

John Locke's Investigation into our Knowledge of Bodies

Dissertation

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Abstract

Since John Locke repeatedly insists that his theory of bodies, endorsed in the *Essay concerning Human Understanding* (1690), is a genuinely philosophical assessment of bodies, the topic of his account adds up to a philosophical reflection on the so-called scientific revolution in the seventeenth century. In this work, I will develop a line of interpretation that undertakes to settle the issue what the genuinely philosophical issue of Locke's analysis of bodies consists in. This leads to a thorough re-examination of Locke's account, since the differences to other interpretations concern most prominent issues on bodies and, correspondingly, many of their crucial concepts: the substratum of bodies, primary and secondary qualities, resemblance, the role of corpuscularian theory, archetypes, real and nominal essences, the argument on species and classification, the significance of the analysis of language, the concept of knowledge, the ideal of scientific understanding, and the account of the scope of contemporary knowledge. As will be argued, Locke consciously assesses contemporary knowledge in the perspective of an ideal scientific grasp of bodies and thus unfolds a philosophical framework for natural science which: (1) specifies what a science of bodies ideally consists in, (2) assesses contemporary knowledge in this perspective, (3) advances an own conception of a contemporary science of bodies that proposes means to enhance contemporary knowledge, and (4) refutes alternative ideas of a science of bodies.

Keywords

John Locke, substances, ideal of science, scope of knowledge

Abstract

Da John Locke wiederholt betont, dass seine Theorie von materiellen Körpern, vorgebracht im *Essay concerning Human Understanding* (1690), eine genuin philosophische Darstellung von Körpern sei, summiert sich das Thema seiner Ausführungen zu einer philosophischen Reflektion der sogenannten wissenschaftlichen Revolution im siebzehnten Jahrhundert auf. In dieser Arbeit werde ich eine Interpretationslinie entwickeln, welche zu bestimmen versucht, worin das genuin philosophische Anliegen von Lockes Analyse von Körpern besteht. Sie führt zu einer umfassenden Neubetrachtung von Lockes Ausführungen, da Unterschiede zu anderen Interpretationen gerade bei den zentralen Fragestellungen und der ihnen entsprechenden Begriffen bestehen, namentlich von: dem Substratum von Körpern, primären und sekundären Qualitäten, Ähnlichkeit, der Rolle der Korpuskulartheorie, Archetypen, realen und nominalen Essenzen, dem Argument zu Spezien und Klassifikation, die Bedeutung von Lockes Sprachanalyse, dem Wissensbegriff, dem Ideal wissenschaftlichem Verstehens und der Bestimmung der Reichweite zeitgenössischen Wissens. Es wird argumentiert, dass er bewusst zeitgenössisches Wissen von Körpern in der Perspektive eines idealen, wissenschaftlichen Verstehens von ihnen bestimmt und dass er so einen philosophischen Rahmen für die Naturwissenschaften entwirft, der: (1) spezifiziert, worin eine Wissenschaft von Körpern idealerweise besteht, (2) zeitgenössisches Wissen in dieser Perspektive bestimmt, (3) eine eigene Konzeption für eine zeitgenössische Wissenschaft beinhaltet, welche Mittel zur Verfügung stellt, dieses Wissen zu erweitern und (4) alternative Ideen von einer Wissenschaft von Körpern zurückweist.

Schlagwörter

John Locke, Substanzen, Ideal der Wissenschaft, Reichweite von Wissen

*To my parents
who gave me the capacity for happiness*

John Locke's Investigation into our Knowledge of Bodies

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General Introduction

Given the structure of the *Essay concerning Human Understanding*, John Locke's theory of bodies is clearly embedded in the overall argument. The account is evidently intended to spell out the general programme of the *Essay* with respect to bodies, namely "to enquire into the Original, Certainty, and Extent of humane Knowledge; together, with the Grounds and Degrees of Belief, Opinion, and Assent".¹ Locke moreover executes his overarching project as to bodies in connection with contemporary natural philosophy. This becomes manifest when he uses key terms of mechanists to express arguments, e. g. Galileo Galilei's and Robert Boyle's distinction between primary and secondary qualities. Similarly, Locke extensively discusses Boyle's corpuscularian hypothesis and often adopts it in his reasonings. And, moreover, he attempts to refute Cartesian and especially Aristotelian views on bodies. In fact, in virtually all passages on bodies, Locke debates or alludes to scientific accounts. Since he likewise repeatedly insists that this assessment of bodies is genuinely philosophical,² the topic of his account adds up to a philosophical reflection on the so-called scientific revolution, i. e. on the rise of the new, empirical sciences in the seventeenth century.

This can be further specified. In the light of Locke's various programmatic statements it becomes plain that the analysis of the *Essay* leads up to its fourth and last book being explicit on knowledge and opinion. The first book on innate notions forms the backdrop of Locke's own positive account and directly motivates the second book on ideas;³ and the third book on words is justified by its contribution to the fourth one.⁴ Since, moreover, the argument on knowledge first assesses contemporary knowledge to

¹ 43, I.i.2. Cp. 44, I.i.3. Quotations from the *Essay* refer to the Nidditch edition. I abbreviate them as follows: page, book.chapter.paragraph. Citations from other works by Locke refer to the edition of his collected works from 1823 and are identified by the short title '*Works*'. Other references are by page number to the editions listed under 'Bibliography'.

² Cp. 43, I.i.2; 140, II.viii.22; 287, II.xxi.73; 376, II.xxxi.2; 548, IV.iii.16.

³ 102f, I.iv.25; 104, II.i.1.

⁴ 401, II.xxxiii.19; 579, IV.vi.1.

terminate then in a conception of a science of bodies, Locke's comments apparently evolve to a philosophical account of natural science. This corresponds to the final chapter of the *Essay* where Locke classifies "All that can fall within the compass of Humane Understanding" into three sciences of which one concerns bodies and spirits, namely natural philosophy.⁵ Locke therefore understands his clarification of knowledge as to its origin, certainty, and extent in the context of bodies as a philosophical argument on natural science.

However, despite Locke's recurrent effort to make plain the relationship between natural philosophy and his epistemology, there is an on-going debate on what the genuinely philosophical issue of Locke's analysis of bodies consists in. In this work, I will develop a line of interpretation that undertakes to settle the issue. As will be argued, Locke consciously assesses contemporary knowledge in the perspective of an ideal scientific grasp of bodies and thus unfolds a philosophical framework for natural science.

This approach leads to a thorough re-examination of Locke's account, since the differences to other interpretations concern most prominent issues on bodies and, correspondingly, many of their crucial concepts. To indicate the chief distinctions, the characteristics of this reading will now be outlined by comparing it with competing interpretations as to central issues comprising the programme of Locke's theory of bodies. One can naturally differentiate between five interrelated aspects. First, I turn to Locke's analysis of ideas regarding substratum, qualities, and resemblance and its relationship to corpuscularian theory, the probably most hotly discussed topic.

According to Peter Alexander, for example, Locke's philosophical reasoning on bodies aims at establishing Boyle's corpuscularian theory by demonstrating that it is an adequate and plausible account of our everyday experience and description of the world. Locke is conceived as an advocat of the most convincing contemporary hypothesis on bodies who not only additionally justifies, but also explains and popularizes the theory.⁶ This effectively means, Locke's analysis is a philosophical foundation of Boyle's scientific hypothesis, significantly complementing Boyle's own experimentally based reasonings. By

⁵ 720, IV.xxi.1f.

⁶ Alexander (1985), 6f.

comparison, Edwin McCann maintains that Locke genuinely analyses our everyday notion of body. But McCann similarly takes Locke to found philosophically the corpuscularian hypothesis in so far as that it is the sole explanatory account which is in accordance with our ordinary conceptual understanding of bodies and our commonsense views on them and their qualities.⁷

One aim of the here expounded reading is to demonstrate that Alexander and McCann misconceive the thrust of Locke's explanations in connection with Boyle's hypothesis (cp. ch. 5 on Locke's theory of qualities). Of course, Locke does regard corpuscularianism as the best available scientific account being in line with our everyday conception and experience of bodies. Yet, generally speaking, Atherton rightly points out that the genuine issue is not to establish corpuscularian theory, since even in the comments on qualities, where Locke is most favourable to the theory, his is concerned with the epistemological topic of resemblance.⁸ Following this approach, I intend to show that Locke rather presupposes than argues for corpuscularian theory. Locke does intend to establish the corpuscularian account as, at his time, the only intelligible conception of bodies, but he does so only because he needs the hypothesis as a premise in the argument on the epistemological issue of resemblance. Crucially, the analysis makes likewise plain that Locke's central claims on qualities and resemblance assess our ordinary conceptual understanding of bodies not in corpuscularian terms, but in concepts of an ideal scientific account.

Not less importantly, Locke's conception of this ideal scientific viewpoint will be further specified by an unorthodox analysis of what the issue of resemblance and its relationship to corpuscularian theory are (cp. ch. 3 on Lockean resemblance). This view leads to an enhanced reading of what it means that primary qualities are "in the things themselves", whereas secondary qualities are "nothing in the things themselves, but powers" (cp. ch. 4 on the reality of primary and secondary qualities). One substantial upshot is that Locke describes bodies from a particular epistemological perspective which coincides with an ideal scientific grasp. From this standpoint, bodies are understood in terms of being not specific for our epistemic access to the world, i. e. for the human senses or our epistemic

⁷ McCann (1994), 58ff.

⁸ Atherton (1992), 122.

apparatus respectively. This perception-neutral viewpoint is crucial to understand Locke aright, since it relates to the substratum and real essences of bodies as well. To assess bodies in this ideal scientific perspective, thus seems to me Locke's stake in corpuscularian theory, resemblance, and the distinction between primary and secondary qualities.

This account, I contend, is in effect additionally supplemented by Locke's assessment of substratum (cp. ch. 2 on the substratum of bodies). The key to this reading is a detailed analysis of Locke's conception of substratum in the light of his corpuscularian comprehension of bodies. As will be argued, commentators do not elucidate convincingly the depiction of substratum as what gives rise to the "union of properties", although they usually acknowledge its importance. According to the here advanced view, Locke conceives the substratum of bodies in explanatory terms which are neither confined to corpuscularian nor to any other theory. Correspondingly, one has to read Locke's prominent claim that one's idea of substratum is confused which thus turns out as an assessment of the contemporary understanding of substratum from the standpoint of an ideal scientific grasp.

Second, Locke's theory of bodies includes a theory of classification. Commentators typically conceive Locke's comments on species and essences in the light of his criticism of Aristotelian views on this subject matter.⁹ Usually, one likewise takes Locke to distinguish between contemporary classifications sorting bodies in the light of rather superficial resemblances existing on the macrophysical stage and an ideal scheme sorting bodies in accordance to their similarities on the explanatory, microphysical level. By contrast, I will argue that this latter topic is the leading issue of the comments on species, on essences, as well as on archetypes. To start with archetypes, on first thought Locke's claim that ideas are inadequate appears to be an emphasis that contemporary ideas do not depict bodies by their real essences.¹⁰ The explanations of archetypes however add rather up to a complex account of how our ideas are connected with the epistemic project of an ideal scientific sorting of bodies regarding their similarities on the explanatory stage (cp.

⁹ Cp. Ayers (1991), II, 65-77; Mackie (1975), 85-88; Woolhouse (1971), 99-105; Yolton (1970), 28-34.

¹⁰ Cp. Ayers (1991), II, 76.

ch. 1 on ideas and archetypes). A detailed analysis of the comments on names of bodies will moreover reveal that Locke uses the distinction between nominal and real essences to express the profound difference between ordinary species and classifications, on the one hand, and an ideal scientific sorting in terms of real essences, on the other hand (cp. ch. 6 on species and essences). Both points thus establish that the aim of the argument on species is not chiefly the refutation and substitution of Aristotelian views, but rather the assessment of contemporary classifications by comparing it with an ideal scientific sorting. This issue of ideal classification is furthermore interwoven with Locke's notion of real essences, I contend. In the light of his comments on archetypes, species and other topics, an unorthodox reading of real essences emerges (cp. ch. 7 on real essences). A real essence, I claim, is ascribed to a specimen as the set of features according to which the body is sorted in an ideal scientific classification. This view profoundly diverges from the prevailing one(s), but purports to show that many of Locke's chief arguments on bodies afford and imply the advanced understanding of real essences.¹¹ It thus turns out that Locke's assessment of contemporary classification in the perspective of an ideal sorting is essentially linked to his conceptions of archetypes and essences. And since 'real essence' is almost omnipresent in his account of bodies, the issue of an ideal classification is one of Locke's primary themes and present in many parts of his theory.

Third, there is Locke's language critic. Locke puts much weight onto this analysis and emphasizes its aim to refute competing views.¹² In my eyes, however, his reasoning has not yet been fully apprehended (cp. ch. 8 on imperfection and abuses). One aim of the advanced reading therefore is to highlight Locke's account and to make plain its significance. This leads to a substantial re-interpretation of the argument, since the proposed reading of real essences is decisive for a correct understanding. It thus becomes plain how Locke's language critic attempts to reject for once and for all Cartesian and

¹¹ In other words: if the real essence of a specimen were traditionally conceived, namely as comprising the microphysical properties corresponding to the nominal essence of its sort (or, alternatively, as comprising all the microphysical features a body possesses), many of Locke's prominent reasonings would be incoherent, conceptually confused, or would in some passages openly contradict his use of 'real essence'.

¹² As Locke emphasizes when introducing the *Essay* to the reader, he attempts to "[remove] some of the Rubbish, that lies in the way to Knowledge" by displaying "frivolous use of uncouth, affected, or unintelligible Terms". Cp. *Epistle*, 10.

Aristotelian conceptions of a science of bodies on purely semantic grounds, paving the way for his own conception of a science of bodies.

Fourth, in his comments on knowledge Locke advances an assessment of contemporary knowledge (cp. ch. 10 on the scope and advancement of knowledge). I will argue for two claims in particular. First, to understand aright Locke's analysis of the scope of contemporary knowledge, one has to take into account the developed view on real essences. Both aspects are part and parcel of Locke's argument to determine the extent of contemporary knowledge and to propose an experimental conception for a contemporary science of bodies that enhances human knowledge.

Importantly, this assessment of contemporary knowledge is advanced on the backdrop of a conception of an ideal natural science. According to the orthodox view, Locke maintains a mathematical-like, conception of an ideal science of bodies.¹³ Roughly speaking, Locke is taken to claim that one can deduce properties on the basis of knowledge of microphysical structures by discovering conceptual-like relationships holding between these microphysical features and the properties. By contrast, I will argue for the contention that Locke is committed to an axiomatic, empirical theory that allows for mathematical-like deductions of properties. The decisive difference is that in the latter case one affords comprehensive knowledge of matter and causal interactions in the first place to develop this axiomatic, empirical theory. An axiomatic theory of this kind simply represents a thorough grasp of body. Given this kind of knowledge, Locke contends, one can then deduce which specific features are possessed by bodies having a particular microphysical structure. This conception of an ideal science of bodies thus complements the account of an ideal scientific grasp of bodies from a perception-neutral, classificatory viewpoint.

The upshot is a partial re-positioning of Locke's place in the history of philosophy. In rough and ready terms, Locke's conception of an ideal account of bodies is substantially farer away from Descartes's rationalism and closer to Hume's empiricism than is usually thought. The problem with Locke's conception is not that it has a Cartesian, mathematical-like *a priori* character, but that Locke is rather naive on the question of its

¹³ Cp. Ayers (1970), 39; Ayers (1991), I, 102, and II, 147; Krüger (1973), 243-46; Mackie (1975), 100-103; Wilson (1979), 143 and 147; Wilson (1982), 249; Woolhouse (1971), 19, 25, and 136.

material adequacy.

Finally, there is Locke's comprehension of knowledge as to its certainty (cp. ch. 9 on knowledge and its degrees). Commonly, Locke is perceived to advance an incoherent account, namely that his definition of knowledge does not fit with the depiction of sensitive, i. e. perceptual, knowledge.¹⁴ By contrast, a re-interpretation of both the definition of knowledge and the portrayal of its so-called degrees show that Locke proposes a coherent view. Accordingly, in both contexts the certainty of knowledge relates to one's grasp of the reasons in virtue of which one recognizes the obtaining of a fact. Since the certainty of knowledge concerns Locke's generic portrayal of knowledge, the issue of certainty does not however specifically bear on Locke's theory of bodies, but pertains exclusively to the overall programme of the *Essay*.

The outline has made plain that the controversy concerns virtually all substantial topics regarding bodies. It has also indicated that according to the here suggested reading Locke develops a philosophical framework for natural science which: (1) specifies what a science of bodies ideally consists in, (2) assesses contemporary knowledge in this perspective, (3) advances an own conception of a contemporary science of bodies that proposes means to enhance contemporary knowledge, and (4) refutes alternative ideas of a science of bodies. I rather speak of a "philosophical framework" than of a "philosophical foundation" since Locke does neither attempt to establish a particular theory, e. g. the corpuscularian hypothesis, nor any fundamental laws, as Descartes respectively Kant do. Instead, Locke solely wants to provide a philosophically clarified conception of a science of bodies, the most that he believes one is able to achieve. In this sense, his theory of bodies intends to set human knowledge of bodies on the right track: by pointing out which track the right one is, that one is still at the beginning of the journey, and what the final destination of the exploration is. He thus determines with epistemological and semantic arguments: the ultimate goal of scientific knowledge and research, the actual limits of contemporary knowledge and the probable limits of knowledge in the future, as well as the objectives and means to enhance contemporary knowledge. Since the following interpretation of

¹⁴ Cp. Alexander (1985), 282f; Ayers (1991), I, 103 and 126; Jenkins (1983), 196ff; Lowe (1995), 174; Specht (1989), 129f.

Locke's account of bodies is structured along the lines of his own discussion, I will come back to these issues in the final chapter and delineate how in the case of bodies the general programme of the *Essay* evolves into a philosophical framework for a science of bodies (cp. conclusion).

A Note on Locke's Works on Bodies

The *Essay* is not only Locke's major work on theoretical philosophy in general, but on bodies in particular. To understand therefore aim and force of Locke's philosophical programme on bodies, one has to focus on the *Essay* even though some of its issues are likewise discussed in his correspondence with Stillingfleet or touched on in *The Elements of Natural Philosophy* and in *Of the Conduct of the Understanding*, which was originally planned to supplement the *Essay*. Thus, except for few places, an interpretation of Locke's account of bodies is chiefly concerned with the *Essay*. Since there are only few important differences amongst the various editions, I will generally quote the fourth one, i. e. the last one published at Locke's life time, if not otherwise pointed out.

A Note on Terminology

Locke himself does of course use the word 'body', but it is not his preferred term to denote bodies in the sense I do. He rather uses 'natural substance' or even the more general term 'substance' to refer to bodies *qua* natural substances. These two words, however, signify strictly speaking, not only bodies. Substances are bodies, spirits, and God; natural substances are bodies and spirits. Natural substances are furthermore contrasted with artificial substances. Natural substances are bodies *qua* members of a natural kind, e. g. men and gold, artificial substances are artefacts like pistols. To further complicate the matter, bodies can also be characterized as relations, e. g. men as children. The difference in this case is that only bodies *qua* natural substances are substances; in other words, entities being grasped as relations are not conceived as being, or respectively as possessing, a substratum. In the light of these considerations, it may not seem to be amiss to call

bodies *qua* natural substances simply bodies.

Part I

IDEAS: THEIR CONTENT AND ARCHETYPES

Introduction

In the first book of the *Essay* Locke begins the execution of his overall programme by a thorough dismissal of a conception of knowledge based on innate ideas or propositions.¹⁵ For Locke, the proposal of innate ideas and propositions is the result of a misconception of what our immediate assent to true propositions consists in.¹⁶ He thus rejects both that there is knowledge adding up to innate ideas or propositions and that knowledge can be justified by innate ideas or propositions serving as principles to enlarge human knowledge.¹⁷ On this backdrop, Locke motivates the analysis of the second book on ideas. He intends to show that ideas are not innate, but acquired in the light of experience, e. g. the idea of substance.¹⁸ For this purpose, he inquires into the origin and content of our

¹⁵ 104, II.i.1.

¹⁶ 99, I.iv.22; 101, I.iv.24.

¹⁷ Cp. 55, I.ii.15; 58, I.ii.19. Cp. ch. 8b and 10d.

¹⁸ 48, I.ii.1; 104, II.i.1f; 95, I.iv.18.

ideas, examines the faculties being involved in their genesis, and assesses their content in different epistemological perspectives. This approach, Locke indicates, eventually leads to an alternative explanation of knowledge and of what immediate assent consists in.¹⁹ The general aim of the account thus is to pave the way for a correct assessment of human knowledge by determining its foundation.²⁰

In the comments specifically concerning ideas of bodies, Locke primarily aims at establishing one's limited grasp of bodies. The point of his reasoning is however not to give simply an account of the content of our ideas, since he apparently has a specific epistemological issue in mind. This becomes plain, when Locke insists that his assessment is to be distinguished from a scientific, explanatory account of bodies, of their properties, and of the physical processes that cause ideas in the human mind.²¹ However, as indicated in the introduction, despite his repeated efforts to differentiate his own programme from that of a natural philosopher, it is hotly disputed what the epistemological topic is.

The aim of this part is to make plain that Locke's major contentions on ideas of bodies determine their content from a specific, ideal scientific viewpoint. Locke thus intends to show, I argue, that one's conceptual understanding of bodies is far from being an ideal scientific grasp. This account comprises several aspects specifying by which properties bodies are ideally to be depicted and in which kind of concepts these properties are to be understood.

In the first chapter, I will argue for two points. First, Locke's analysis of ideas of bodies is an assessment of one's conceptual understanding of bodies, i. e. of the depiction of bodies as it is entailed in our concepts of them, e. g. 'gold' and 'man'. Second, in the comments on archetypes Locke conceives ideas of bodies in the perspective of a specific epistemic project, namely of an ideal scientific classification. The next chapter delineates Locke's characterization of the substratum of bodies and its identification with matter in explanatory terms which are neither confined to corpuscularian nor to any other theory. Chapters three, four, and five reconstruct successively: Locke's notion of resemblance,

¹⁹ Cp. 55, I.ii.15.

²⁰ 102, II.iv.25.

²¹ Cp. 43, I.i.2; 140, II.viii.22; 287, II.xxi.73; 376, II.xxxi.2; 548, IV.iii.16.

what it means for qualities (not) to be real, and the argument establishing the account of qualities as a whole. As will be contended, crucially for all three aspects, ideas and properties of bodies are discussed in an ideal scientific perspective depicting bodies and their properties from a perception-neutral viewpoint.

Locke's comments on ideas thus assess the contemporary conceptual comprehension of bodies from a twofold epistemic viewpoint. It specifies both in virtue of which properties and in terms of which concepts bodies are ideally grasped, depicted and classified. For this purpose, Locke relies partly on corpuscularian theory and partly goes beyond it. In fact, the result is an intriguing and complex relationship between Locke's ideal epistemological viewpoint and Boyle's physical theory, since the intelligibility of Locke's arguments draws in part on Boyle's model of body. But though Locke's views on an ideal grasp are decidedly inspired by Boyle's hypothesis, it likewise becomes plain that he pursues a genuine philosophical project. The programme of Locke's analysis is to determine one's conceptual grasp of bodies in the perspective of what he regards a scientific understanding ideally to be.

1. Ideas and Archetypes

At the end of the second book of the *Essay* Locke compares the content of an ordinary idea of bodies with its archetype. He conceives an archetype as what an idea is intended to represent and identifies the archetype with a real essence. More specifically, some people refer their ideas to Aristotelian real essences whereas others relate them to corpuscularian real essences. Yet, despite this difference, all speakers understand the archetypes to be the real essences of bodies experienced in nature. Locke's primary claim is that our ideas of bodies represent only inadequately their archetypes or real essences respectively. In addition, the ideas are said to be inadequate representations as to the substratum of bodies. Generally speaking, commentators do not pay much attention to the topic of archetypes in the first place,²² but if they do so, they tend to focus on corpuscularian real essences since they apparently regard corpuscularian real essences as the true archetypes of ideas of bodies and Aristotelian real essences as only alleged archetypes.²³ But this picture does not fit with Locke's comments, as a closer examination will reveal. The upshot is a far more complex account, namely that according to Locke a subject conceives an idea as standing in the perspective of a certain epistemic project, which goes beyond the idea's content, when relating ideas to archetypes. An idea is formed to serve a specific classificatory end that is not part of the idea. This epistemic intention varies among subjects in so far as they have different ideas of what the real essences of bodies are, but they share the basic conception to depict species experienced in nature and that real essences are the archetypes of ideas of bodies. These insights will prove to be important in chapter seven on real essences, but there is an immediate implication as well: Locke's account that our ideas of bodies are inadequate both as to corpuscularian real essences and as to their substratum adds up to an assessment of our conceptual grasp of bodies from an ideal

²² There has however been a recent debate on the adequacy of simple ideas. Cp. Bermúdez (1992) and Ferguson (1996).

²³ This becomes plain when Locke's assertion that ideas of bodies are inadequate is effectively reduced to the claim that the ideas do not depict bodies by their corpuscularian real essences. However, ideas of bodies are said to be inadequate as to Aristotelian real essences as well. Cp. Ayers (1991), II, 76.

viewpoint of scientific classification.

The first step is to clarify what an idea is. Giving the gist of Yolton's interpretation and of Ayers's supplemental account and acknowledging both views in principal, I argue in later chapters that, *pace* Ayers, Yolton's reading applies thoroughly to the context of bodies. The punchline is to give the reader the established interpretation of Lockean ideas at hand as well as to delineate Ayers's account against which the argument is directed in the following chapters. Then, an analysis of Locke's comments on archetypes contends that there he links ideas to the classificatory venture a subject has in mind. Both the differences and the common ground of the Aristotelian and corpuscularian epistemic project will be highlighted which, according to Locke, speakers pursue with their ideas. Subsequently, I will make plain Locke's assessment of our ideas from an ideal scientific viewpoint. This latter result will be reconfirmed in the chapters on substratum, the theory of qualities, and real essences.

a. The Notion of Idea

Locke's central characterizations of ideas highlight them as "the immediate object of Perception, Thought, or Understanding".²⁴ Reading this portrayal on the philosophical backdrop of Locke's time, Yolton in particular has developed an interpretation which comprehends Lockean ideas as intentional objects.²⁵ The point is to explain how thought can be concerned with entities which are "outside" the mind. Conceiving entities, the claim is, is to grasp them by a mental representation. For example, one can think of tigers by having a conception of tigers. In this explanation, tigers "appear" in two ways; namely, firstly, tigers as the (material or physical) entities being referred to by one's thinking of tigers, and, secondly, tigers as the (intentional) entities being the content of one's conception of tigers, i. e. as the entities being referred to in so far as they are thought of. In the second sense, tigers are the intentional object or the object of thought respectively, namely the entities being conceived of in so far as they are conceived of. The difference

²⁴ 134, II.viii.8. Cp. 525, IV.i.1; *Works* IV, 130. Cp. also 47, I.i.8; 104, II.i.1.

²⁵ Yolton (1984), 88-104.

between the two “ontological modes” becomes apparent with respect to their existence conditions as to non-existent entities. When thinking of centaurs, there are centaurs as the object of this thought of centaurs even though there are no centaurs in the world to which the thought refers; while, on the other hand, when no one thinks of gold, there would be gold in nature to which a thought refers even though there were no gold as the object of a thought.

Interpreting Locke’s notion of the immediate objects of the understanding as intentional objects, to say for Locke, ideas are the immediate objects of the understanding, is to emphasize that one conceives entities only by thinking of them. One conceives entities in terms of ideas, i. e. one grasps entities by them being the intentional object of one’s thought. ‘Thought’ is taken here in a very general sense which signifies all kinds of intentional states whether they are, for example, sensations or memories. For instance, the thought of an particular apple might be one’s sensation or one’s memory of the apple. Moreover, Locke speaks of ideas not only in the sense of them being the content or object of intentional states, but also in the sense of them being an intentional state. For example, with ‘idea of gold’ Locke could mean either gold in so far as it is a thought of gold or gold in so far as it is the object of thoughts of gold.

I prefer to speak of ideas in terms of mental representations.²⁶ That is, Locke’s ideas are either mental representations, i. e. intentional states representing entities, or the content of representations, i. e. the object of thought. For example, in the first sense the idea of centaurs is the mental representation of a sort of entities, namely of centaurs. In this sense of idea, an idea is specified by its content. An idea is the mental depiction or portrayal of specific entities, an idea is a mental state which represents entities. One can speak of course not only of particular mental representations, but also of a type of mental representations which is individuated by a common content. Two persons have the same idea of gold, if the two mental representations have the same content, i. e. if they depict the same entities. And Locke calls both types of mental representations and their token idea. Moreover, whether ideas are understood as types or tokens of representations, to highlight ideas as mental representations explains why in some contexts ideas are

²⁶ In this context, one should mention the classic article on this topic, namely Jackson (1930).

identified with mental states being characterized by having a specific content and a causal history, e. g. the sensation of yellow. On the other hand, in most contexts and especially in connection with his comments we are concerned with, Locke means by idea the content of mental representations, i. e. the object of thought. He examines our mental representations with respect to the sort of entities they represent. For example, the discussion of our ideas of bodies is an analysis of the kind of features by which bodies are conceived as bodies. Since ideas in the sense of representations are genuinely characterized by their content, there is a floating transition from ideas understood as representations to ideas understood as the content of representations. Yet, one should keep in mind that for Locke 'idea' can denote both the content of mental representations as well as these mental representation themselves.

By and large, in some cases a Lockean idea might be regarded as making up the whole content of a thought. For example, if one thinks of tigers simply in the sense that one conceives of tigers as they are depicted by one's idea, one could regard the whole cognitive content of the thought as solely consisting of the idea of tigers. More precisely, however, for Locke ideas serve as aspects of intentional content. This becomes evident in his theory of knowledge where a "combination" of ideas represents a state of affairs. As will be developed more in detail,²⁷ to know that a state of affairs holds is to perceive the holding of that state of affairs, e. g. that gold is yellow. States of affairs are therefore likewise content of intentional states where a single idea serves to represent an aspect of a state of affairs, e. g. the idea of gold stands for gold. Moreover, given Locke's emphasis that not ideas but only propositions can be true or false,²⁸ if pressed, Locke should concede that one's thought of tigers is not simply equivalent to the idea of tigers, but to a proposition representing a state of affairs expressing or spelling out the depiction of tigers as it is entailed in the idea, e. g. 'Tigers are predatory cats with yellow and brown stripes'. Thus, strictly speaking, Lockean ideas are aspects of thoughts.

There is a close connection between ideas and concepts. Words are regarded as signs which acquire semantic content only when they are used to signify ideas.²⁹ Categorematic

²⁷ Cp. section 9b.

²⁸ Cp. 9b.

²⁹ Cp. 6a.

terms like substantives, predicates, adjectives, and adverbs signify ideas whereas so-called particles, i. e. syncategorematic terms, like 'but' refer to relations between ideas.³⁰ This shows, since 'idea' is the central notion of Locke's theory, that from his perspective concepts or the meaning of words have to be explained in terms of ideas, namely as the content of ideas. Concepts, meaning, words, etc. are entities which have to be related to intentional states of an epistemological subject, i. e. they terminate ultimately in the content of mental representations. On the other hand, at central places Locke explains ideas by referring to words. An idea represents what a word stands for:

“§1. EVERY Man being conscious to himself, That he thinks, and that which his Mind is employ'd about whilst thinking, being the *Ideas*, 'tis past doubt, that Men have in their Minds several *Ideas*, such as are those expressed by the words, *Whiteness, Hardness, Sweetness, Thinking, Motion, Man, Elephant, Army, Drunkenness*, and others: [...]”.³¹

Given this nexus between ideas and the meaning of words, an idea can be conceived of characterizing entities in the way concepts do. An idea entails the kind of portrayal of entities as it is entailed in concepts. In modern terms, the content of an idea amounts to the meaning, or intension, of a concept.³² In this sense, one's idea of entities represents one's conceptual understanding of these entities. In the contexts, where Locke focuses on the content of ideas, ideas add up to what one usually calls concepts. For instance, Locke's analysis of the content of our ideas of bodies is effectively an account of our concepts of bodies. More precisely, to discuss “our” or “the” ideas of bodies, means for Locke to examine the kind of ideas which are commonly signified by our names of bodies. As his repeated criticism of Descartes's notion of bodies shows,³³ Locke is only interested in our

³⁰ 471-73, III.vii. Alston overlooks Locke's particles when being polemical against Locke: “Can you discern an idea of “when”, “in”, “course”, “becomes”, etc., swimming into your ken as each word is pronounced? [...] What are we supposed to look for by way of an idea of “when”? How can we tell whether we have it in mind or not?”. Cp. Alston (1964), 24.

³¹ 104, II.i.1.

³² As will be delineated in the next part, one mistakes Locke's talk of ideas being the primary signification of words if one reads it as the claim that ideas are the extension of words. Cp. 6a. Ashworth has convincingly argued this point. Cp. Ashworth (1984), 60-64. That is, Locke does not contend in this modern sense of 'meaning' that the meaning of words are ideas, as some commentators do. Cp. Alston (1964), 22; Bennett (1971), 27; O'Connor (1967), 131.

³³ Cp. 449, II.vi.21; 603ff, IV.vii.12ff.

usual concepts of bodies, namely in those ideas which are given by experience and which therefore represent entities in the world. Having said that, one should keep in mind however that in connection with other issues it is relevant that ideas are *mental* representations.

Ayers has complemented Yolton's account of Lockean ideas by adding another understanding of ideas which is present in some of Locke's comments on simple ideas. An idea is understood as a mental state in the sense of a "blank effect" of an external cause.³⁴ A blank effect is a mental state characterized by phenomenological features and caused by an external power or property. The idea of yellow is, for instance, the kind of effect which is caused by yellow objects. The phenomenological feature of the idea of yellow is thereby contrasted by the phenomenological features of other sorts of sensations, e. g. the phenomenological feature of sensations of green. As Ayers has convincingly shown, this understanding of ideas is indeed present in Locke's arguments.³⁵

Now, matters become complicated if one asks what is the content of a simple idea. In many contexts, a simple idea is said to be about the property that causes the simple idea in ordinary sensation. For example, the idea of yellow is about the feature of material objects which causes the sensation of yellow when one visually perceives yellow. Given this "causal understanding" of the content of simple ideas, there is a seemingly innocuous connection between ideas as blank effects and ideas as intentional objects. Simple ideas of sensible qualities, e. g. colours, tastes and sounds, are individuated by phenomenological features. Yellow is the property of bodies that causes sensations of yellow, whereas green is the feature producing sensations of green. But this kind of characterization does not apply to all simple ideas. For example, the idea of the form of globes is the mental representation of the form of globes whether one has a visual or tactual idea of the shape.³⁶ In other words, for Locke there is no difference between a visual and a tactual idea of the form of globes as there is a difference between the idea of yellow and the idea of green. On first thought, one might want to explain this difference by pointing out that it is justified for Locke to take the visual and the tactual idea of a shape to be the same

³⁴ Ayers (1991), I, 62.

³⁵ Cp. 372, II.xxx.2; 375, II.xxxi.2.

³⁶ Cp. 127, II.v; 145f, II.ix.8.

ideas, since they represent the same property. These two ideas, one might add, are only different in the sense that they have been received by different senses. And indeed Locke does hold that experience has to show that the tactual and the visual idea of globes have the same content.³⁷ Lockean simple ideas, one could move on, are mental representations that are *prima facie* individuated by their specific phenomenological features, but which are identified by their content, namely by the kind of property causing this sort of mental representations in sensation. Simple ideas are portrayed as mental representations having both a property as their content and phenomenological features by which one specifies the content.

However, Locke's position is not that straight forward, since there are other passages in which a simple idea is depicted as an intentional state whose content consists in the phenomenological features of a mental state. Sensations are the paradigm again. For example, in some passages the idea of pain is understood as a mental state being characterized by phenomenological features which differ from sensations of colour.³⁸ In this sense, one can move on to distinguish between pondering and stinging pain, i. e. between ideas representing various sorts of pains. Here, simple ideas do not represent their cause, but their phenomenological features. In sensations, such a simple idea is effectively a self-representing mental state; but since there are also other intentional states than sensations, e. g. memories of one's having been in pain, simple ideas in this sense need not to be self-representing states. Rather, more generally, simple ideas of this kind represent mental states being characterized by phenomenological features. Ayers's speaks therefore rightly of two different models of ideas which are partly interrelated and partly excluding each other. On the one hand, by characterizing simple ideas as blank effects one can explain how they represent their cause, namely by asserting that a simple idea represents the property which causes a certain kind of blank effect. On the other hand, in other contexts simple ideas are said to represent a blank effect.

Ayers shows convincingly both that Locke's understanding of simple ideas as blank effects is part and parcel of his conception of ideas as being mental representations of their cause

³⁷ 145f, II.ix.8. This is the so-called Molyneux problem.

³⁸ 229-33, II.xx.

and that the blank-effect model is employed in some places to specify the content of a simple idea as a blank effect. But I disagree with Ayers with respect to the range of contexts in which the content of a simple idea is identified with a blank effect. In particular, I will argue that in Locke's theory of qualities and resemblance the content of ideas of secondary qualities is identified with their cause.³⁹ For example, the idea of pain is conceived there as representing the property of bodies which causes the idea of pain, i. e. as standing for the disposition of bodies to produce pain. This interpretation of ideas of secondary qualities implies that Locke only uses rarely the blank effect model to determine a simple idea as a blank effect representing a mental state being characterized by phenomenological features. *Pace* Ayers, there is no clash between the two models, but rather a peaceful coexistence.⁴⁰ On the other hand, as we have seen, Ayers correctly points to unclarified parts of Locke's theory. Some simple ideas, e. g. the idea of pain, are in some contexts portrayed as representing blank effects, but in other ones as representing its cause; some simple ideas, e. g. the visual and the tactual ideas of the shape of a globe, are said to be *one* idea conveyed by different senses, whereas other simple ideas being likewise conveyed by different senses, e. g. ideas of colours and of smells, are said to be different. These are no contradictions but represent either ambiguities or the lack to clarify exactly what mental representations should have in common to be signified by the same name, e. g. by 'pain' or 'globe'.

b. Ideas of Bodies and their Archetypes

Ideas, we have seen, are mental representations of entities. This means for ideas of bodies more specifically that they each stand for a species of bodies having a distinct set of properties. For example, a particular idea of bodies might depict the class of bodies being yellow and having a metallic shine. Bodies are thereby understood as entities having a substratum, consisting of coherent solid parts as well as being extended and capable of

³⁹ Cp. 4c.

⁴⁰ Cp. Ayers (1991), I, 63ff.

communicating motion by impulse.⁴¹ As will be delineated in the next chapter, the substratum of bodies is the kind of stuff they consist of, namely matter.⁴² Thus, an idea of bodies comprises the idea of substratum, the ideas of extension, solidity and motion as well as a set of other ideas of properties which specify the depicted class of bodies as a particular species, e. g. as gold.⁴³ Now, Locke assesses our ideas of bodies in comparison with the epistemic project a subject pursues with his or her ideas. As will now be argued, Locke's comments entail that his account on ideas being inadequate as to corpuscularian real essences and substratum is an examination of our conceptual grasp of bodies from an ideal scientific viewpoint.

At various places, Locke comprehends ideas of bodies to depict a class of bodies which one has regularly experienced. For example, in the chapter on the ideas of substances, Locke asserts that one forms an idea of substances in the light of the repeated experience of substances having a particular set of properties.⁴⁴ To experience recurrently various bodies being yellow and fixed, leads to the genesis of an idea of bodies being yellow and fixed. In other passages, an idea of substances is said to copy an existing pattern, e. g. bodies being yellow and fixed. An idea of bodies depicts therefore an existing class of bodies, since the idea has been formed in the light of bodies displaying a common set of features. In this sense, substances are said to be the "standard" of an idea, namely the entities according to which one generates the idea. The idea has its standard in nature.⁴⁵ Similarly, one puts together properties in an idea because there are bodies in nature which show a corresponding union of these properties: "the Union in Nature of these Qualities" is "the true Ground of their Union in one complex *Idea*".⁴⁶

This account is developed further in his theory of real and fantastical ideas. An idea of substance is real if it depicts existing substances: if there "are such Combinations of simple *Ideas*, as are really united, and coexist in Things without us".⁴⁷ By contrast, fantastical idea

⁴¹ 305, II.xxiii.15; 306, II.xxiii.17f; 307, II.xxiii.22; 312f, II.xxiii.29f.

⁴² Cp. 2a.

⁴³ 297, II.xxiii.4.

⁴⁴ 295, II.xxiii.1.

⁴⁵ Cp. 468f, II.vi.46ff.

⁴⁶ 483, III.ix.13.

⁴⁷ 374; II.xxx.5.

of substances “are made up of such Collections of simple *Ideas*, as were really never united, never were found together in any Substance.”⁴⁸ A fantastical idea is not a copy of an existing pattern or standard. For example, the idea of a centaur or the idea of a body possessing the colour of gold and the weight of iron are fantastical, since one has not experienced bodies of this kind. Yet, Locke insists, a fantastical idea might represent substances existing in the world even though one does not know whether this is possible.⁴⁹ One is ignorant of whether these bodies could exist because one’s idea is not a copy. Locke speaks at some places of real ideas as if specimens must actually exist so that the idea is real. However, the characterization of fantastical ideas and their opposition to real ones as well as passages on real knowledge show that an idea is real even if no specimens exist presently. Real ideas of substances “[have to] be taken from something that does or has existed”.⁵⁰ Once the idea is made, there need not to be members of the depicted sort. Locke’s point is that a real idea must be a copy and thus guaranteeing the possibility that specimens exist.

Locke’s distinction of real and fantastical ideas makes plain that ideas of bodies corresponding to our everyday concepts of natural kinds serve as copies for species existing in nature. The epistemic purpose of real ideas of bodies is to portray classes of bodies which do exist or at least have existed in the world. This becomes evident by the contrast between substances and mixed modes or relations.⁵¹ Ideas of mixed modes or of relations might have been made in accordance with features of an existing entity, but this need not to be the case: they are “not always copied from Nature”.⁵² Correspondingly, an idea of mixed modes is real even if it is not a copy and is fantastical only if it depicts entities by properties which exclude each other logically.⁵³

Locke’s account of fantastical ideas likewise makes clear that an idea of bodies represents

⁴⁸ 374; II.xxx.5.

⁴⁹ 374; II.xxx.5.

⁵⁰ 568, IV.iv.12. Cp. 385, II.xxxii.5.

⁵¹ 429, III.v.3; 430f, III.v.5f; 434, III.v.10; 435-37; III.v.12-15.

⁵² 431, III.v.7. In this context Locke refers to mixed modes; but as other passages show, his claims relate likewise to ideas of relations. Cp. 437, III.v.16.

⁵³ By contrast, ideas of substances are real only if they are copies; fantastical if they are contradictory or not copies. Cp. 374, II.xxx.5.

entities in the world even if the idea is not a copy. In this sense, the representative content of ideas is independent of its epistemic purpose for which it has been introduced. Whatever epistemic function a subject attaches to its ideas, they represent the kind of bodies which they depict. A fantastical idea portrays, in principle, bodies in the world even if it is not truly a copy of some specimens of the sort. This independence of an idea's content from the opinions and intentions of a speaker is affirmed rigorously by Locke in his theory of true and false ideas. According to Locke, a truth value can be ascribed only to propositions because only they express a state of affairs.⁵⁴ Properly speaking, he maintains, an idea cannot be judged to be true or false, since ideas, if taken by themselves, represent simply the kind of entities they do. For this reason it does not make sense to call them either true or false.⁵⁵ Only ideas which include properties logically contradicting each other may be termed false as to their content⁵⁶ - since such ideas do not really portray any kind of entity. Usually, however, one asserts an idea to be true or false in reference to another entity.⁵⁷ As to substances, this means, an idea is related to another entity in the sense that the idea depicts this entity.⁵⁸ For example, our common ideas of bodies are false in the way that they do not depict bodies by microphysical properties, namely by their corpuscularian real essences.

We have seen, ideas of bodies are designed to copy real existing patterns, i. e. classes of bodies possessing a common set of properties. But besides this epistemic function, a speaker has further epistemic intentions with regard to his ideas. One does not only aim at portraying an existing class of bodies by the set of properties one has experienced. Rather, one intends to depict these bodies also by properties which exceed the set of features one has experienced and which go thus beyond the content of the idea. This means, one has a conception of the bodies that are represented by one's idea which goes beyond the depiction of the idea.

Aristotelians, for example, grasp the species being portrayed by their ideas of bodies as

⁵⁴ 384, II.xxxii.1; 391, II.xxxii.19. Cp. 9b.

⁵⁵ 384, II.xxxii.1; 392f, II.xxxii.20-24.

⁵⁶ 393, II.xxxii.26.

⁵⁷ 384, II.xxxii.1.; cp. 385; II.xxxii.5.

⁵⁸ 390f, II.xxxii.18; 392f, II.xxxii.22-25.

classes which are characterized by an Aristotelian real essence. By contrast, other speakers understand the bodies being depicted by their ideas to possess corpuscularian real essences. Epistemic subjects therefore comprehend the specimens of a sort by properties which are not included in their ideas. In other words, they conceive the members of a sort as being a particular kind of entities, e. g. as entities having an Aristotelian real essence in common. This account of Locke becomes obvious in his theory of (in-) adequate ideas. Ideas of bodies, he explains, are used in two ways. Either one refers them to a class of bodies sharing an Aristotelian real essence, or to a class of bodies possessing corpuscularian real essences.⁵⁹ Either way, ideas of bodies are inadequate, since they do not include either type of real essences.⁶⁰

This means, a subject comprehends the specimens of a sort as of a particular kind of entities. Speakers conceive of bodies as being of a certain type of entities what is not entailed in their ideas. Importantly, one does not only grasp bodies being depicted by an idea to be such entities; one also intends to represent bodies as such entities, e. g. as bodies having the same Aristotelian real essence. If one knew real essences, one would form ideas including these real essences and thus representing bodies as the entities as one conceives them. In this case, one's ideas of bodies were adequate since they would represent the bodies they depict by the features one intends to portray the bodies. More precisely, according to Locke subjects intend to portray bodies not only by their real essence, but by their substratum as well. An idea is therefore adequate if it depicts the represented bodies by their real essence and substratum. One's intentions as to representing bodies involves therefore a conception of the properties by which one ideally wants to portray bodies by one's ideas.

This comprehension of the specimens of a sort of bodies is entailed in Locke's notion of archetype. Archetypes are the entities one regards to be the originals or standards of one's ideas. The archetype of an idea is the entity "which the Mind supposes [to have] taken [the idea] from".⁶¹ One conceives of the standard of an idea to be the archetype of the idea; the archetype is the entity which one takes the standard to be. In the case of bodies, speakers

⁵⁹ 378, II.xxxi.6.

⁶⁰ 378-83, II.xxxi.6-13.

⁶¹ 375, II.xxxi.1.

thus conceive of their ideas as copies of their archetype. The archetype is the entity which one believes the standard to be and according to which one has formed the idea. A subject grasps the standard as the idea's archetype, and comprehends the idea as a copy of the features the archetype has displayed. The archetype of an idea is therefore a conception of the standard of the idea - a conception portraying the standard beyond the experienced properties and serving as the ideal as what kind of entity one wants to depict the standard. Given this notion of archetype and Locke's corpuscularian belief that bodies possess corpuscularian real essences, it is legitimate for Locke to apprehend the standard of an idea as a corpuscularian archetype and to signify the standard with 'archtetype' when discussing the corpuscularian use of ideas.⁶² This identification of standards and corpuscularian archetypes is natural for Locke, but one has to keep in mind that an archetype is not defined as the kind of entity which actually serves as the original of our ideas. Only if one has an understanding of archetypes which discerns correctly the (unknown) features of one's standards, standards can be conceived as instantiations of one's archetypes. The case of Aristotelian archetypes exemplifies this. Since speakers intend their ideas to represent the archetype which they have in mind and since speakers take their archetypes to be the originals of their ideas, Aristotelians conceive the standards of their ideas as having an Aristotelian real essence. But according to Locke, bodies do not have Aristotelian real essences; the conception of Aristotelian real essences is for him even incomprehensible.⁶³ The Aristotelian case shows, the archetype of an idea need not to be also the idea's standard. An archetype is only the kind of entity which one conceives the original of our ideas to be.

Furthermore, an archetype is not only a speaker's comprehension of his standard. More specifically, a subject intends his idea to represent its archetype, i. e. one refers the idea to its archetype. Locke therefore calls ideas inadequate because they are "a partial, or incomplete representation of those Archetypes to which they are referred", because they do not "perfectly represent those Archetypes ... which it [scil. the mind] intends them [scil. the ideas] to stand for, and to which it [scil. the mind] refers them".⁶⁴ The kind of

⁶² 381, II.xxxi.8; 482f, II.ix.13.

⁶³ 380, II.xxxi.6.

⁶⁴ 375, II.xxxi.1.

archetype, which an idea has, depends on the way it is used by a speaker. An Aristotelian use of ideas ascribes Aristotelian-real-essence archetypes to ideas, a corpuscularian use refers ideas to corpuscularian real essences. Locke calls therefore ideas inadequate because they do not portray the archetype as one uses one's ideas: "[with respect to both ways in which ideas of bodies can be used] these Copies of those Originals, and Archetypes, *are imperfect and inadequate*".⁶⁵ In other words, ideas of bodies are inadequate depictions of their archetypes - whether one wants to represent bodies by Aristotelian or by corpuscularian real essences - since either kind of real essences is not contained in our ideas. This entails, the archetype of an idea represents the kind of entity as which one would like ideally to portray its standard. More generally, one's comprehension of archetypes embodies a conception of the features by which one would ideally represent a body.

We have seen, the notion of archetype relates directly to one's grasp of standards, but it entails indirectly a corresponding understanding which one has of bodies, species and ideas. For example, due to their comprehension of real essences, Aristotelians grasp every body to possess an Aristotelian real essence and to be classified by it into a species. The members of each species are regarded to share the same Aristotelian real essence. Consequently, they believe that the inclusion of further properties of the macrophysical level, which are displayed by several specimens, is a perfection of the idea they already have of that species. The possession of the same Aristotelian real essence is seen to guarantee that all members of a species have in common the same features of the macrophysical level. Locke brands this understanding of one's ideas (and words) as an abuse of language which according to him leads to false knowledge claims raised by the Aristotelians.⁶⁶ Moreover, due to their comprehension of species, real essences and archetypes, Aristotelians conceive their ideas as part of a scientific project to classify bodies ideally according to their respective Aristotelian real essence. Corpuscularians, by contrast, see themselves to sort bodies ultimately as to corpuscularian real essences. In the chapter on language and species, I will highlight this latter claim. Thus, from their own

⁶⁵ 378, II.xxxi.6.

⁶⁶ 499-503, III.x.17-21. Cp. 8.2.

perspective speakers pursue a certain epistemic project of classification; and depending on their understanding of bodies, species and real essences, subjects might have a different outlook on their depiction of bodies by their ideas.

Yet, despite the differences, both Aristotelians and corpuscularians recognize that their ideas are copies of standards in nature. Ideas are not only partial representations of their archetypes, but foremost copies of an experienced set of properties. Aristotelians and corpuscularians disagree over the epistemic purpose of their ideas only as to what goes beyond experience or respectively beyond the content of their ideas. Their respective beliefs in archetypes affect solely the broader outlook of the classification represented by their ideas. This corresponds to Locke's stance that the representative content of an idea is independent of the opinions and intentions one has. Thus for Locke, Aristotelians still have ideas of bodies which relate to bodies in the world regardless of their thoroughly false conception of bodies, species and real essences. The common ground of Aristotelians and corpuscularians is their use of ideas to copy and represent existing sorts of bodies.

Importantly, since Locke regards the corpuscularian understanding of archetypes as correct, his more specific comments on the corpuscularian use of ideas are effectively an assessment of one's ideas and classification of bodies from an ideal scientific viewpoint. As we have seen, for Locke ideas ideally depict bodies by their corpuscularian real essences. Consequently, Locke regards our ordinary ideas as provisional. According to him, one makes use of features of the macrophysical level only because of our ignorance of corpuscularian real essences and as a substitution for real essences.⁶⁷ Properties of the macrophysical level serve as a substitution of unknown real essences because one takes only those properties into one's ideas which one believes to be identical with parts of the real essence of the standard. Here the corpuscularian understanding of the reduction or identification of properties comes into play. For example, the colour of a body is comprehended as being identical to parts of the microphysical surface of the body. Features of the macrophysical level are thus identified with microphysical properties. Rough and ready in Lockean terms, features of the macrophysical level *depend on* the

⁶⁷ 301, II.xxiii.11; 584, IV.vi.10.; 587f, IV.vi.12; 647, IV.xii.12.

real essence of the body.⁶⁸ Therefore, due to this correspondence or identity relationship between properties of the macrophysical level with features of the microphysical stage, the former can be taken as placeholders and substitutions for the latter. All properties of a standard which depend on its real essence, or microphysical internal constitution respectively, have a right to be included.⁶⁹ Correspondingly, according to Locke one does not include features in an idea which one regards as not depending on the real essence of its standard. For example, if one generates an idea of gold, one does not take the form of its standard into the idea because one cannot conceive its form to depend on its real essence.⁷⁰ The precedence of real essences over properties of the macrophysical level finds also expression when Locke judges our ideas still as inadequate even if they contained all the features of the macrophysical level which depend on the real essences of their standards.⁷¹ Thus, the inclusion of properties in an idea is understood in the perspective of representing the corpuscularian real essence of the standard.

On the other hand, when portraying ideas of bodies in general, Locke puts forward another conception of ideas, namely that ideas serve to copy sets of features experienced recurrently. Consequently, this means for him, every property or set of properties may be taken into an idea which has been experienced repeatedly. As he puts it, every property, which has been found together with other features, has the right to be included in an idea: "For the complex *Ideas* of Substances, being made up of such simple ones as are supposed to coexist in Nature, every one has a right to put into his complex *Idea*, those Qualities he has found to be united together."⁷² In other words, properties making up an idea have "no more original precedency, or right to put it, and make the specifick *Idea*, more than others that are left out".⁷³ Since this is a general conception as to ideas of substances in so far as they are (real) ideas of substances, an ideal idea is a copy of a recurrently experienced set of features.

The present point is that at first sight Locke gives two different conceptions of the

⁶⁸ Cp. 7a-b.

⁶⁹ Cp. 382, II.xxxi.10; 486, III.ix.17.

⁷⁰ Cp. 381, II.xxxi.9.

⁷¹ 377, II.xxxi.3; 383, II.xxxi.13.

⁷² 483, III.ix.13. Cp. 485f, III.ix.17.

⁷³ 381, II.xxxi.8.

properties which are included and which are ideally to be included in ideas. On the one hand, ideas include only properties depending on the real essence of their standard as a substitution for the standard's unknown, corpuscularian real essence which ideas ideally contain. On the other hand, ideas comprise and ideally comprise features that are found repeatedly together in various bodies. Crucially, these two conceptions of ideas are not detached from one another. They apparently go hand in hand, since Locke mentions them in the same contexts: properties of an idea's standard which are regarded as being left out are features that both depend on the real essence and go together regularly.⁷⁴

How can these two conceptions of ideas of bodies be squared with one another? The usual readings of corpuscularian real essences cannot accomplish this, as we will see in chapter seven.⁷⁵ And as will be argued there as well, in the light of a different understanding of what Locke's corpuscularian real essences are, both conceptions turn out to be effectively equivalent.⁷⁶ By and large, a classification as to real essences, is the sorting of bodies according to their microphysical similarities. And since similarities are sets of features which can be experienced repeatedly, the recurrent experience of microphysical properties that coexist in bodies, is the experience of microphysical similarities among bodies. To represent bodies by their real essence, is thus effectively the depiction of bodies by the largest set of microphysical features which recurrently coexists, namely by their microphysical similarities. If real essences are thus understood, it likewise becomes plain how features of the macrophysical level serve as substitutions for real essences. Due to the correspondence relationship, similarities on the macrophysical stage correspond to similarities on the microphysical level. A sorting of bodies in accordance with repeatedly experienced similarities on the macrophysical level approximates a classification of bodies in accordance with their microphysical similarities. By contrast, the traditional comprehension of Lockean real essences fails to deliver a satisfying answer as to the role properties of the macrophysical level play as substitutions for corpuscularian real essences.

As argued, ideas are said to be inadequate as to Aristotelian and corpuscularian

⁷⁴ Cp. 382, II.xxxi.10; 486, III.ix.17.

⁷⁵ Cp. 7.1.

⁷⁶ Cp. 7.1.

archetypes. That is, ideas of bodies are inadequate as to the features by which a speaker ideally wants to portray bodies. Ideas are therefore inadequate as to Aristotelian and corpuscularian real essences as well as to the substratum of bodies. However, in his comments Locke evidently focuses on corpuscularian real essences. In the summary of II.xxxi, the inadequacy as to Aristotelian real essences is not mentioned any longer and the one as to substratum is briefly acknowledged for the first time. Moreover, in subsequent discussions ideas of bodies are said to be (in-) adequate, more or less, only with respect to corpuscularian real essences.⁷⁷ In addition, Locke's comments on our general epistemic venture and on the specific corpuscularian project naturally relate to his theory of an ideal classification since ideas of bodies represent species. To say that bodies are to be depicted by sets of features which have been experienced repeatedly, is to maintain that bodies are to be sorted according to their similarities. To assert that bodies are ideally portrayed by their corpuscularian real essence, is to contend that one ideally classifies bodies into species by their corpuscularian real essence. Thus, taking everything into account, in his comments on inadequacy Locke effectively assesses our ideas of bodies in the perspective of an ideal classification. That is, when claiming that ideas of bodies are inadequate as to corpuscularian real essences, Locke determines our conceptual understanding of bodies in the perspective of an ideal classification.

Importantly, the proposed ideal of ideas portraying bodies by their corpuscularian real essences applies to our ideas solely from a scientific viewpoint. Locke concedes that in everyday life one would still make use of our ordinary ideas, even if we knew real essences, since with our senses one can recognize and determine substances of a particular sort only by features of the macrophysical level.⁷⁸ After all, we do not have microscopical eyes to discover handily the real essence of a substance.⁷⁹ This acknowledgement of the need of ideas for our everyday use implies a division between two sorts of ideas and, correspondingly, two sorts of language, namely one for everyday life and one for scientific

⁷⁷ 383, II.xxxi.13.

⁷⁸ 300, II.xxiii.8.

⁷⁹ 303, II.xxiii.12. Cp. 381, II.xxxi.8: "Because endeavoring to make the signification of their specifick Names as clear, and as little cumbersome as they can, they make their specifick *Ideas* of the sorts of Substances, for the most part, of a few of those simple *Ideas* which are to be found in them: [...]".

investigations. This ties in with Locke's remark to Stillingfleet that he does not claim that ideas of bodies are necessarily inadequate because not all speakers refer them to real essences as the archetypes of their ideas.⁸⁰ It depends on the speaker and his epistemic interests. Yet, this does not imply a principal division between, on the one hand, laymen and, on the other hand, corpuscularians and Aristotelians, since for Locke both laymen and Aristotelians abuse their names of bodies by referring them to unknown real essences. In this latter case, there is only the difference that Aristotelians further obscure their use of words by an unintelligible theory of real essences.⁸¹ This indicates that, according to Locke, speakers do generally refer their ideas of bodies to real essences *qua* archetypes.

Locke's focus is, however, on adequate ideas serving our scientific purposes and interests. It is his epistemological backdrop why in his account adequate ideas take precedence over our everyday, inadequate ideas. He is interested in determining the correct understanding of the classificatory quest which looms in the content and formation of our everyday ideas of bodies, and in assessing the content of our ideas from this ideal scientific viewpoint. From the scientific perspective, Locke contends, one should comprehend our ideas in the perspective of corpuscularian real essences.

This account is enhanced by the results of chapter five. For real essences are understood in terms of microphysical primary qualities which, as will be argued, are features in terms of which bodies are conceived from an ideal scientific viewpoint. The same applies to the substratum of bodies, since it is likewise elucidated in terms of microphysical primary qualities as will be delineated in the next section. This scientific standpoint is generally speaking the physical one, but more specifically a particular epistemological one as well. Locke's focus on a corpuscularian understanding of archetypes thus means that his argument on inadequacy determines our everyday comprehension of bodies from an ideal scientific standpoint: our everyday ideas do neither characterize bodies by corpuscularian real essences nor by their substratum. And, as has been shown, this

⁸⁰ *Works*, IV, 78.

⁸¹ Cp. 8.1.

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assessment stands in the perspective of an ideal classification.

This account becomes more clear in the following chapters. Having said that, we can turn to the next section where Locke's notion of substratum will be reconstructed and his account that our comprehension of the substratum of bodies is confused.

2. The Substratum of Bodies

Locke develops his theory of the substratum of bodies as part of his account of our common ideas of substances. Every idea of substances, Locke asserts, contains the idea of substratum. The inclusion of this idea, which is also called the general idea of substance, is precisely what makes an idea of substances to an idea portraying (a class of) substances. In other words, to have or be a substratum is to be a substance. A substratum is thereby understood to be the “cause of the union” of all the other properties unified in an idea of substances.⁸² Moreover, Locke presupposes general agreement rather than demonstrates that our common ideas of bodies, finite spirits, e. g. human minds, and God include the idea of substratum.⁸³ But this idea of substratum, Locke argues, is confused. The stress of Locke’s chief contention that our ordinary ideas of bodies and of spirits contain a confused idea of substratum, therefore does not lie on our possession of an idea of substratum, but on the fact that we just have a confused one. Now, as to bodies, Locke’s explanations on substratum add up to this general claim.⁸⁴ This means in the light of Locke’s notion of idea that his chief reasoning is an argument for the thesis that our conceptual comprehension of the substratum of bodies is in some sense confused.

This “knowledge thesis” comprises two aspects, namely what a substratum is and what it means that the idea is confused. I will agree on the latter issue with what has been suggested by other commentators, e. g. Ayers, even though I am going to disagree with their interpretations of what a substratum consists in. One can hold on to the suggested notion of confusion, but replace the understanding of substratum. With respect to substratum, however, an alternative reading will be developed. There are two diverse, common lines of interpretation. One is Bennett’s view that a substratum is a featureless, pure logical subject, the other one highlights the substratum of bodies as a specific set of

⁸² 298, II.xxiii.6; 305, II.xxiii.14.

⁸³ Cp. 174f, II.xiii.18ff; 297f, II.xxiii..5. Below, the first passage will be discussed more in detail.

⁸⁴ After arguing that every idea of substances contains an idea of substratum, Locke first establishes generally that our idea of substratum is confused, and then more specifically that the idea of a substratum of spirits is as confused as the idea of a substratum of bodies.

(micro-) physical properties which has been differently determined by different commentators. Generally speaking, I agree with those proponents of the latter line of interpretation who identify the substratum of bodies as matter. But there is largely disagreement with respect to the details of the argument. In my eyes, one commonly misses the point of Locke's formula that a substratum is the cause of the union of coexisting properties. What he means by this depiction is usually not elucidated, but it reveals both that his comments are more coherent and that he advances a more subtle account than current readings suggest.

To come to grips with Locke's reasoning for the knowledge thesis, his notion of the substratum of bodies will first be discussed and subsequently the assertion that the idea of substratum is confused. Then, Locke's justification will be analysed that our ordinary ideas of bodies contain a confused idea of their substratum. Finally, the conclusion will be drawn that Locke conceives the substratum of bodies in the perspective of an ideal scientific comprehension of bodies. This account will be confirmed in chapter five on the theory of qualities which re-establishes that Locke's analysis of the ideas of bodies assesses our conceptual grasp of bodies from an ideal scientific viewpoint.⁸⁵

a. The Notion of the Substratum of Bodies

At the beginning of the chapter on the ideas of substances, Locke officially introduces the notion of substratum. The advanced characterization is repeated in the course of the explanations and also in other passages.⁸⁶ Moreover, since 'to inhere in' and 'to support' are equivalent to 'to subsist in', as will be explained below, the same use of 'substratum' appears at further places as well.⁸⁷ Locke introduces 'substratum' as follows:

“§1. THE Mind, being, as I have declared, furnished with a great number of the simple *Ideas*, conveyed in by the *Senses*, as they are found in exterior things, or by *Reflection* on its own Operations, takes notice also, that a certain number of these simple *Ideas* go constantly together; which being presumed to belong to one thing,

⁸⁵ Cp. 5b.

⁸⁶ 298, II.xxiii.6; 305, II.xxiii.14; 316, II.xxiii.37.

⁸⁷ 175, II.xiii.19f; 295ff, II.xxiii.2-5.

and Words being suited to common apprehensions, and made use for quick dispatch, are called so united in one subject, by one name; which by inadvertency we are apt afterward to talk of and consider as one simple *Idea*, which indeed is a complication of many *Ideas* together; Because, as I have said, not imagining how these simple *Ideas* can subsist by themselves, we accustom our selves, to suppose some *Substratum*, wherein they do subsist, and from which they do result, which therefore we call *Substance*.⁸⁸

In the first part of §1 Locke describes the process of acquiring the idea of substratum as part of our forming ideas of substances. After having repeatedly experienced the same set of properties in several particulars or in one's own mind ("that a certain number of these simple *Ideas* go constantly together"), these properties are regarded to belong to the same subject: "*which* (i. e. properties) *being presumed to belong to one thing, ..., are called so united in one subject*". That is, the regularly experienced bond of properties results in our assumption that these properties are features of the same entity. In the same light one has to read the last part of §1 and in particular the notion of 'to subsist', since Locke refers back to what he has said before ("as I have said"): the repeated experience of the same properties being together leads to our assumption of a substratum, i. e. we suppose that these entities have a substratum ("not imagining how these simple *Ideas* can subsist by themselves, we accustom ourselves, to suppose some *Substratum*, wherein they do subsist"). This means, Locke specifies our supposition that properties belong to the same entity as the assumption of a substratum, namely as the supposition of a substratum being understood as what explains the experienced union of properties. To say that the same properties are found together because they are properties of the same entity, is for Locke to say that the bond of the properties is due to a substratum. A substratum is therefore what explains the bond of properties by elucidating how these features are properties of the same entity.

In other words, 'substratum' is an explanatory notion introduced to designate that feature of substances which accounts for the experienced union of the same properties. Correspondingly, by 'some x subsist in y' Locke means roughly 'the bond of some x is due to y'. And likewise one has to understand similar expressions being used in subsequent paragraphs and elsewhere; i. e. 'to support' and 'to inhere in' denote the same relationship

⁸⁸ 295, II.xxiii.1.

between a set of properties and a substratum, namely, as Locke puts it, that the substratum is the cause of the union of coexisting properties.⁸⁹ Furthermore, Locke's reference to regularity means that the assumption of a substratum is caused by the *recurring* experience of the same set of properties. This does not mean, however, that Lockean substratum is defined by explaining this recurrence. One does not suppose a substratum to explain the fact that one has *repeatedly* experienced a set of properties. This can be taken from other passages where Locke uses similar phrases to depict substratum, but without relating this to regularity.⁹⁰ Rather, as Ayers has pointed out, the supposition of a substratum is a specific response of the mind to the (repeated) experience of the *union* of properties to explain the union of the features, but not the regularity of the experience.⁹¹ The point seems to be that the experience of a set of properties cries for an explanation of how these properties are interrelated, and our epistemic response is to assume that a real or ontological bond exists between the features.⁹² The general character of this kind of experience, namely that it is not confined to any particular properties, explains why Locke's conception of substratum applies to all kinds of features, i. e. to simple ideas of sensation and of reflection. This is the reason why a substratum is purely functionally understood as what accounts for the union of properties and as applying to all kinds of substances. Locke expresses the functional conception of substratum by saying that "we have no *Idea* of what it is, but only a confused obscure one of what it does."⁹³ It is important to note that 'substratum' is defined as a general conception which applies uniformly to all kinds of substances, namely to bodies, finite spirits like human minds, and God. For if one overlooks the uniformity of Locke's conception, one is easily driven into the direction Alexander goes, namely to understand 'substratum' as denoting a mixed bag of different stuffs which do not have a generic conception of a substratum is

⁸⁹ 298, II.xxiii.6; 305, II.xxiii.14.

⁹⁰ 298, II.xxiii.6; 305, II.xxiii.14; 316, II.xxiii.37.

⁹¹ Ayers (1991), I, 161f.

⁹² This claim leaves open of course whether we can also acquire an idea of substances in cases where we have experienced only a few times a particular set of properties, once we have acquired the conception of a substratum.

⁹³ 175, II.xiii.19.

common.⁹⁴

As we have just seen, according to Locke the experience of the same set of properties leads to one's supposition of "some substratum" to explain the union of the features found together. A substratum is thus functionally characterized as what explains the bond of properties which one encounters. In this sense, a substratum is characterized by a causal relationship: a substratum causes the union of features. To put it in slightly paradoxical terms, a substratum is the bond of properties *qua* being the cause of their bond. This causal understanding of Lockean substrata suggests, of course, that a substratum is to be identified with a set of other properties which substances have, e. g. microphysical ones. A substratum is the set of those properties of substances which explain the bond of the experienced features of an entity. In what follows the leading question will be to assess more precisely which properties of bodies comprise their substratum.

But before turning to the matter, a radically different line of interpretation should be discussed first. For, according to Bennett, the advanced approach is already on the wrong track and sets a completely false perspective in which to interpret Locke's further explanations. Bennett maintains what he calls the "Leibnizian interpretation",⁹⁵ since he believes that Leibniz has already interpreted Locke correctly: for Locke a substratum is a "pure logical subject". 'Substratum' is like the dummy concept 'thing' which can be used, even if one gives an exhaustive description of an entity's features: 'This thing has the

⁹⁴ Alexander (1985), 204-235, esp. 221-235. He maintains that Locke identifies the substratum of bodies with matter and the substratum of spirits with an analogous spiritual substance called spirit (224). According to Alexander, a Lockean substratum is a stuff, a "substance-in-general", which is specific for a particular kind of substances, namely for bodies or spirits. As will be argued below, Alexander is right in identifying a substratum with a general stuff, but wrong in understanding 'substratum' as designating a mixed bag of two kinds of stuffs. The crucial defect of his view is to disregard Locke's generic notion of substrata and, consequently, to lack an explanation of how Locke can effectively denote two different stuffs with his uniform conception. Thus, Alexander's interpretation cannot account for those passages in which Locke introduces and uses his general notion of substance. - To avoid misunderstandings, *pace* Alexander, Locke does not truly assert that *finite* spirits are of an immaterial stuff. He instead holds an agnostic position leaving open whether human minds are material or immaterial; cp. Ayers (1991), II, 42-47. God, on the other hand, an infinite spirit, is immaterial. But Locke's possibility of "thinking matter", i. e. of materialism, adds weight on the *prima-facie* incoherences of Alexander's two-stuff interpretation.

⁹⁵ Bennett (1987), 197. Ayers however argues against Bennett's interpretation of Leibniz. Cp. Ayers (1994), n. 59, 65.

properties A, B, C, etc.⁹⁶ In this sense a substratum is a featureless *subject* to which one predicates properties only to make explicit that these properties belong to the same entity. And a substratum is *pure logical* in so far as it is stripped off any features. This means, if one equates a substratum with a set of explanatory basic properties, one is on the wrong track. According to this reading, Locke puts forward an argument which explains the substratum of a substance as a featureless something which serves as a subject in predications to depict a substance.

However, this view faces three difficulties at least. Firstly, given Locke's notion of obscure and confused ideas, as understood below, the idea of substratum would be neither obscure nor confused. Locke's knowledge thesis would become obscure itself. Secondly, to elucidate a substratum as a pure logical subject, would introduce incoherences in other parts of his explanations. Given Bennett's view, there would be no point for Locke to discuss whether the substance of finite spirits could exist or not. If the substratum of finite spirits were a pure logical subject, it would not make sense for Locke to argue that it exists.⁹⁷ Thirdly, in the very same context, Locke also suggests that there are two different kinds of substrata, namely one for bodies and one for spirits. This becomes evident in the Stillingfleet correspondence where Locke clarifies his explanations by asserting that the substance of finite spirits need not to be necessarily immaterial, but could also be material.⁹⁸ But a distinction between two kinds of substrata would be implausible, if substrata were pure logical subjects. The alternative line of interpretation faces certainly its own difficulties, in the way it has been developed by Alexander or Ayers.⁹⁹ Yet, despite

⁹⁶ Bennett (1965), 1f; Bennett (1971), 59-63. Bennett has recently modified his view, but in essence he re-asserted it. Cp. Bennett (1987), 197-201.

⁹⁷ 298, II.xxiii.5.

⁹⁸ *Works* IV, 33-7.

⁹⁹ Alexander, see n. above. Ayers effectively combines both Mandelbaum's - see below - and Alexander's line of interpretation. Cp. Ayer (1991), II, 37f.

For example, Ayers reads Locke's corpuscularian model in the same way Mandelbaum does. More precisely, in those passages (295f, II.xxiii.1f), where Locke clearly speaks of *one* idea of substratum, Ayers takes Locke to endorse a general notion of substratum which applies to all kinds of substances. There 'substratum' is an explanatory notion (1991, I, 49) signifying real essences of substances as what explains the union of properties (1991, II, 40). And at other places (e. g. 297f, II.xxiii.5), Locke is understood to use the notion of a general substratum to denote a general stuff which can be different in various substances (1991, II, 38). For example, bodies are of matter and God is of immaterial stuff. Ayers explains this ambivalence by a slip of Locke from

Bennett's rebuttal of criticism, the objections to the former views are not as big as the incoherences implied by his own one.¹⁰⁰

In §2 Locke moves on to argue that we have zero or only limited knowledge of substrata. He claims subsequently that corpuscularians, children or the laymen do not really know what the substratum of bodies is. In particular, the knowledge thesis is expressed in ideatheoretic terms, namely that one does not have a clear and distinct, but only a confused and obscure idea of substratum.¹⁰¹ We will come back to what this claim exactly means. More importantly, when exemplifying one's limited knowledge of substrata, Locke delivers a corpuscularian conception for the substratum of bodies. This account will help to examine what Locke means by substrata. The crucial question of interpretation is how to understand the corpuscularian model:

“§2. So that if any one will examine himself concerning his *Notion of pure Substance in general*, he will find he has no other *Idea* of it at all, but only a Supposition of he knows not what support of such Qualities, which are capable of producing simple *Ideas* in us; which Qualities are commonly called Accidents. If any one should be asked, what is the subject wherein Colour or Weight inheres, he would have nothing to say, but the solid extended parts: And if he were demanded, what is it, that that Solidity and Extension inhere in, he would not be in a much better case, than the *Indian* before mentioned; who, saying that the World was supported by a great Elephant, was asked, what the Elephant rested on; to which his answer was, a great Tortoise: But being again pressed to know what gave support to the broad-back'd Tortoise, replied, something, he knew not what. And thus here, as in all other cases, where we use Words without having clear and distinct *Ideas*, we talk like Children; who, being questioned, what such thing is, which they know not, readily give this satisfactory answer, That is it *something*; which in truth signifies no more, when so used, either by Children or Men, but that they know not what; and that the thing they pretend to know, and talk of, is what they have no distinct *Idea* of at all, and so are perfectly ignorant of it, and in the dark. The *Idea* then we have, to which we give the general name Substance, being nothing, but the supposed, but unknown support of those Qualities, we find existing, which we imagine cannot subsist, *sine re substante*, without something to support them, we

the first into the second usage of 'substratum' in the course of his explanations (1991, II, 38). By contrast, the reading proposed below interprets Locke's model differently, reconciles both types of passages and ascribes thus to Locke an ambiguous notion.

¹⁰⁰ Cp. Alexander (1985), 204-215, Ayers (1991), II, 51-64; Ayers (1994), 62-71. On the other hand, Bennett has recently rejected Ayers's criticism. Cp. Bennett (1987), 202-214.

¹⁰¹ 295, II.xxiii.2. This is also indicated by the summary of §2 at the beginning of §3, where the idea of substratum is said to be confused and *relative*.

call that Support *Substantia*; which, according to the true import of the Word, is in plain *English, standing under, or upholding.*"¹⁰²

Locke argues that even corpuscularians and their sophisticated understanding of bodies fall short in giving an adequate explanation of substratum. According to Locke, all of us, i. e. including the corpuscularians, talk like children when speaking of the substratum of bodies, since we do not know what it is. On the other hand, since Locke evidently believes corpuscularian theory to be true, the corpuscularian model of bodies certainly embodies the most intelligible conception of what one does not know, namely the most qualified account of what explains the experienced bond of properties. To point out the ignorance of corpuscularians, Locke draws the picture of three successive stages of explaining the union of properties. He does this in analogy to the way an Indian philosopher makes plain the "upholding of the world". First there is the world being upheld, i. e. what has to be explained; then there is an elephant holding up the world; then a tortoise holding up the elephant; and then a one-knows-not-what holding up the tortoise. That is, the Indian does not know what truly explains the upholding of the world. Likewise, Locke expounds a corpuscularian-theory inspired model of three different levels of explanatory properties. First there is the union of properties, i. e. what has to be explained; then extension and solidity; and then a one-knows-not-what. Now, the decisive question is how to understand this model and its implications for Locke's conception of the substratum of bodies.

Mandelbaum has suggested to identify the substratum of a body with its real essence.¹⁰³ He maintains the common view, criticized in part two, that the real essence is a microphysical structure which is specific for the specimens of a sort. The basic argument for this interpretation is that corpuscularian theory conceives the union of experienced properties in terms of real essences. That is, the model Locke proposes in §2 is taken to imply that the substrata (of sorts) of bodies are their real essences. If the argument were true, it would be a strong one, since Locke's affiliation to corpuscularian theory indicates indeed that he comprehends the union of properties along corpuscularian lines. I will

¹⁰² 295f, II.xxiii.2.

¹⁰³ Mandelbaum (1964), 39. Cp. Bolton (1976), 501.

contend, however, that a corpuscularian understanding of the bond of properties consists in fact in a different view. But before delineating the alternative account it is worth noting that Mandelbaum's reading has difficulties to square Locke's explanations.

First of all, Mandelbaum's interpretation and similar ones hinge decisively on their reading of Locke's corpuscularian model, since there is virtually no additional textual evidence supporting their reconstruction. Only §3 of the chapter on the ideas of substances suggests *prima facie* that for Locke the substratum of a body is its real essence, since he uses there an expression to denote the substratum of a sort which he otherwise applies to its real essence, namely 'the particular internal Constitution, or unknown Essence of that Substance'. On the other hand, given strong evidence for an alternative interpretation of 'substratum', one can also read Locke as being only (verbally) imprecise in not distinguishing here properly between substratum and real essence. In any case, in §3 Locke does not clearly equate 'substratum' with 'real essence', so that this passage alone does not support sufficiently Mandelbaum's reading if he is mistaken about the corpuscularian understanding of bodies. To turn the tables, given the importance of both notions, one would expect Locke to make plain such a significant identification, e. g. when introducing 'real essence' officially.¹⁰⁴ But at no place Locke asserts explicitly that 'real essence' denotes substrata.¹⁰⁵

More importantly, whether his view of corpuscularian theory is correct or not, critics have shown that Mandelbaum interprets effectively Locke's explanation in §2 as incoherent.¹⁰⁶ The objection runs as follows. If one identifies the substratum of a body with its real essence, the real essence appears as the one-knows-not-what on the third level. In addition, according to corpuscularian theory the real essence of a body is explained from a *microphysical* viewpoint in terms of the extension of cohering solid

¹⁰⁴ Cp. Alexander (1985), 217-221 and 232; Alexander (1980), 104f; Alexander (1981), 1-6.

¹⁰⁵ In some passages, Locke even clearly distinguishes the substratum and the real essence of a body. Cp. 383, II.xxxi.13. Locke's comments to Stillingfleet moreover suggest the here proposed reading, namely that the substratum, or substance, of bodies is matter and that their real essences are microphysical structure: the internal constitutions of bodies is depicted as the "modification of [...] substance". Cp. *Works*, IV, 82. But a more elaborated reconstruction, e. g. Ayers's one, can deal with these passages, since one can take Locke to use 'substratum' here with a second meaning.

¹⁰⁶ Mackie (1976), 81.

elementary particles, i. e. corpuscles. This means, if the substratum were a real essence, *microphysical* solidity and extension would be assumed to be explanatory basic, i. e. to be on the third stage. Consequently, as Yolton and Ayers have indeed maintained,¹⁰⁷ when Locke says in §2 that a corpuscularian cannot explain solidity and extension, he must be read as referring to *macrophysical* solidity and extension of bodies. But if this were so, the critic now urges, Locke would not draw in §2 a picture of successive stages of explanation, as he apparently intends to do. For macrophysical solidity and extension does neither elucidate the experienced set of properties nor their bond. Macrophysical solidity and extension are features of the same level as the experienced properties are. Even worse, for Locke macrophysical extension and solidity are characteristics of bodies and therefore part of the set of features whose bond is to be specified. In short, if Locke intended to elucidate the substratum as the real essence by its explanatory role with respect to other properties, he would have failed bluntly.

A closer analysis of what a corpuscularian account of the bond of experienced properties consists in will reveal, however, that Locke does expound a corpuscularian model of the substratum of bodies in terms of three different explanatory levels. The first stage, i. e. the one of the experienced features, is of properties of the “macrophysical level”, e. g. colours and macrophysical figure. According to corpuscularian theory every property of the macrophysical level can be reduced to or explained by specific microphysical properties. For example, a colour is identified with a minute particles being in motion on the surface of coloured bodies and passing on motion by impulse to other tiny particles which finally affect our senses.¹⁰⁸ These microphysical properties are described in terms of microphysical solidity, extension, and mobility. Features of the macrophysical level are “the various modifications of the Extension, of cohering solid Parts, and their motion”.¹⁰⁹ Thus, from an explanatory viewpoint a macrophysical body is conceived, by and large, as a compound of cohering solid corpuscles which has a particular extension. (Motion will be discussed below.) In this sense, properties of the macrophysical level can be re-identified with microphysical features in terms of microphysical solidity and extension. Even

¹⁰⁷ Yolton (1970), 45; Ayers in Tipton (1977), 89.

¹⁰⁸ 545, IV.iii.13; 589, IV.vi.14.

¹⁰⁹ 313, II.xxiii.30.

macrophysical solidity and extension are comprehended in this way. From this microphysical standpoint every body is understood as being solely solid and extended. Consequently, the second stage should be read as comprising *microphysical* extension and solidity.

To re-describe the experienced features of the macrophysical level as microphysical properties of an extended, solid substance is indeed to give an account of their union, namely that they are bound up by being interrelated features of a solid and extended entity from the microphysical perspective. Yet, this cannot be the whole story, since corpuscularian theory does not conceive a macrophysical body as an indivisible entity, but as a constitution of elementary bodies or atomic corpuscles. As indicated, a macrophysical body consists of cohering solid parts. Explaining the interrelationships between the properties of the macrophysical stage therefore leads to the question how the parts cohere which the body comprises of. As Locke puts it, there is a need to elucidate the extension of a macrophysical body, namely how its solid parts cohere.¹¹⁰ Thus, if an explanation of the union of experienced properties is asked for, describing them in terms of microphysical solidity and extension simply passes on the bucket, namely to the interrelationship between microphysical extension and solidity. The identity relationship between the features of the first two stages illustrates this well. To explain the bond of properties of the macrophysical level is simply the same as to elucidate the union of corresponding microphysical features. Explaining the bond of properties of the macrophysical level in terms of microphysical extension and solidity, thus results in elucidating the union of microphysical extension and solidity. Corpuscularian theory requires a third stage of explanation.

To delineate the union of microphysical features, being conceived of as modifications of the extension of cohering solid parts, is to elucidate how the elementary corpuscles are united to one entity, i. e. to explain the coherence of corpuscles or the entity's extension respectively - in terms of other microphysical properties. However, as Locke painstakingly points out in the same chapter, neither corpuscularian theory nor any other hypothesis

¹¹⁰ 308-11, II.xxiii.23-27.

can make intelligible how corpuscles cohere.¹¹¹ That is, for corpuscularians the bond of experienced properties, the substratum of bodies, is in fact a one-knows-not-what.

Thus in §2 Locke effectively employs a model of three stages of explanatory properties. The first one is about properties of the macrophysical level which serve as the defining features of sorts of bodies in our everyday ideas of them. The second one comprises properties of the microphysical level which correspond to properties of the first one. The third stage is of other microphysical properties, namely the substratum, which explains ultimately the union of all the other properties. In this sense, a substratum comprises the explanatory fundamental properties.

A comparison between real essence and substratum illustrates the differences. The real essence of a body comprises properties of the second level and represents an explanatory comprehension of features of the first one. That is to say, the real essence elucidates in microphysical terms properties being ordinarily known by our senses. By contrast, the substratum of a body consists of those microphysical properties which make plain the interrelationship of properties of the second stage. The substratum of a body accounts for the union of the features of which the body's real essence consists. A description of bodies as to the second level involves general features, e. g. being solid and extended, but it does not delineate how these properties are interrelated.

More precisely, on the second stage a body is conceived as an extended, solid entity which is being moved by impulse. For, according to Locke, features of the macrophysical level are explained as "the various modifications of the Extension, of cohering solid Parts, and their motion".¹¹² Thus, mobility and its interrelationship to solidity and extension is likewise to be made intelligible on the most basic level as part of a theory of substratum. This means, an account of the union of a body's properties consists of an explanation of the interrelationships between microphysical solidity, extension and mobility. And, as with extension or cohesion respectively, we do not comprehend mobility. For in arguing that our understanding of finite spirits is equally in the dark as the one of bodies, Locke does not only point out that we, i. e. corpuscularians, have no clue of how corpuscles

¹¹¹ 308-11, II.xxiii.23-27.

¹¹² 313, II.xxiii.30.

cohere, but also none of how they pass on impulse.¹¹³ Mobility therefore needs to be explained as well - in terms of other microphysical features. The substratum of bodies comprises the properties which elucidate the union of microphysical solidity, extension and mobility.¹¹⁴

As the discussion of Locke's view shows, he comprehends all bodies and all their features in the same, corpuscularian perspective. This suggests that he also conceives the union of properties for all bodies in the same terms. For example, he apparently assumes that corpuscles comprising bodies cohere in the same way. That is, he has a portrayal of the interrelationship of microphysical solidity and extension in mind which applies to every body. This understanding of the substratum of bodies is present when in the course of his explanations and at other places Locke identifies the substratum of bodies with a general stuff bodies are made of, namely with matter.¹¹⁵ In other words, Locke conceives bodies as modifications of the same kind of material.¹¹⁶ Thus the substratum of bodies comprises solely properties being common to all bodies, i. e. being specific for them *qua* bodies. A theory of the substratum of bodies consists in a general theory of what bodies are, namely in a depiction of the interrelationships of their properties in general terms.

This interpretation has advantages. It interprets satisfactorily Locke's corpuscularian model of the substratum of bodies in §2. Furthermore, a coherent or unambiguous conception of substratum is ascribed to him which squares his definition of substratum with its identification with matter. In addition, another problem of reading Locke as being coherent can be solved. As has been pointed out above, in §1 Locke clearly intended to introduce a notion of 'substratum' which applies to the substrata of all substances. Moreover, the model of §2 relates to all kinds of substrata, since it serves not only to illustrate one's ignorance of the substratum of bodies, but of substrata in general. Thus the substratum of human minds comprises of analogous properties explaining the union of the defining features of these substances. And, corresponding to the equation of the

¹¹³ 311f, II.xxiii.28.

¹¹⁴ Something similar must in fact account for Newtonian gravitation as well, since it is likewise regarded as inconceivable. *Works* IV, 467f. Cp. Rogers (1978), 225f.

¹¹⁵ Cp. 174f, II.xiii.18ff and 297f, II.xxiii.5.

¹¹⁶ Cp. 330f, II.xxvii.3f.

substratum of bodies with matter, Locke speaks also of the substrata of human minds and of God as of general stuffs. The substratum of God is thereby portrayed as immaterial and the substratum of human minds as either material or immaterial.¹¹⁷ The question arises, however, whether Locke truly has a uniform notion of substratum. It has to be a generic conception for different substrata which leaves open the ontological issue of human consciousness and which covers both matter and the immaterial stuff of God. If Locke's concept of substratum does not comply with this, one would effectively be thrown back on Alexander's two-substances-in-general view that 'substratum' is not a generic term for substrata, but denotes a ragbag which includes two distinct stuffs. To see that there is no such incoherence, a comparison with the concept of the melting point of a sort of bodies might help.

The point of Locke's uniform concept of substratum is that it serves as a generic placeholder for different, unknown substrata. 'Substratum' may denote various substrata, but different substrata have genuinely in common that they fulfill the same explanatory role. In short, Locke's concept of substratum signifies sets of properties which ultimately account for the union of properties of substances - whatever these sets of properties may (turn out to) be. His concept 'the substratum of a sort of substances' is thus of the same kind as 'the melting point of a sort of bodies'. Melting points differ among classes of bodies, but the abstract concept 'the melting point of a sort of bodies' is the same in each case. We can refer to the unknown melting points of various classes by using in each case the same concept 'the melting point of a sort of bodies'. The general concept of melting points denotes a particular (and perhaps unknown) melting point, if used for a specific class of bodies. Likewise, there is the generic notion of substratum. It is considered as part of the concept of a particular sort of substances, signifying a specific (and unknown) substratum. The dissimilarity is only in number, namely that there are many different melting points compared to two different substrata. Thus, it is indeed intelligible and

¹¹⁷ *Works* IV, 33-37; 623f, IV.x.10. In the *Essay*, Locke speaks of finite spirits as of immaterial spirits, suggesting that their substratum is an immaterial stuff. Cp. 305f, II.xxiii.15. There are also other passages from which some commentators concluded that Locke maintains dualism. However, in the Stillingfleet correspondence Locke clarifies his thoughts and insists on an agnostic position, namely that consciousness might be material or immaterial. Cp. *Works* IV, 33-37. As Ayers convincingly argues, passages which seem to imply dualism present in fact an agnostic account. Cp. Ayers (1991), II, 42-47.

coherent for Locke to assert, on the one hand, that there is always one and the same idea of substratum in every idea of substances and, on the other hand, that there are two different substrata and that consciousness might be material or immaterial.

b. The Confused Idea of Substratum

The advanced account of ‘substratum’ discloses in fact what Locke means by our ignorance of the substratum of bodies. Given our everyday ideas or comprehension of bodies, one does not know what a substratum consists in. Yet, one does know the existence of substrata. For ‘substratum’ denotes the unknown properties which “cause” or explain that the same set of properties go together. Crudely speaking, the experience of the union of properties is the experience of a substratum. Thus, the idea of substratum as being part of ideas of substances represents *knowledge* of the *existence* of a substratum.¹¹⁸ One knows the existence of a set of explanatory properties, but not what these properties are.

Locke expresses this peculiar cognitive content of the idea of substratum in characterizing it as relative, obscure, and confused.¹¹⁹ As other commentators have rightly said, Locke’s portrayal of the idea of substratum as confused (or respectively as being not distinct) is decisive.¹²⁰ His other characterizations should be seen as an effort to convey the same.¹²¹ An idea is confused or not distinct if it is “not sufficiently distinguishable from another”¹²² idea. More precisely, two ideas are confused if two ideas have the same

¹¹⁸ Since Locke himself speaks of knowledge in this context, I do so as well. Given Locke’s technical term of knowledge, one has, however, only sensitive or perceptual knowledge of substrata, namely when one experiences the bond of properties in sensation. If considered an idea of bodies only by itself, it is, at best, true. This means, it entails solely knowledge of the *former* existence of bodies and their substratum.

¹¹⁹ 296f, II.xxiii.3.

¹²⁰ Cp. Ayers (1991), II, 47f.

¹²¹ Cp. 296, II.xxiii.3. An idea of something is obscure if one has not properly grasped its content due to bad perceptual conditions, e. g. twilight. And having not fully grasped an idea implies not having full knowledge of what the idea is about. Cp. 363, II.xxix.2. Apparently and in a rather broad sense, this technical sense of ‘obscure’ means in the context of the idea of substratum that there are not proper conditions to grasp the substratum of bodies in detail, but only its existence. - By contrast, ‘relative’ is not a technical term of Locke in the first place and can be interpreted along the lines suggested here with respect to ‘confused’.

¹²² 364, II.xxix.4.

content, even though there is a name for each idea which is taken to signify a different idea. This means, two names are intended to signify two different classes of entities, but they denote the same entities because they are related to the same idea.¹²³ Given Locke's technical notion of a confused idea, the question should be with respect to which other idea the idea of substratum is called confused.¹²⁴

However, in this context Locke does not stick to his official notion of confused ideas. As it has convincingly been shown,¹²⁵ Locke's argument in II.xiii.18 entails an elucidation in which sense he understands the idea of substance, i. e. the idea of substratum, to be confused.¹²⁶ He criticizes those people who think that the term 'substance' stands for three different significations, namely three distinct (unconfused) ideas when used for God, finite spirits and bodies. And, given these intentions of those speakers, he recommends them to use three distinct names to indicate those three different ideas to avoid confusion in conversation, i. e. names equivalent to 'substratum of bodies', 'substratum of finite spirits', and 'substratum of God'. But this advice is not really meant to be a recommendation, since Locke argues subsequently that the term has only *one* non-distinct signification, namely that 'substance' stands for a confused idea. Thus Locke does not maintain what one would expect, given his technical term of confused idea. He does not claim that one uses three distinct terms with the intention to denote three different substrata, but fails to do so because one uses the three terms for one and the same idea of substratum. Instead, Locke speaks of one idea which is confused.

Yet, it becomes clear what he means. He criticizes those who think that their term 'substratum' stands for different substrata when referred to God, finite spirits and bodies. Thus Locke implies that the idea of substratum is confused in the sense that it does not distinguish the alleged differences between the substratum of God, finite spirits and bodies. One has only *one* idea which cannot be used to discriminate between various substrata. This usage of 'confused idea' is similar to his official notion. In both cases various classes of entities are not distinguished as intended. The dissimilarity is however

¹²³ 364f, II.xxix.6.

¹²⁴ 367, II.xxix.11.

¹²⁵ Cp. Ayers (1991), II, 47f.

¹²⁶ 174, II.xiii.18.

that according to the official notion various names do not discriminate between different entities and that in the case of the idea of substratum an idea does not distinguish between different entities. This account implies that the confusion of the idea of substratum expresses one's ignorance of substrata: one does not know what substrata consist in, but one does know that they exist.

c. Locke's Argument

So far only Locke's knowledge thesis has been analysed, but not his argument that our ordinary ideas of bodies contain a confused idea of substratum. Once he has established that ideas of substances include the idea of substratum, his argument takes off that this idea is only confused, namely that a portrayal of matter is not part of our everyday ideas of bodies. Crucially, however, for Locke there is no question that we have an idea of substratum, i. e. that we have knowledge of the existence of the substratum of bodies and spirits. This shows up in the case of bodies when he asserts without an explicit argument that even children acquire the general notion of substance and ascribe it to bodies.¹²⁷ Likewise, though he does discuss whether finite spirits have a substratum, Locke is prepared to regard denials of the existence of their substratum as confusion about one's ordinary conception of the human mind and not as really arguable.¹²⁸ For him everyday experience entails knowledge of the existence of the substratum of bodies and human minds. Similarly, Locke argues for the idea of substratum being confused: everybody who makes plain to oneself the content of one's own idea, will agree that it is confused and obscure.¹²⁹ In other words, the "epistemic status" or content of the idea of substratum is quite evident, once one becomes aware of the fact. Thus, when rejecting knowledge claims raised by the laymen or corpuscularians to have a clear idea or understanding of the substratum of substances, Locke sees himself as referring to the kind of understanding of matter which is contained in our concepts or ideas of bodies. To conceive that our ideas

¹²⁷ 296, II.xxiii.2.

¹²⁸ 297f, II.xxiii.5.

¹²⁹ 296, II.xxiii.3.

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of substances include an idea of substratum and that this idea is confused, is simply to become aware of the content of the ideas.

Yet, there is another argument present in Locke's account. He maintains that the regular experience of the same set of properties leads to the assumption of a substratum. For Locke this account serves certainly not so much as a psychological explanation of a mental operation, but rather as a justification of our supposition of a substratum and the inclusion of a confused idea of it in our ideas of substances. One has to assume unknown features of bodies which explain how the experienced properties are interrelated, i. e. which causes the experienced bond of the properties.

Two objections illuminate the argument. True, one may say that properties making up a set have a bond in a logical sense, namely that they comprise the set. But why has one to ascribe a real or ontological bond to the properties in the sense that other features have to account for the fact that one experiences them as being together? For example, given a universe in which only elementary particles exist, a comprehensive understanding of "ordinary" bodies would simply consist in a list of all their properties. In other words, given everyday experience of our universe, how does one know that the properties of bodies are complex interrelated and not explanatory basic? Our ordinary experience of a set of features alone does not convey the existence of unknown interrelationships between these properties. Experience of this kind does not entail the need to account for such interrelationships. There is a second problem. As we have seen, Locke drives at a notion of stuff. Imagine, however, a universe in which bodies have features in common only on higher explanatory levels, but not on the explanatory basic stage. For example, the mechanism or cause how their elementary corpuscles cohere might vary from species to species. Bodies were then not made of the same stuff, since there were no generic features of bodies. And if even specimens of the same sort, e. g. gold, do not share features on which the bond of their common properties depend, the notion of stuff evaporates completely. If the bond of properties differs from body to body, one could not even speak of a "stuff" being specific for a sort. It shows up that the force of Locke's argument rests on the attractiveness and intelligibility of a corpuscularian-theory inspired understanding of bodies.

With respect to both problems, one might be tempted to reply that Locke has the recourse

to appeal to a wider range of experience. The defence runs as follows. Locke maintains that ordinary experience of bodies suggests the notion of matter.¹³⁰ In other words, everyday experience of bodies interacting, disassembling and unifying affords the assumption that bodies are of the same stuff, namely the supposition of a substratum which explains the bond of properties as to every body. This might solve the difficulty for bodies, but it is far from clear whether it does so likewise for substances like human minds. We do not have analogous experience of consciousnesses interacting, disassembling and unifying - at least not in the required sense.

d. Conclusion

The most pressing difficulties of Locke's theory of substratum do not relate to alleged incoherences or ambiguities of his conception of substratum, but to his justification of it, namely by his appeal to everyday experience. Yet, despite this predicament, one can agree with Locke's epistemological argument: to reject advanced accounts of the substratum of bodies as insufficient and to point out one's ordinary ignorance about their explanatory basic features, and to insist on the need of an account of matter as part of a comprehensive, scientific understanding of bodies.

As we have seen, for Locke 'substratum' is an explanatory concept. In this sense, 'substratum' is certainly not a pre-theoretic notion. On the other hand, according to Locke the assumption of a substratum is a simple or basic epistemic response of the human mind, since even children obtain the concept. This means, 'substratum' is directly linked to experience and has thus an extension independent of the truth of any theory which allegedly delineates the details. Whether Aristotelians, corpuscularians, Indian philosophers, laymen or children, we all have the same idea of substratum and apply it to the substrata of substances, whatever beliefs or opinions each of us has as to what a substratum consists in. In this sense, the conception of a substratum is primitive enough to serve as a placeholder for what an ideal theory identifies as the substratum of bodies. Thus, despite his corpuscularian model of the substratum of bodies, Locke's notion goes

¹³⁰ 330f, II.xxvii.3f.

beyond it. Its application is not confined to the truth of corpuscularian theory. This conception of substratum is more manifest with respect to finite spirits, since Locke does not even present a convincing or well justified hypothesis on their substratum.¹³¹ For him one's everyday experience of the multiplicity of properties of bodies and of one's own mind entails a primitive conception of matter and consciousness. A specification of substratum is therefore part of an ideal, or true and comprehensive, scientific understanding of species, since ideal, i. e. adequate or perfect, ideas of substances include a clear and distinct idea of their substratum.¹³² Summing up, in connection with its functional conception to explain elementary experience, the substratum of bodies comprises features which are ascribed to bodies in an ideal scientific account of them.

This account will be confirmed by the theory of qualities. As will be argued in chapter five,¹³³ the notion of 'primary quality' serves to comprehend bodies from an ideal scientific viewpoint and in a specific epistemological perspective. And since the substratum of bodies is understood in the corpuscularian model as what explains the interrelationship between the three corpuscularian primary qualities solidity, extension and mobility, the substratum is understood in the same perspective as well.

This has a substantial implication as to Locke's philosophical programme. His discussion of substratum shows that there he is not concerned with pointing out the merits, but rather the limits of corpuscularian theory. Locke emphasises the ignorance of corpuscularians about the substratum of bodies, and equates it with the ignorance of children, laymen and Aristotelians. Likewise, when delineating that our idea of the substratum of finite spirits is not more obscure or confused than our idea of the substratum of bodies, he heightens our limited, corpuscularian understanding of bodies, namely as to the cohesion of atoms and as to the mechanism by which impulse is transmitted from body to body. In both reasonings, Locke does not justify, but only assumes and criticizes a corpuscularian account of bodies. *Pace* Alexander's view that the

¹³¹ God is a special case, since we acquire knowledge of his existence by reflecting on the idea of God, i. e. not from experience. Cp. 619-630, II.x. This is why God is virtually not discussed in the context of substratum.

¹³² 383, II.xxxi.13.

¹³³ Cp. 5b.

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Essay is intended to establish corpuscularian theory,¹³⁴ the thrust of Locke's argument is not to justify a corpuscularian account of matter and bodies. Rather, given his notion of substratum and its connection to 'primary quality', Locke assesses our everyday understanding of matter and bodies from an ideal scientific viewpoint. In this perspective one has to read the knowledge thesis that we possess only a confused idea of substratum, i. e. that we do know the existence of substratum, but not what it consists in. The epistemological aspect of this standpoint will be highlighted in the following section on resemblance.

¹³⁴ Alexander (1985), 7.

3. Lockean Resemblance

Locke introduces his notion of resemblance as part of some further considerations concerning simple ideas in II.viii. Evidently, however, as his examples show, Locke is interested in our ideas of bodies and in simple ideas only in so far as they make up ideas of bodies. His resemblance theory concerns therefore the simple ideas of our everyday ideas of bodies. Distinguishing the properties of bodies in primary and secondary qualities, Locke argues that ideas of primary qualities are resemblances whereas ideas of secondary qualities are not. He contends more specifically that contrary to popular belief our ideas of sensible qualities, e. g. of colours, tastes, etc., are not resemblances.

As the discussion of recent years and the variety of suggested interpretations prove, Locke's doctrine of resemblance is not easy assessable. First of all, one has to distinguish between two notions of resemblance. As Yolton has persuasively shown, at Locke's time the relationship between ideas *qua* intentional objects representing entities has been explained by saying that ideas resemble the entities they represent, e. g. by Cartesians.¹³⁵ That is: an idea represents the entities which it depicts because the idea resembles the entities, i. e. because the idea portrays the entities by properties which they possess.¹³⁶ And since the content of ideas determines which entities are represented, ideas have to resemble the entities they represent. If an idea represents its cause, it does so precisely - otherwise it would not represent its cause.¹³⁷ In turn, in this context 'resemblance' is on par with 'representation': an idea resembles the depicted entities in the sense that it represents the entities by an accurate depiction of them. However, this conception of resemblance is evidently not present in Locke's context of qualities, since ideas of secondary qualities are said not to resemble the properties which they represent; which would be a contradiction in terms, if the former understanding of resemblance were

¹³⁵ Yolton (1984), 61.

¹³⁶ Yolton (1984), 38: "Ideas, then, in some ways (resemblance is frequently suggested) represent objects."

¹³⁷ Logically speaking, there is no room between the content of an idea and the constitution of the represented entity whether the idea is a resemblance or dissemblance. As Jackson puts it: "There would be no sense in saying that an idea does not resemble a power to produce it." Cp. Jackson (1929), 68.

manifest here.

More importantly, Locke's comments on resemblance are on the face of it only to a degree illuminating. It is therefore not surprising that a variety of interpretations has been suggested.¹³⁸ E. M. Curley suggests a "causal reading" of resemblance which I will support and substantially supplement. According to Curley, in the case of resemblance the same concept denoting the idea also signifies the represented property in a scientific account of this feature as the cause of its idea.¹³⁹ In this sense, which will be delineated in what follows, I will speak of "conceptual resemblance". Curley does however concede that in these passages Locke speaks of secondary qualities in connection with the reality status of qualities when really meaning ideas of secondary qualities.¹⁴⁰ The problem now arises for Curley's line of interpretation that these comments are linked with the topic of resemblance. This, it seems to me, leads Alexander to the conclusion that there must be more to Lockean resemblance than Curley contends.¹⁴¹ Probably for the same reason, Ayers differently reconstructs the resemblance doctrine as a whole, dropping Curley's approach of a causal reading.¹⁴² I will argue in this and the next chapter that Curley is

¹³⁸ I will not go into details with a line of interpretation which understands Locke's resemblance doctrine as the claim that ideas of primary qualities necessarily depict bodies as to properties which they possess, whereas ideas of secondary qualities might fail to do so. Cp. Aaron (1937), 126 and O'Connor (1952), 67. As other commentators have rightly and thoroughly argued, Lockean resemblance has nothing to do with mistakes in perceptual judgements. Cp. Curley (1972), 152-55; Mackie (1975), 13ff. - Generally speaking, many interpretations will be refuted simply by re-interpreting their textual evidence. For instance, Jackson's interpretation of resemblance is based on the assumption that primary qualities add up to indeterminate macrophysical properties: "The ideas of the secondary qualities are, therefore, probably held to be produced by microscopic qualities, while the ideas of primary qualities are probably held to be produced by macroscopic qualities. Locke's doctrine then will be that macroscopic qualities produce resembling ideas, while microscopic qualities produce non-resembling ideas." Cp. Jackson (1929), 68. Since I will argue that primary qualities are neither determinable nor, crucially, macrophysical, there is no basis for Jackson's thesis that Locke does only identify secondary qualities, but not primary qualities with microphysical primary qualities when they are conceived as powers to produce ideas. Cp. 5a.

¹³⁹ Curley (1972), 150f.

¹⁴⁰ Curley (1972), 141.

¹⁴¹ Alexander (1985), 198.

¹⁴² According to Ayers, Locke conflates Yolton's kind of resemblance with another one. Yolton's notion of resemblance is present when ideas of primary qualities are said to be resemblances. But Locke is conceived as making use of 'resemblance' in a second sense in connection with ideas of secondary qualities. Here, resemblance is taken to hold between ideas of secondary qualities *qua* blank effects and secondary qualities *qua* being the cause of the blank effects, i. e. between mental states characterized by phenomenological features and

basically right as to remblance, but, as most interpretators, he is wrong about the reality of qualities. Curley's reading neglects however substantial aspects and thus does not apprehend the genuine topic of Locke's resemblance theory. The issue of resemblance, I will contend, is to determine how far our ideas portray bodies from a perception-neutral viewpoint that is identified with the scientific, causal standpoint.

As just alluded to, this account will be further deepened in the next chapter, since contrary to prevailing interpretations Locke's view of the reality of qualities is an ontological claim that is linked to the same perception-neutral viewpoint specific for Lockean resemblance.¹⁴³ In fact, this nexus between the two topics makes first and foremost intelligible why there is a correspondence between Locke's major contentions on the resemblance of ideas and his contentions on the reality of qualities. It likewise explains why, curiously, after having gone on stage the notion of resemblance virtually disappears again. For, even though the resemblance theory sets the stage for the theory of qualities, in later parts of the *Essay* Locke's claims on resemblance reappear in the guise of assertions about qualities and their reality status.

In this chapter, first, the relata will be clarified and, subsequently, Lockean resemblance as a whole, including his chief contentions on resemblance. Due to the close ties between Locke's explanations on qualities and resemblance, the reconstruction is however completed in the following two chapters in three ways. First, further textual evidence will be presented that in this context ideas and secondary qualities are to be understood as suggested.¹⁴⁴ Second, as part and parcel of the theory of qualities, Locke's reasoning is highlighted for his principal claims on resemblance and qualities.¹⁴⁵ Third, the analysis of the argument establishes furthermore that *pace* Alexander Lockean resemblance and its perception-neutral viewpoint are not bound up with corpuscularian theory, but are rather

physical properties. Cp. Ayers (1998), II, 1064, 1091, and 1092. Cp. also Ayers (1991), I, 63ff.

¹⁴³ McCann likewise highlights resemblance in the light of the corpuscularian criticism of Aristotelian "real qualities". However, McCann's approach does not lead to an elucidation of Lockean resemblance. He explains an idea, that is a resemblance, as being "qualitatively similar" to the property it represents, without clarifying what he means by this expression. Cp. McCann (1994), 64.

¹⁴⁴ Cp. 4c.

¹⁴⁵ Cp. 5b.

theory-neutral.¹⁴⁶ On the other hand, this chapter also pertains to the other two, since it does not only delineate the perception-neutral perspective, but also sets out a line of interpretation what (ideas of) secondary qualities are which is equally decisive for a correct grasp of Locke's comments on qualities.

a. The Relata of the Resemblance Relationship

Locke expresses his notion of resemblance rather metaphorically and vaguely. Taken by themselves, they open the gates for a variety of different interpretations. For example, Locke introduces 'resemblance' as follows:

"§7. To discover the nature of our *Ideas* the better, and to discourse of them intelligibly, it will be convenient to distinguish them, as they are *Ideas* or Perceptions in our Minds; and as they are modifications of matter in the Bodies that cause such Perceptions in us: that so we *maynot* think (as perhaps usually is done) that they are exactly the Images and *Resemblances* of something inherent in the subject; most of those of Sensation being in the Mind no more the likeness of something existing without us, than the Names, that stand for them, are the likeness of our *Ideas*, which yet upon hearing, they are apt to excite in us."¹⁴⁷

In this context Locke distinguishes between two meanings or conceptions of ideas. In a first sense, ideas are mental states, namely perceptions or sensations. In a second sense, an idea is the cause of such mental states, i. e. of an idea in the first sense. The two conceptions of ideas are linked by a causal theory of perception. An idea of the second sense causes an idea of the first one: the property of a body causes one's perception of this feature. As we will soon see, Locke uses 'idea' primarily with the first meaning to denote perceptions and less frequently with the second one to signify the properties of bodies which cause these mental states.¹⁴⁸

Locke draws the distinction as a means to prevent the common mistake of regarding perceptions as exact images or resemblances of the corresponding properties causing the perception. But if one differentiates between the two kinds of ideas, the possibility

¹⁴⁶ Cp. 5b.

¹⁴⁷ 134, II.viii.7. Cp. 137, II.viii.15f for further vague depictions of resemblance.

¹⁴⁸ Cp. 376, II.xxxi.2. Cp. my interpretation of this passage in 4c.

becomes plain not to understand every idea of the first sense as a resemblance of an idea of the second one. This intention of Locke becomes clear in §7 by his comparison between ideas (in the first sense) and words: most of our sensations do not have any likeness of something existing outside of us, just as there is no likeness between a name and the idea being signified by the name. The resemblance relationship holds between an idea taken as a mental state and an idea taken as the property causing this sensation. An idea resembles its cause, if it is *like* its cause. However, 'likeness' is left unexplained. The depiction of ideas resembling their cause as "exact images" certainly does not help either. And the comparison of the dissimilarity between an idea and its cause with the dissimilarity between the idea and its name does not tell us in which respect there is a lack of resemblance. The same goes for the deep metaphorical characterization of ideas being resemblances as mirrors in §16. My point here simply is, as the diversity of interpretations of Locke's theory of resemblance (and qualities) indicates, that Lockean resemblance remains unclear if these explanations are taken only by themselves. What are ideas *qua* mental states precisely and in which respect are they compared to the property causing them?

As it became common to read Locke, at the beginning of the comments on qualities and resemblance, Locke introduces the following two notions of ideas and qualities that each other correspond: an idea is a mental representation of the property which causes this representation in sensation; and a quality is the power, i. e. property, which causes a mental representation in sensation.¹⁴⁹ The point however is, I contend, that Locke sticks to this conception of ideas and qualities throughout the argument in the required sense. "In the required sense" means that Locke's use of 'idea' to denote also qualities is not decisive for his doctrines of resemblance and the reality of qualities. By contrast, according to one line of interpretation, in the context of resemblance ideas of secondary qualities are mental states characterized by a specific phenomenological content.¹⁵⁰ And since in connection with the topic of reality secondary qualities are moreover conceived as mental

¹⁴⁹ Cp. Alexander (1985), 114ff; Ayers (1991), I, 58; Curley (1972), 141-45; Mackie (1975), 15.

¹⁵⁰ Ayers (1991), I, 63ff. According to Ayers, in this context resemblance is taken to hold between the idea of a secondary quality *qua* blank effect and the secondary quality *qua* cause of the blank effect, i. e. between a mental state characterized by phenomenological features and a physical property. Cp. Ayers (1998), II, 1092.

states being characterized by a specific phenomenological content, secondary qualities are thus equated with ideas of secondary qualities in the latter sense.¹⁵¹ This implies in turn that ideas of secondary qualities are regarded as self-representing, namely as representing secondary quality which is a mental state characterized by phenomenological features. Two (ideas of) secondary qualities would then be distinguished in the way the sensation of yellow varies from the impression of blue, or a pounding headache differs from a dull one. Given the nexus between the issues of resemblance and the reality of qualities, the here developed reading will be further established in the following chapter which entails a thorough rejection of comprehending in this context (ideas of) secondary qualities as self-representing mental states.

In §8 Locke moves on to distinguish between ‘idea’ and ‘quality’. The explanations of §8 show that ideas are conceived here as the content of intentional states or respectively as the intentional states themselves:

“§8. Whatsoever the Mind perceives in it self, or is the immediate object of Perception, Thought, or Understanding, that I call *Idea*; and the Power to produce any *Idea* in our mind, I call *Quality* of the Subject wherein that power is. Thus a Snow-ball having the power to produce any *Idea* of *White, Cold, and Round*, the Powers to produce those *Ideas* in us, as they are in the Snow-ball, I call *Qualities*; and as they are Sensations, or Perceptions, in our Understandings, I call them *Ideas*: which *Ideas*, if I speak of sometimes, as in the things themselves, I would be understood to mean those *Qualities* in the Objects which produce them in us.”¹⁵²

Ideas, Locke explains in the first sentence using traditional philosophical terminology,¹⁵³ are the “immediate object of Perception, Thought, or Understanding”.¹⁵⁴ This means, ideas are the content of intentional states. Since in §7 ideas are said to be perceptions or sensations, Locke apparently does not differentiate between an intentional state and its content, putting thus the stress solely on intentionality. This implies, in §8 he uses ‘idea’ with the first meaning of §7, declaring this signification as his official use of the concept. Furthermore, a quality is explained as the power or propensity of bodies to produce an

¹⁵¹ Ayers (1991), I, 63.

¹⁵² 134, II.viii.8.

¹⁵³ Cp. Yolton (1984), 88-104.

¹⁵⁴ 134, II.viii.8. Cp. 47, I.i.8. Cp. likewise 104, II.i.1 where Locke expands his phrase of ideas being the immediate object of the understanding.

idea, i. e. to cause intentional content or an intentional state having intentional content respectively.¹⁵⁵ This piece of §8 is clear, independently of the other parts. Thus, on the face of it ‘idea’ denotes primarily the intentional content of mental states caused by qualities. The distinction of §7 between two meanings of ‘idea’ corresponds to the one between ‘idea’ and ‘quality’ advanced in §8. What is called ‘idea’ with its second meaning in §7, is signified as a quality in §8. Consequently, since §8 is linked to §7, the resemblance relationship should hold between ideas as intentional objects and qualities as the cause of them! True, Locke’s paradigm are sensations, since with respect to this type of intentional states the intentional object can be straight forwardly identified as its cause. But since Locke evidently regards his theory of qualities and resemblance to apply to all kinds of intentional states and not only to sensations, one should not misunderstand his explanations too narrowly to confine them only to sensations, as Alexander does.¹⁵⁶ In other words, ‘idea of x’ refers to x as the intentional object of any type of intentional state. The second part of §8 is, no doubt, a linguistic muddle. The problem is to interpret the two occurrences of ‘as they’. I prefer to read them to refer to ‘powers’ because this would consider the semicolon to separate two different explications of powers in terms of ‘as they’. Given this interpretation, qualities are first explained as powers producing ideas (i. e. intentional objects) in us; ideas are then elucidated as powers in a sense in which powers can be said to be perceptions, namely as powers conceived as intentional objects. This implies, Locke uses ‘power’ with two significations corresponding both to the sense of ‘idea’ and of ‘quality’ in the first sentence of §8, and to the two meanings of ‘idea’ in §7. In the last part of §8 Locke, however, warns the reader that despite these conceptual clarifications he sometimes uses ‘idea’ to denote qualities as well. He thus reintroduces the ambiguity of ‘idea’ which has been explained in §7 and substituted by the distinction

¹⁵⁵ Jackson contends that one should strictly distinguish between powers and qualities, since only primary qualities are genuinely qualities and that secondary qualities are in fact powers. Cp. Jackson (1929), 55 and 59. Jackson is right in reading some passages in this light, cp. 135, II.viii.9 and 375f, II.xxxi.2. Here Locke indicates that according to his “taste” one should call only primary qualities qualities, but not likewise secondary qualities. Calling secondary qualities ‘qualities’ is for him only to comply with an established way of speaking (135, II.viii.9). However, after all, he does name secondary qualities ‘secondary qualities’. And in this sense he apparently highlights qualities in terms of powers in §8 what subsequently serves him as the basis for distinguishing between two types of qualities, calling the latter ones secondary qualities.

¹⁵⁶ Alexander (1985), 199.

between 'idea' and 'quality' in the first part of §8. There is in fact no need to read Locke's attempt to illuminate his key concepts as confused - but one might become thoughtful about its true impact on the innocent reader.

More importantly, it becomes evident what Locke is aiming at. He distinguishes between two ways to comprehend the same properties: to regard them as the objects of our intentional states and to conceive them as the causes of these intentional objects or states. This is expressed by his elucidation of ideas both as powers in our minds and as qualities of bodies. One even arrives at the same interpretation, even if, contrary to the above assumption, one reads the first occurrence of 'as they' to refer to ideas and the second one to qualities: qualities are then said to be ideas in the sense in which an idea can be comprehended as being in a body, and an idea is said to be a quality in the sense in which a quality can be conceived of being in the mind. Thus in either case Locke is struggling to distinguish between two different conceptions of the same property, namely between a feature as an intentional object and the feature as the cause of an intentional object. The topic of §§7-8 is to make plain the difference between properties of bodies as they are represented in our minds and as they are understood in a causal account of perception. Now, the crucial consequence is that, if Locke's account is coherent, the resemblance relationship holds between two conceptions of the same property. And since Locke introduces this understanding of ideas and qualities immediately before he differentiates between primary and secondary qualities, ideas of both primary and secondary qualities are *prima facie* to be comprehended in this sense, namely as properties of bodies conceived as the content of intentional states which are caused by this quality.

By contrast, to comprehend ideas as self-representing mental states characterized by phenomenological characteristics would introduce in Locke's argument unnecessary incoherences, if not confusion, since contenders of this line of interpretation understand only ideas of secondary qualities as representing mental states, but not likewise ideas of primary qualities. Only the latter ideas are conceived in the proposed way as intentional states or objects representing the property causing these ideas in sensation. In addition, this approach can easily lead to the view that, in the context of resemblance, secondary qualities are not properties of bodies, but of a perceiver, since a secondary quality is taken as the content of its idea, namely as the mental state being represented by the idea. But,

again, §§7-8 are placed immediately before the distinction between primary and secondary qualities and thus treat them on par. One principal claim of the interpretation proposed in this and the next two chapters is that in connection with the resemblance theory and the reality doctrine there is no need to read Locke to deviate from his official understanding of ideas and qualities which he delineates in §§7-8. Quite the contrary, one can highlight Locke's explanations as conceptually coherent. For, as we will see, even those passages can be interpreted in the light of the here advanced view which on first thought seems to imply the rival reading that (ideas of) secondary qualities are self-representing mental states.¹⁵⁷ The thrust of Locke's distinction between ideas and their causes, i. e. between ideas as powers (or qualities) in the mind and powers (or qualities) as ideas in bodies, is not to differentiate between phenomenological features of a mental state and the property causing it, but to separate two conceptions of the same property. The epistemological significance which Locke attaches to this will be addressed below. First, however, Lockean resemblance will be reconstructed on the basis of our results.

b. Lockean Resemblance

The point of the preceding section is to demonstrate by a careful analysis of §§7-8 that, on the face of it, the resemblance relationship holds between ideas *qua* intentional object and qualities *qua* properties being represented by ideas and causing these ideas in sensation. The relationship thus compares two conceptions of the same properties. As we will shortly see, this naturally paves the way for Curley's interpretation of Lockean resemblance which will be significantly enhanced in the subsequent section. As indicated above, the problem of Curley's reading is that he maintains the orthodox view on the reality of qualities as well. According to him, Locke contends that secondary qualities are only real *qua* being properties of a perceiver, namely mental states characterized by phenomenological features, whereas primary qualities are real *qua* being physical properties of bodies. This implies, secondary qualities are taken, on the one hand, as properties of bodies in connection with resemblance and, on the other hand, as mental

¹⁵⁷ Cp. 5c.

states in the context of their reality status. In the light of this consequence, however, Curley's reading is hardly tenable. The reason is that Locke's comments on resemblance and on the reality of qualities are closely intertwined. Both claims are the two sides of the same coin. Alexander, who basically agrees with Curley on resemblance and reality, avoids this problem by interpreting terms like 'yellow' not as denoting secondary qualities, but ideas of secondary qualities.¹⁵⁸ Resemblance could thus be understood to relate to secondary qualities (in the sense of properties of bodies) and the reality status to ideas of secondary qualities (in the sense of sensations of secondary qualities, or properties of bodies respectively). In my eyes, this reading of Locke's terms like 'yellow' is straight forward contra-intuitive, given the nexus between them and Locke's comprehension of secondary qualities as properties of bodies in terms of microphysical primary qualities.¹⁵⁹ Any alternative reading which ascribes to Locke as advancing more or less coherently a different account should be preferred.

On the supposition of the orthodox view of the reality doctrine, I believe, the only convincing way out is Ayers's reading.¹⁶⁰ The price to pay is however that in the case of secondary qualities the notion of resemblance does not relate any more to two different conceptions of the same properties. According to Ayers, resemblance holds between ideas of primary qualities and primary qualities in Yolton's innocuous sense, namely that the former represent the latter. But ideas of secondary qualities are regarded to dissemble secondary qualities in the sense in which a mental state dissembles its cause. In which sense? Well, as Ayers himself alludes to, it is unintelligible what kind of dissemblance this should be. Moreover, in the context of resemblance and reality secondary qualities are conceived as mental states characterized by phenomenological features, whereas in other contexts secondary qualities are properties of bodies. And since both kinds of contexts are present in the comments on resemblance and qualities, this line of interpretation

¹⁵⁸ Cp. Alexander (1985). Alexander maintains, on the one hand, that secondary qualities are properties of bodies (118). But since he claims that colours (etc.) are truly ideas of secondary qualities (118) - and not secondary qualities, as I contend -, he takes the issue of colours (etc.) being real as a question of locating them correctly. Colours (etc.) are genuine properties of a perceiver, i. e. ideas, and not properties of objects causing ideas (125f). As to resemblance, cp. 198.

¹⁵⁹ For instance, in Locke's definition of 'secondary quality'. Cp. 135, II.viii.10.

¹⁶⁰ Cp. Ayers (1998), II, 1064, 1091, and 1092. Cp. also Ayers (1991), I, 63ff.

understands Locke as employing ambiguously his central terms: ‘idea of secondary quality’ denotes either self-representing mental states characterized by phenomenological features or mental states representing properties of bodies; ‘secondary quality’ and ‘yellow’ (etc.) signify either self-representing mental states or properties of bodies.¹⁶¹

But there is no need to read Locke in this way, namely as talking of two kinds of resemblance relationships, of which one is unintelligible, and of using ambiguous terms. This will be argued in the next chapter on the reality doctrine. The point I wish here to make simply is that Curley’s approach to read Lockean resemblance is natural in the light of §§7-8, but has to be secured and supplemented by an alternative interpretation of the reality status of qualities. Otherwise, Ayers’s reconstruction is the better alternative. Curley’s approach will now be unfolded and further deepened in the next section.

Curley elucidates the resemblance relationship in conceptual terms. According to him, in the case of resemblance the same concept denoting the idea also signifies the represented property in a scientific account of this feature as the cause of its idea.¹⁶² As we have seen, in §§7-8 Locke is concerned with clarifying his vocabulary in order to distinguish between a property being the content of an idea and the property being the cause of the idea. On the one hand, there is the depiction of a property as it is represented by an idea. On the other hand, there is one’s grasp of the same feature as the cause of the idea representing the feature. This suggests, to read the resemblance relationship as “conceptual resemblance” holding between two different conceptions of the same property.

One can easily advance this line of interpretation. Thereby, it comes into play that a primary quality consists in a conceptual type comprising properties of both the macro- and the microphysical level. Like Locke, one can illustrate this in corpuscularian terms. For example, the primary quality form, i. e. figure, includes macro- as well as microphysical

¹⁶¹ This is not exactly what Ayers says, but it is implied by his position. See above.

¹⁶² Curley (1972), 150f. In principle, Alexander maintains the same approach. Cp. Alexander (1974), 458f. However, he decisively obscures his account because he believes that there has to be a stronger conception of resemblance. For him, one has to explain in which sense one can intelligibly say that the idea of the property X *has* the property X, e. g. that the idea of extension *is* extended. One result of his effort is that the notion of resemblance is narrowed down to sensations so that other types of intentional states are excluded. I am afraid, I do not see Alexander’s problem in the first place, namely why Locke is allegedly confined to the claim that an idea *is* extended in any stronger sense than that the represented entities are extended. Cp. Alexander (1985), 198-203.

figure. Both features are of the same conceptual type in the sense that ‘form’ denotes them both. This means, in an explanatory account of bodies a macrophysical primary quality is conceived in terms of its microphysical counter-part. For example, macrophysical form and solidity are understood in terms of the corresponding microphysical properties, e. g. microphysical form respectively solidity. By contrast, secondary qualities like colours do not reappear conceptually on the microphysical level. Conceived from an explanatory perspective, bodies do not have colours or any other secondary qualities, since secondary qualities are identified with microphysical primary qualities. For instance, yellow is equated with minute particles being in motion on the microphysical surface structure of bodies.¹⁶³ In this sense, a secondary quality is identified with a “combination” of microphysical primary qualities, but not with microphysical secondary qualities. Primary and secondary qualities differ crucially in this aspect.

Now, to comprehend a property as the cause of a mental representation, is to grasp the feature in scientific terms. This holds, of course, whether properties are depicted by ideas of primary qualities or by ideas of secondary qualities. Our ordinary ideas of (macrophysical) corpuscularian properties therefore represent a (macrophysical) primary quality which is scientifically conceived as a (microphysical) primary quality. Ideas of secondary qualities, however, portray properties which are not highlighted again in terms of secondary qualities, but in terms of (microphysical) primary qualities. Thus, due to the conception of primary qualities as conceptual types, in the case of ideas of primary qualities there is conceptual resemblance holding between the term denoting the property as the content of the idea and the concept signifying the feature as the idea’s cause: they both denote the same primary quality. The mental representation of solidity resembles the causal understanding of solidity since the former depicts solidity by the same term as the latter does, namely by ‘solidity’. By contrast, the idea of yellow dissembles the scientific comprehension of yellow because the former does not depict yellow by the same concept as the latter.

But is there not a stronger notion of resemblance present in Locke’s explanations? Take, for example, hair, i. e. our sensation or ordinary conception of hair and our scientific

¹⁶³ 545, IV.iii.13; 589, IV.vi.14.

understanding of hair. Assume further that the view or comprehension of hair which we derive from looking through a microscope adds up to a scientific understanding of hair. True, the view through a microscope does not give an adequate explanatory account of the constitution of hair, but for the sake of the argument let the microscope serve here as a model. Given all this: does not our perception of hair through a microscope resemble our ordinary sensation of hair more specifically than just in the ascription of primary qualities? For instance, do both depictions not have more in common than that they both attribute any kind of figure to hair? Do they not both ascribe also a *similar* figure to hair? Is long and curly hair not likewise long and curly if perceived through a microscope?

However, Locke does not give prominence to this kind of resemblances. He rather emphasizes that one has very different ideas of bodies if one looks at them through a microscope.¹⁶⁴ For Locke there is no similarity which goes beyond conceptual resemblance. This point becomes more obvious with regard to the corpuscularian comprehension of bodies. For example, the surface structure of a dice might be smooth in macrophysical terms. But the surface is not only “very rough” from a microphysical perspective. It is also described profoundly different, since in corpuscularian theory a body is regarded as a compound of corpuscles on whose surface minute particles are in motion.¹⁶⁵ In a macrophysical description, however, there are no tiny bodies buzzing on rough surfaces. Locke, criticizing corpuscularian theory with subtlety,¹⁶⁶ must have been well aware of this at first very astonishing insight about the “falsity” of our everyday physical picture of bodies. One should therefore abandon the idea to read Locke in a more figurative way. According to him, in principle, the macrophysical description of a primary quality disassembles the corresponding microphysical portrayal in every aspect a part from having in common to depict the primary quality as the same primary quality, e. g. as form.

To conclude, Lockean resemblance is *conceptual* resemblance. The resemblance

¹⁶⁴ 301f, II.xxiii.11. In this context Locke focuses on our ideas of sensible qualities and compares them to ideas of the microphysical structures with which one would identify a sensible quality in an explanatory account of bodies. Yet, his comments make plain that ideas of macrophysical primary qualities vary also greatly from ideas of microphysical primary qualities.

¹⁶⁵ Cp. 545, IV.iii.13; 589, IV.vi.14.

¹⁶⁶ 295f, II.xxiii.2; 308-12, II.xxiii.23-28.

relationship holds between the concept signifying a property conceived as the intentional object of a mental state and the concept denoting the same property comprehended as the cause of that mental state. Both concepts are of the same type; but there is no further similarity, since they each stand for an otherwise differently conceived feature. To pick up again the example, both concepts denote figure, but one stands for a smooth surface whereas the other one signifies a rough surface with minute particles being in motion. In this sense, it is intelligible to speak of conceptual resemblance between an idea and its cause. The same concept denotes both the idea and its cause, e. g. form. Consequently, on the backdrop of Locke's corpuscularian list of primary qualities, our ordinary ideas of macrophysical primary qualities resemble their cause only because they have counterparts on the microphysical level. The concept signifying the idea of a primary quality of the macrophysical stage is of the same type as the concept denoting the idea's cause in terms of microphysical primary qualities. The same does not hold for ideas of secondary qualities because, as Locke argues, from the microphysical standpoint one does not conceive their cause in terms of secondary qualities.

This understanding of Lockean resemblance explains why according to his notions of ideas, qualities, and resemblance it is possible that only one of two ideas resembles its cause although both have the same cause, e. g. the idea of yellow and the idea of the respective microphysical features.¹⁶⁷ For, although the two ideas have the same intentional object, only the latter idea is signified by the type of concept by which the cause is denoted. The interpretation also fits with Locke's usage of 'resemblance' in II.viii, for example in §13:

"It being no more impossible, to conceive, that God should annex such *Ideas* [e. g. of colours] to such *Motions*, with which they have no similitude; than that he should annex the *Idea* of Pain to the motion of a piece of Steel deviding our Flesh, with which that *Idea* hath no resemblance."¹⁶⁸

After having advanced an *explanatory*, corpuscularian account of human sense perception and after having presupposed its truth as a hypothesis, Locke explains here

¹⁶⁷ 545, IV.iii.13; 589, IV.vi.14.

¹⁶⁸ 136f, II.viii.13.

why ideas of colours are like the idea of pain which does not resemble its cause: in an *explanatory* account of bodies the idea of pain does not resemble its cause (i. e. the sharpness of the knife's shape) because one uses concepts of a different type to denote the idea of pain and its cause respectively.

We have seen what it means that ideas of primary qualities resemble primary qualities, whereas ideas of secondary qualities dissemble secondary qualities. But one can dig deeper. There is a particular epistemological thrust attached to Locke's theory of resemblance. To see this, one has to spell out the implications of the already indicated explanatory role which primary and secondary qualities play as to ideas.

c. The Perception-neutral Viewpoint

As argued, the resemblance relationship contrasts our conceptual understanding of properties in so far as they are conceived as being mentally represented with our comprehension of the properties in so far as they are conceived as the cause of their mental representation. This means, to grasp a feature in causal terms is to conceive it independently of the mental representation of the property. More precisely, a feature is comprehended not in terms of the way it is represented, if it is understood in terms of microphysical primary qualities. And since this accounts for all properties and for all our mental representations of them, the grasp of a property in terms of primary qualities is to understand the feature independently of the way it is mentally represented. To say therefore that ideas of primary qualities are resemblances, is to claim that ideas of primary qualities depict primary qualities in the same terms in which one would conceive them independently of the way they are mentally represented by the ideas. The punchline of Locke's resemblance theory is to determine which ideas portray the properties of bodies from an idea- or perception-neutral conceptual viewpoint.

All this becomes manifest when one realizes that Locke does not discuss any explanatory or causal account of bodies and their properties, but more specifically a theory of qualities in conjunction with an account of our perception of them. As will be highlighted in the chapter on the theory of qualities, the assumption of a corpuscularian theory of sense

perception is the cardinal step in Locke's main argument for his contentions of resemblance and qualities in §§11-14. On the basis of a corpuscularian theory of sense perception, Locke demonstrates that ideas of primary qualities are resemblances whereas ideas of secondary qualities are not. Furthermore, as Thomas Heyd has forcefully argued,¹⁶⁹ in §16 and §§19-21 Locke presents additional empirical support by pointing out that the alternative, Aristotelian theory of sense perception and qualities cannot convincingly explain the results of certain experiments or everyday experience respectively. In §22 Locke even clearly asserts with reference to the preceding paragraphs that an account of qualities and our perception of them is at issue.¹⁷⁰ This likewise becomes plain at the end of II.viii in §25. And since in this context Lockean ideas are regarded as intentional objects, which will be underscored in the next chapter, and since sensations serve as paradigms for intentional states, Locke's theory of sense perception is in fact a theory of mental representation and intentional states. Primary qualities are those properties whose concepts are designed to be the vocabulary with which one comprehends properties without reference to a mental representation of these properties. If therefore a body is understood in terms of primary qualities, the body is grasped independently of the way it is represented in the human mind.

In connection with the resemblance theory, bodies are grasped from a specific epistemological perspective, namely from a perception-neutral, conceptual viewpoint: bodies and their properties are conceptually conceived independently of the particular way we represent them. The reason is that bodies are understood in terms of primary qualities if they are conceived as the cause of our mental representations of their properties: in a theory of mental representation, primary qualities serve as the kind of properties in terms of which bodies are comprehended as the objects of *every* mental representation. An idea resembling its cause is thus an idea representing its cause in those terms in which this property is grasped if conceived without any reference to the specific

¹⁶⁹ Heyd (1994), 19-27.

¹⁷⁰ 140, II.viii.22: "§22. I have in what just goes before, been engaged in *Physical Enquiries* a little further than, perhaps, I intended. But it being necessary, to make the Nature of Sensation a little understood, and to make the *difference between the Qualities in Bodies, and the Ideas produced by them in the Mind*, to be distinctly conceived, without which it were impossible to discourse intelligibly of them; [...]"

way the property is mentally represented. A resemblance is a mental representation depicting its property in terms of the same concepts in which the property is understood from a causal or perception-neutral viewpoint. Thus, Locke's chief contention of his explanations that only ideas of primary qualities are resemblances and that ideas of sensible qualities are truly not resemblances, is an account of how one has to conceive bodies from a scientific, conceptual viewpoint. In the light of Locke's reasoning that the known corpuscularian properties are primary qualities, the point of his argument on resemblance apparently is to insist that, in principle, we do have a conceptually adequate comprehension of bodies even though we are ignorant of their microphysical features. In other terms, from the epistemological viewpoint of resemblance our everyday ideas depicting bodies in terms of macrophysical corpuscularian properties represent a conceptually adequate scientific grasp of bodies and their properties.

Given the presence of corpuscularian theory in the argument of resemblance and qualities, namely the assumption of a corpuscularian theory of sense perception and the use of the quality distinction, the question arises whether this epistemological perspective is meant to be a specific corpuscularian one or a general, theory-neutral viewpoint applying *prima facie* to all kinds of theories of perceptions. In other words: is the issue of resemblance confined to the truth of corpuscularian theory, as Alexander's reading implies?¹⁷¹

First of all, supposing Boyle's hypothesis as a premise to establish which ideas are resemblances does certainly not mean that Locke's notion of resemblance is part and parcel of corpuscularian theory. The assumption does not imply that the question which ideas are resemblances is specifically linked to the hypothesis, but only that the answer is premised on corpuscularian theory. Moreover, the simple fact that Locke uses the quality distinction does likewise not imply that he does so with the Boylean meaning, since other natural philosophers like Galileo have used these terms before and there was no defined

¹⁷¹ Alexander holds, first, that Locke's quality distinction is Boyle's one and, second, that, the *Essay* is aimed at establishing that corpuscularian theory can best explain our everyday experience and at spelling out its implications for philosophy. And since in the comments on resemblance and qualities, Locke discusses everyday experience and even experiments, it follows for Alexander's line of interpretation that the notion of resemblance is a corpuscularian term. Cp. Alexander (1985), 7 and 118.

or fixed signification for them.¹⁷² Of course, what has just been said does neither indicate the opposite. But, on the face of it, the topic of resemblance seems not to be confined to Boyle's explanatory account. First, contrary to Boyle Locke develops a concept of resemblance which he introduces before, immediately before, the notion of quality and the distinction between primary and secondary qualities. This indicates that resemblance is not meant to be an "addition" to corpuscularian theory. Second and more important, the resemblance relationship is conceived as one between an idea and its cause. This cause is what Locke then calls a quality. That is, the relationship does not make use of any characteristics which specifically apply to primary or secondary qualities.

On the other hand, a defender of Alexander's line of interpretation can reply that the talk of ideas resembling its cause already implies a more specific characterization of causes than just simply being causes since otherwise there would be no distinction between ideas resembling their cause and ideas which do not. And these entailed characteristics, one can add, are spelled out by Locke in terms of the quality distinction. This means, Locke's notion of resemblance presupposes the quality distinction so that the former would be confined to corpuscularian theory if the latter is. In my eyes, however, the topic of resemblance with its reference to properties *qua* causes is clearly too general to be bounded up with any particular theory of bodies and sense perception. Thus, even if Locke's quality distinction were meant to be specifically corpuscularian, his notion of resemblance should not be taken to be so as well.

Fortunately, we need not to content ourselves with these considerations. There is conclusive evidence that the quality distinction is not understood as part and parcel of the corpuscularian viewpoint. But before arguing this point in chapter five, the next section on the reality of qualities will first highlight that the advanced interpretation of resemblance can be squared with other passages on resemblance that are connected with Locke's reality doctrine. The reality doctrine and the resemblance theory turn out to be the two sides of the same coin.

¹⁷² Galileo introduced the distinction in modern philosophy in *Il Saggiatore*. Cp. Galileo (1968), VI, 213-372.

4. The Reality of Primary and Secondary Qualities

Locke's two chief contentions as to qualities are that primary qualities are "in the things themselves" or respectively "real", and that secondary qualities are "nothing in the objects themselves but powers" or respectively not in the same way real than primary qualities are. I will call these claims the reality doctrine of qualities. The reality doctrine is an integral part of Locke's prominent explanations on resemblance and qualities in II.viii and is intimately connected with Locke's chief assertions on resemblance. Obviously, the reality status of qualities matches the resemblance status of their ideas: ideas of qualities, which are real, are resemblances; ideas of qualities, which are nothing in the objects themselves but powers, are dissemblances.¹⁷³ And as with resemblance, Locke is not primarily concerned with the reality status of primary and secondary qualities in general, but rather with the "non-reality" of sensible qualities.¹⁷⁴

Yet, despite the frequency and evident importance of these depictions of qualities, Locke himself never really introduces or explains the notions of being in the things themselves, being real or being nothing in the objects themselves but powers. Apparently, for him it is a clear-cut and natural way to characterize qualities. The prevailing view is that primary qualities are conceived as real in the way properties exist in bodies and that secondary qualities are not real in this sense, since in this context they are understood as mental states or respectively properties of a perceiver. Commentators however disagree in important details, especially whether secondary qualities are the entities which Locke officially designates as secondary qualities or whether they are truly identified with the entities which he usually calls ideas of secondary qualities.¹⁷⁵ On the contrary, I will argue that, in principal, Locke uses his notions of ideas and qualities unequivocally and consistently with his official declarations as they were reconstructed in the foregoing chapter. Moreover, taking into account Boyle's views on qualities, a historically plausible

¹⁷³ Cp. 137, II.viii.14f.

¹⁷⁴ 137, II.viii.13-16; 142, II.viii.25.

¹⁷⁵ Cp. 4c.

alternative interpretation becomes attractive which reads Locke's explanations as being in line with our reconstruction of Lockean resemblance and which comprehends reality doctrine and resemblance theory as two sides of the same coin. The upshot is that the ontological issue of the reality doctrine is not whether qualities exist in bodies or in sensible beings, but whether bodies genuinely possess them if they are understood in an ideal scientific perspective, namely from a perception-neutral standpoint.

In this chapter, only the reality doctrine will be highlighted, whereas both Locke's reasoning for the contentions and his definitions of primary and secondary qualities will be discussed in the next one. The first step is to show that key passages link the reality status of qualities with the role they play in an explanatory account of bodies and properties. Crucially, this demonstrates that secondary qualities are conceived as features of bodies and thus refutes common lines of interpretations which take the reality doctrine to relate to mental states with respect to secondary qualities. Then an alternative view will be developed by reading Locke's comments in the light of Boyle's corpuscularian theory and his argument on real qualities. The analysis discloses that the reality doctrine conceives qualities from the same perception-neutral perspective from which the resemblance theory depicts ideas of qualities. The final part discusses passages which are often understood to substantiate the usual views. It will be argued that Locke should rather be read on the backdrop of the advanced interpretation to understand his explanations as coherent.

a. The Reality of Qualities and the Resemblance of Ideas

In many passages, Locke portrays secondary qualities as powers, i. e. properties being dispositions to cause ideas, which are to be identified with microphysical primary qualities. In Locke's corpuscularian terms, a secondary quality is a disposition understood in terms of primary qualities of the "insensible parts" of bodies.¹⁷⁶ Since according to corpuscularian theory these dispositions, or insensible parts respectively, are minute particles on the surface of bodies, the secondary quality of being yellow is conceived as

¹⁷⁶ 135, II.viii.10.

being identical with specific microphysical minute particles which pass on motions to other microphysical particles which eventually affect our senses.¹⁷⁷ This understanding of qualities is significantly present when Locke makes use of corpuscularian theory in his reasoning about qualities, namely in his accounts about: the perception of a body's properties (§§12-13), the changing of a body's secondary qualities (§20), and the multiplicity of effects a body has on a perceiver (§§19 and 21). The same relationship is expressed by Locke's phrase that secondary qualities *depend on* or *are reduced to* primary qualities.¹⁷⁸ In an explanatory account of bodies, secondary qualities are dispositional properties and to be elucidated in terms of microphysical primary qualities. Note that for Locke macrophysical primary qualities can likewise be conceived as dispositions being comprehended in terms of microphysical primary qualities. Hence, the punchline of the portrayal of secondary qualities as powers or dispositions is that they are features which are highlighted by properties of a different conceptual type, namely by primary qualities. In this sense, one has to understand my way of speaking that secondary qualities are dispositions, namely that, more specifically, they are dispositions which are elucidated in terms of a different conceptual type. This depiction is likewise present in Locke's definition of secondary qualities:

“§10. *2dly*, Such *Qualities*, which in truth are nothing in the Objects themselves, but Powers to produce various Sensations in us by their *primary Qualities*, *i. e.* by the Bulk, Figure, Texture, and Motion of their insensible parts, as Colours, Sounds, Tasts, *etc.* These I call *secondary Qualities*.”¹⁷⁹

The first step is to realize that the characterization of secondary qualities as powers is part of a more complex depiction: secondary qualities are nothing else “in the Objects themselves” than powers that are comprehended in terms of microphysical primary qualities. In other words, a secondary quality is a property which is in no other way “in the things themselves” than in form of a disposition. In a later passage it becomes evident that Locke equates this way of being in the things themselves with the reality status of secondary qualities:

¹⁷⁷ 545, IV.iii.13; 589, IV.vi.14.

¹⁷⁸ 138, II.viii.17.

¹⁷⁹ 135, II.viii.10.

“[...] whatever reality we, by mistake, attribute to them [scil. secondary qualities], [secondary qualities] are in truth nothing in the Objects themselves, but Powers to produce various Sensations in us, and *depend on those primary Qualities, viz. Bulk, Figure, Texture, and Motion of parts; as I have said*”.¹⁸⁰

This means, secondary qualities are only in that sense real, or “non-real” in which they are *qua* dispositions in the things themselves. The apparent similarity between the latter quoted passage and the definition of ‘secondary quality’ suggests that Locke means the same when defining secondary qualities as properties being nothing else in the objects themselves than a disposition. Importantly, this implies that secondary qualities are comprehended as properties of bodies when characterized as being non-real. Having said that, it becomes plain that, in fact, this is likewise entailed in the definition of secondary qualities:

“To these [scil. primary and sensible qualities] might be added a third sort which are allowed to be barely Powers though they are as much real Qualities in the Subject, as those which I to comply with the common way of speaking call *Qualities*, but for distinction *secondary Qualities*. For the power in Fire to produce a new Colour, or consistency in Wax or Clay by its primary Qualities, is as much a quality in Fire, as the power it has to produce in me a new *Idea* or Sensation of warmth or burning, which I felt not before, by the same primary Qualities, *viz. The Bulk, Texture, and Motion of its insensible parts.*”¹⁸¹

Locke points out that non-sensible secondary qualities, e. g. the propensity of fire to change the consistency of wax, are as much “real Qualities” of bodies, e. g. a “real Quality” of fire, as sensible qualities are. Since, usually, only primary but not secondary qualities are said to be “real Qualities”, Locke evidently does not use ‘real Quality’ in the same sense when calling primary qualities real, but with a different one which applies to secondary qualities, namely to assert that secondary qualities are real qualities in the sense of being powers. Again, it shows up: secondary qualities in general and thus sensible qualities in particular are real *qua* being dispositional properties of bodies which are highlighted in terms of microphysical primary qualities.

This understanding of ‘real’, and ‘in the things themselves’ respectively, corresponds to

¹⁸⁰ 137, II.viii.14.

¹⁸¹ 135, II.viii.10.

the way Locke uses these concepts in connection with primary qualities.¹⁸² The argument in §§11-15, which establishes that sensible qualities are secondary qualities, suggests that primary qualities are understood as being real in so far as intrinsic or explanatory properties are real. Here Locke first expounds a corpuscularian hypothesis of sense perception according to which primary qualities are explanatory basic, i. e. according to which bodies are understood from the explanatory perspective in terms of microphysical primary qualities. And he then concludes that only the “patterns” of ideas of primary qualities “do really exist in the Bodies themselves”.¹⁸³ Now, whatever Locke means exactly when recognizing that the patterns of ideas of primary qualities are in the bodies themselves, on the face of it, primary qualities are conceived here as properties being in the things themselves in virtue of their explanatory function. However, it would be imprecise to identify primary qualities with features being intrinsic or explanatory basic in an account of bodies and their properties. For primary qualities, as explained above, are conceptual types of features which comprise micro- as well as macrophysical properties. The primary quality figure is instantiated by both micro- and macrophysical figure. Thus, more specifically, primary qualities are real in virtue of being the conceptual type of features serving as intrinsic or explanatory basic properties in a theory of bodies.

We have seen, ‘to be real’ and ‘to be in the things themselves’ characterize the reality status of both primary and secondary qualities with respect to their role in an explanatory or scientific account of bodies. Secondary qualities are non-real or nothing in the things themselves than powers in virtue of being dispositions that are identified with primary qualities. Primary qualities are real or in the things themselves in virtue of being the features in terms of which one conceives bodies and their properties in a theory of bodies. The analysis so far has made plain that at least in some passages the reality doctrine is about qualities conceived as properties of bodies. The reality status has something to do with their role in a scientific account of bodies and their properties, namely with them serving as intrinsic or respectively dispositional properties. The immediate impact is that these important paragraphs cannot be understood in accordance with common lines of

¹⁸² Locke apparently means the same when saying that primary qualities are real and that they are in the things themselves.

¹⁸³ 137, II.viii.15.

interpretation. For example, Locke is often understood to ascribe reality to primary qualities in the sense that they are properties of bodies, and to deprive reality of secondary qualities in the sense that they are not properties of bodies, but rather mental states of a perceiver.¹⁸⁴ These commentators regard secondary qualities in the context of the reality doctrine not to be dispositions, but to be sensations, i. e. as being identical with ideas of secondary qualities. Other readings do conceive Locke's secondary qualities as properties of bodies, but they also assert that the reality doctrine relates truly to ideas of secondary qualities.¹⁸⁵ Ideas of secondary qualities are thus said to be not real in the sense that they are mental states and not properties of bodies. Both lines of interpretation view Locke's notions of being real and non-real alike and attribute them to the same type of entities, namely to properties respectively to mental states. Not surprisingly, among the two readings there is a corresponding similarity as to the conceptual level. In connection with the reality doctrine, predicates like 'yellow' are said to denote mental states: according to one reading Locke calls these mental states 'secondary qualities', according to the other one 'ideas of secondary qualities'.¹⁸⁶

However, in the quoted passages Locke speaks neither of (ideas of) secondary qualities being non-real in virtue of being *sensations*, nor of primary qualities which are real *solely* in virtue of being properties. Quite the contrary, secondary qualities are real *qua dispositions* and primary qualities are real *qua intrinsic* features.

Yet, it remains so far unclear how the reality status of qualities can be spelled out in the light of their explanatory role. In what follows next, I will argue that this can be done by ascribing to Locke an intelligible and historically plausible view. The key is the corpuscularian backdrop of Locke's quality discussion.

¹⁸⁴ Cp. Ayers (1991), I, 63. Ayers insists here that, in this context, secondary qualities are blank effects, i. e. mental states. And he depicts secondary qualities not to be real in objects in the sense that they are mental states and not properties of bodies. Cp. Krüger (1981), 80ff.

¹⁸⁵ Cp. Alexander (1985). Alexander maintains, on the one hand, that secondary qualities are properties of bodies (118). And since he claims that colours (etc.) are truly ideas of secondary qualities (118) - and not secondary qualities, as I contend -, he takes the issue of colours (etc.) being real as a question of locating them correctly. Colours (etc.) are genuine properties of a perceiver, i. e. ideas, and not properties of objects causing ideas (125f).

¹⁸⁶ Cp. again Ayers (1991), I, 63; Alexander (1985), 118. See notes above.

b. The Reality Doctrine in the Light of Boyle's Criticism of Real Qualities

Natural philosophers before Locke have already distinguished between primary and secondary,¹⁸⁷ in particular Boyle who had developed the corpuscularian hypothesis.¹⁸⁸ There is no need to expound Boyle's concept of primary and secondary qualities and his corpuscularian account in detail, but some input of Locke's corpuscularian background is needed to recognize the thrust of his reality doctrine.

Boyle's quality distinction is part of his corpuscularian theory which is a mechanical account of the properties of bodies, namely of how their properties change and how their properties are perceived. He contends that bodies are to be comprehended as a compound of smaller bodies, the corpuscles,¹⁸⁹ and that corpuscles have certain physical properties, e. g. shape, size and mobility.¹⁹⁰ These "corpuscularian" properties are often, but not consistently called primary qualities.¹⁹¹ From this explanatory perspective bodies are understood solely in terms of microphysical, corpuscularian qualities. This implies that the multiplicity of properties, which bodies have on the macrophysical level, is reduced to their microphysical, corpuscularian properties.¹⁹² Every property of the macrophysical level is explained in terms of corpuscularian properties of the microphysical level. Since macrophysical bodies have corpuscularian properties not only if understood from the micro- but also from the macrophysical viewpoint, corpuscularian properties occur on *both* levels. There are both macro- and microphysical corpuscularian properties. In other words, a corpuscularian feature is conceived as a conceptual type of properties, namely as a conceptual type of the features being intrinsic according to corpuscularian theory. On the other hand, all other properties, e. g. colours, are understood as dispositional properties

¹⁸⁷ In *Il Saggiatore*, Galileo introduced the distinction in modern philosophy. Cp. Galileo (1968), VI, 213-372.

¹⁸⁸ Boyle developed his corpuscularian theory especially in the so-called theoretical part of *The Origin of Forms and Qualities*. Cp. Boyle (1772), III, 14-27.

¹⁸⁹ Boyle (1772), III, 16 and 22. However, Boyle uses his terminology not always consistently and also refers to unobservable compounds of corpuscles as corpuscles, 29f.

¹⁹⁰ Boyle (1772), III, 16. However, it is a matter of interpretation whether Boyle's primary qualities comprise only shape, size, and mobility, since he also speaks of other properties, e. g. bulk. Cp. Boyle (1772), III, 16. There is no need for my argument on Locke to go into these details.

¹⁹¹ For instance, Boyle refers to primary qualities also as "essential properties". Cp. Boyle (1772), III, 20f.

¹⁹² This is well illustrated by Boyle's famous example of a key fitting a lock. Cp. Boyle (1772), III, 18.

and do not have a microphysical equivalent.¹⁹³ These features are often, but again not consistently named secondary qualities.¹⁹⁴

The implications are of two kinds. First, a single corpuscle does not have secondary qualities, e. g. it is not coloured.¹⁹⁵ Second, even macrophysical compounds of corpuscles are conceived not to have secondary qualities *in addition* to their corpuscularian features. Boyle illustrates this with respect to non-sensible secondary qualities. A key fitting a lock has the power to turn the the lock and the lock has the power to be turned by the key. But, Boyle insists, “by these new attributes there was not added any real or physical entity either to the lock or to the key”.¹⁹⁶

Boyle’s substantial argument to decline Aristotelian real qualities is directly connected with his account of qualities, as the last quote already indicated. A quality is real if it is literally ascribed to bodies on the microphysical level although bodies do not have the quality from the explanatory standpoint.¹⁹⁷ In other words, real qualities are secondary qualities which are treated analogous to primary ones in being likewise present on the microphysical level. For example, sensible qualities like colour and taste are real qualities, if they are attributed to bodies as features being ontologically or numerically distinct from corpuscularian properties; but Boyle insists:

“there is in the body, to which these sensible qualities are attributed, nothing of real and physical but the size, shape, and motion or rest, of its component particles, together with that texture of the whole, which results from their being so contrived as they are; [...]”.¹⁹⁸

To say in the Aristotelian sense that bodies are coloured, is to assign to them a real quality

¹⁹³ Boyle (1772), III, 18 and 25.

¹⁹⁴ For instance, Boyle calls also sensations secondary qualities. Cp. Boyle (1772), III, 23.

¹⁹⁵ Boyle (1772), III, 22: “[...] if we should conceive that all the rest of the universe were annihilated, except any [scil. any *one*] of these intire and undivided corpuscles ... it is hard to say what could be attributed to it, besides matter, motion (or rest), bulk, and shape. Whence by the way you may take notice that bulk, though usually taken in a comparative sense, is in our sense an absolute thing, since a body would have it, though there were no other in the world.”

¹⁹⁶ Boyle (1772), IV, 18.

¹⁹⁷ I do not claim that this is Boyle’s definition of ‘realqualities’, but that, as a matter of fact, they have this characteristic according to Boyle’s explanations.

¹⁹⁸ Boyle (1772), IV, 23.

which they do not possess from the scientific viewpoint. This becomes evident in respect of single corpuscles: corpuscles are not coloured - neither from the microphysical perspective nor even from the macrophysical stage since they do not have the power to cause visual sensations. Similarly, compounds of corpuscles are not coloured, if understood from the microphysical perspective. In an explanatory account, bodies are not described in terms of secondary qualities. Of course, according to corpuscularian theory, macrophysical bodies still have secondary qualities, but only on the macro- and not on the microphysical level. The disclaimer of real qualities is not a denial of macrophysical bodies having secondary qualities, but of the existence of microphysical secondary qualities. It is an ontological thesis. This ontological contention is derived from an account that the real qualities are truly dispositions and that they therefore do not exist numerically distinct in addition to their corpuscularian properties. In Boyle's own words:

"And proportionably hereunto, I do not see why we may not conceive, that as to those qualities (for instance) which we call sensible, though by virtue of a certain congruity or incongruity in point of figure (or texture or other mechanical attributes) to our sensories, the portions of matter they modify are enabled to produce various effects, upon whose account we make bodies to be endowed with qualities; yet they are not in the bodies that are endowed with them any real or distinct entities or differing from the matter itself furnished with such a determinate bigness, shape, or other such modifications."¹⁹⁹

Locke's corpuscularian account of perceiving properties of bodies which he gives in §§12-13 goes along the lines of Boyle's corpuscularian theory.²⁰⁰ As alluded to above,²⁰¹ in Locke's outline of an explanatory account, bodies are described solely in terms of primary qualities, and secondary qualities are conceived as "combinations" of microphysical primary qualities. Now, if one reads Locke in the light of Boyle's discussion of real qualities, the depriving of secondary qualities of being real simply means that there *are no* secondary qualities on the microphysical level. In this sense it is perfectly intelligible to say: secondary qualities are *not real* - while maintaining that they are properties in the

¹⁹⁹ Boyle (1772), IV, 18. Rogers points out similarities between Locke's and Boyle's views on sense perception. Cp. Rogers (1966), 210f.

²⁰⁰ Cp. Boyle's account of the perception of colours in *The Experimental History of Colours*. Cp. Boyle (1772), I, 671.

²⁰¹ Cp. 4b.

sense of dispositions. In an explanatory, microphysical description secondary qualities do not exist separately side by side with primary qualities. To the contrary, secondary qualities are to be identified with microphysical primary qualities. The former are not numerically distinct from the latter. This reading of the reality status of qualities and of Locke's use of "real" complies with Boyle's use of 'real' when saying that a non-sensible quality is not "any real or physical entity" or that sensible qualities are not "any real or distinct entities or differing from the matter itself." By contrast, primary qualities of the macrophysical level are real in the sense that they re-appear on the microphysical level. To be more precise, since a primary quality comprises both micro- and macrophysical features, primary qualities are real because bodies possess them from the scientific standpoint.

Thus, what Locke is up to is to decline the popular belief amongst laymen,²⁰² Aristotelians and alchemists that sensible qualities are in the same way irreducible as corpuscularian properties are.²⁰³ Primary qualities do appear on the microphysical level, but secondary qualities disappear. Not to make this distinction is to give a false, very misleading account of how things are. Locke's claim of the non-reality of secondary qualities can be made intelligible on the background of contemporary scientific discussions. Macrophysical primary qualities are real because from the explanatory perspective they are conceived in terms of the same conceptual type, whereas secondary qualities are non-real because they are explained in terms of a different type of properties.

This way to comprehend Locke illuminates both why the reality status of qualities is linked with their explanatory role as intrinsic or respectively as dispositional features and why qualities are understood in terms of "conceptual types". The nexus between the reality status of qualities and their explanatory role makes likewise plain why in these passages Locke is concerned with an explanatory account of bodies, namely with corpuscularian theory: the reality status of properties relates to the way bodies are conceived in a scientific description of them.

Crucially, on the face of it, other passages have to be understood in the same light. In his discussion of qualities, Locke's main objective is to show that contrary to popular opinion

²⁰² 141f, II.viii.24f.

²⁰³ It is not clear whether Locke has Aristotelians and alchemists in mind, but certainly Boyle has. Boyle argues against both of them especially in *The Sceptical Chymist*. Cp. Boyle (1772), I.

sensible qualities are not real, i. e. that they are only as much real as other secondary qualities are. To underpin his contention, he draws an analogy between sensible qualities and other secondary ones, namely mediately perceivable features like the propensity of the sun to melt wax. To come to grips with the analogy, Locke's distinction between immediately and mediately perceivable secondary qualities has to be introduced first.

The sub-division of secondary qualities between immediately and mediately perceivable secondary qualities is implicitly introduced in the definition of secondary qualities, but stated explicitly at the end of the chapter.²⁰⁴ The secondary quality of a body is mediately perceivable if it is understood as the property which causes a sensation of a change of features which another body possesses. Mediately perceivable secondary qualities are therefore propensities of bodies to cause property changes in other bodies; and they are identified by the corresponding change of sensation which goes hand in hand with the property change. For example, the capacity of the sun to melt wax is grasped as the property of the sun which causes the change of perceiving wax first to be hard and then to be fluid. Similarly, the power of wax to be melted by the sun is that feature of wax which is causally involved in the change of perceiving wax first to be hard and then to be fluid. On the contrary, a secondary quality is immediately perceivable if it is identified or ascribed to a body directly by a sensation of the secondary quality. For example, sensible qualities like colours are properties causing a visual perception by which a particular colour is specified.

Coming back to the comparison of the reality status between sensible qualities and mediately perceivable secondary qualities, §24 for example, entails the proposed reading of the reality doctrine. According to Locke, one commonly regards sensible qualities as real qualities in the things themselves, but mediately perceivable qualities as nothing but powers:

“For *the Second sort* [scil. immediately perceivable qualities], *viz.* The Powers to produce several *Ideas* in us by our Senses, *are looked upon as real Qualities, in the*

²⁰⁴ 143, II.viii.26. Some commentators use a different terminology to distinguish between immediately and mediately perceivable secondary qualities, calling the former secondary and the latter tertiary qualities. Cp. Curley (1972), 141; Goodin (1992), 59-81; Wilson (1979), 143. I will not adopt this usage, since it introduces an ambivalence of ‘secondary qualities’, namely a second meaning besides Locke’s own one.

things thus affecting us: But the Third sort [scil. mediately perceivable qualities] are call'd, and esteemed barely Powers."²⁰⁵

Rejecting the belief that sensible qualities are real, Locke points then out that one has to conceive them like mediately perceivable features, namely as powers and not as real qualities. In both cases one has to comprehend secondary qualities in terms of (microphysical) primary qualities: " [...] *these two later sorts of Qualities are Powers barely, and nothing but Powers, relating to several other Bodies, and resulting from the different Modifications of the Original Qualities*".²⁰⁶ Locke illustrates his point by qualities of the sun. The sun's power to melt wax is a mediately perceivable property which is regarded solely as a power or disposition of the sun:

"But when we consider the Sun, in reference to Wax, which it melts or blanches, we look upon the Whiteness and Softness produced in the Wax, not as Qualities in the Sun, but Effects produced by *Powers* in it".²⁰⁷

In other words: when conceiving the power of the sun to melt wax with reference to the effect caused in the wax, we do not understand the sun to be soft; rather the softness is seen as an effect produced in the wax by the sun's power. In short, softness is not attributed to the sun, but to the wax. That is, one does not elucidate a mediately perceivable property in terms of its effect by which one identifies the property. Instead, one comprehends the sun's power to melt wax in terms of microphysical primary qualities. Locke moves then on to assert that sensible qualities have to be understood in the same way. This means, not only mediately but also immediately perceivable properties are dispositions which are to be conceived in terms of primary qualities. The comparison between mediately and immediately perceivable features thus establishes that for Locke sensible qualities are not real qualities in virtue of being dispositions.²⁰⁸

²⁰⁵ 141, II.viii.24.

²⁰⁶ 141, II.viii.24.

²⁰⁷ 141, II.viii.24.

²⁰⁸ But, in §24, does Locke not also speak of sensible qualities as of sensations, ideas and perceptions? Is there confusion after all? The point is to keep in mind Locke's previous declaration of his terminology in §8: 'idea' refers generally to the intentional object of sensations caused by powers; but with the proviso that 'idea' is sometimes also used to denote the qualities or powers which cause intentional content. To read Locke as arguing coherently, one has to interpret his talk of sensible

This means, Locke links again the reality status of secondary qualities with them being dispositions: they are not real qualities because they are to be identified with primary qualities. And Locke charges his opponents to make the mistake to ascribe a secondary quality to bodies from an explanatory standpoint. But a secondary quality, he maintains, is of a conceptual type in terms of which one only grasps the secondary quality, but in terms of which one does not elucidate the secondary quality in a scientific account of bodies. Concepts of secondary qualities denote properties in virtue of the sensations they produce, concepts of primary qualities depict properties in virtue of their existence from the causal standpoint. To confuse this, is to take sensible qualities as real qualities or respectively to attribute sensible qualities to bodies on the microphysical level.

To sum up, Locke's analogy serves to establish that sensible qualities are like other secondary qualities with regard to a scientific understanding of them. There is nothing soft in the sun which causes the softness of wax. Correspondingly, there is nothing hot in the sun which causes the sensation of heat. Of course, in the sun there is the disposition to melt wax and to warm, but these properties should not be understood in terms of softness or warmth. Secondary qualities are features of bodies which are to be elucidated in terms of primary qualities; from the explanatory standpoint one should not conceive secondary qualities in terms of the conceptual type in terms of which one depicts them as secondary qualities. As to secondary qualities, one can grasp a feature either with reference to our mental representation of them as produced in sensation, i. e. in terms of a secondary quality or with reference to our scientific understanding of them, i. e. in terms of primary qualities. By contrast, primary qualities - whether micro- or macrophysical

qualities being sensations as portraying sensible qualities as powers of bodies. For, if one does not read him in this way, he would contradict himself in the very same sentence by calling at once sensible qualities both powers as well as sensations or respectively ideas: "*v.g.* the *Idea* of Heat, or Light, which we receive by our Eyes, or touch from the Sun, are commonly thought *real Qualities*, existing in the Sun, and something more than mere Powers in it." Now, as '*v.g.*' indicates clearly in this context, the "*Idea* of Heat, or Light" exemplifies that sensible qualities are powers: 'idea' signifies here powers or dispositions of bodies. More straight forwardly, one can read the occurrence of 'perception'. Sensible qualities of the sun are identified as powers or properties of the sun "which are Perceptions in me when I am [effected by these powers]". That is, given this time Locke's primary meaning of 'idea', a sensible quality is a power which is in so far a perception as it is the intentional content of a perception.

ones - are properties which are understood in the same terms whether with respect to our sensations or to our explanatory account of them.

Importantly, the analogy between mediately and immediately perceivable features moreover makes plain that the reality status of qualities is not related to their explanatory role in any account of bodies and their properties. Rather, the reality status of a quality is linked with its role in an account of bodies with respect to our mental representations of them. To say that secondary qualities do not exist on a microphysical level is not simply to claim that they are omitted in a description of bodies in some scientific explanation of their properties or that secondary qualities do not perform the role of being explanatory basic in some kind of theory. Instead, Locke prefers to conceive bodies in the language of microphysics rather than in our everyday language of secondary qualities, because to portray bodies in terms of primary qualities is to comprehend them independently of any particular way we represent them mentally. One can illustrate this again in corpuscularian terms.

According to the corpuscularian picture, a body has a multiplicity of ways to affect a perceiver, namely to cause a multiplicity of mental representations of the properties of the body. And since one grasps the features of bodies by one's mental representations, one depicts bodies by a multiplicity of mental representations. In other words, there is a multiplicity of concepts each of which denotes a type of property being conceptually distinct. However, for corpuscularians like Locke, an explanatory account of our mental representations makes intelligible that only a smaller set of conceptually distinct types of properties are truly numerically distinct. The multiplicity of conceptually distinct types of features are ontologically reduced to the small set of primary qualities. In a theory of perception, bodies are grasped from a causal perspective, namely as the cause of all our mental representations. To depict bodies in terms of primary qualities is thus to conceive them as independent of the way they are mentally represented. Concepts of primary qualities are therefore designed to be the vocabulary with which one comprehends bodies as not being related to our mental representations. In Lockean words: describing bodies with primary qualities is to conceive them *how bodies are in themselves*, and not how they are in relationship to the way they affect the perceiver, i. e. to the particular way bodies are mentally represented.

We now see: in connection with the reality doctrine Locke discusses qualities from the same epistemological perspective as he does with ideas in connection with the resemblance theory, namely from a perception-neutral viewpoint. This is not surprising, given the prominence of the corpuscularian theory of perception in Locke's chief argument in §§11-15 and the close ties between reality doctrine and resemblance theory. With regard to this epistemological perspective Locke depicts qualities as real or non-real. A property is real if a feature of the same conceptual type is ascribed to bodies from the perception-neutral standpoint; otherwise it is non-real.

c. Objections against Alleged Textual Evidence for Alternative Readings

If one keeps the perception-neutral perspective of the reality doctrine in mind, one can elucidate passages in accordance to the developed reading which are usually seen to establish common lines of interpretation. For most commentators, there are passages showing that Locke comprehends secondary qualities as being not real in the sense that they are sensations and not properties of bodies. At the root of this predicament Locke is viewed to mean in fact ideas or perceptions of secondary qualities when literally speaking of secondary qualities or when using words like 'yellow'. Locke is taken to mean ideas of secondary qualities when speaking of entities which he signifies by concepts like 'yellow'.²⁰⁹ Ayers does not certify confusion, but he takes Locke to make use of an ambiguity of 'idea of secondary qualities' and of a corresponding ambiguity of 'secondary qualities'. Ayers understands Locke to use 'secondary qualities' not only for properties but also for our ideas or sensations of them, since Locke, allegedly, declares in one passage that 'ideas of secondary qualities' signifies primarily perceptions of secondary qualities and secondarily secondary qualities. In particular, Ayers regards Locke's analogy between pain and sensible qualities to show that secondary qualities are said to be not real in the way Ayers views Locke.²¹⁰

But the advanced interpretation can be squared with these passages. On first thought

²⁰⁹ Alexander (1985), 118.

²¹⁰ Ayers (1991), I, 63f.

Locke there seems to speak of secondary qualities as if they were effects or sensations. Secondary qualities appear to be portrayed as being real only in the sense that they exist as sensations of bodies only in the mind of a perceiver. In these paragraphs Locke pursues again his main objective, namely to show that sensible qualities have the same reality status as all other secondary qualities have. To show that the common interpretation of these passages is unnecessary and unhelpful in order to read Locke as arguing coherently, one has to keep in mind Locke's use of 'quality', namely that qualities are understood as intentional objects if qualities are said to be ideas.²¹¹ On this backdrop the comments having typically led to the usual view can be understood in the light of the reconstructed position. Likewise, Ayers textual evidence for the alleged official ambiguity of Locke's notions dissolves and it becomes clear that Locke's pain analogy does not display that secondary qualities are mental states. Instead, the pain analogy should be read along the lines of his analogy of sensible qualities with mediately perceivable secondary qualities. I begin with II.viii.16:

“§16. *Flame is denominated Hot and Light; Snow White and Cold; and Manna White and Sweet, from the Ideas they produce in us. Which Qualities are commonly thought to be the same in those Bodies, that those Ideas are in us, the one the perfect resemblance of the other, as they are in a Mirror; and it would by most Men be judged very extravagant, if one should say otherwise. And yet he, that will consider, that the same Fire, that at one distance produces in us the Sensation of Warmth, does at a nearer approach, produce in us the far different Sensation of Pain, ought to bethink himself, what Reason he has to say, That his Idea of Warmth, which was produced in him by the Fire, is actually in the Fire; and his Idea of Pain, which the same Fire produced in him the same way, is not in the Fire. Why is Whiteness and Coldness in Snow, and Pain not, when it produces the one and the other Idea in us; and can do neither, but by the Bulk, Figure, Number, and Motion of its solid Parts?*”²¹²

As the beginning of §16 indicates, the subsequent fire example is supposed to highlight the denial that ideas of sensible qualities like hot, white, cold and sweet are “the perfect resemblance[s]” of these qualities.²¹³ Thus, given our reading of ‘resemblance’, if Locke asks whether those ideas are in the bodies which cause these ideas, he asks whether the

²¹¹ Cp. 3a.

²¹² 137; II.viii.16.

²¹³ 137, II.viii.16.

type of property which is ascribed to the body as the idea's content is also ascribed to the body on the microphysical level in an explanatory account. Locke insists in the fire-example that warmth, coldness, and other sensible qualities are not to be ascribed to fire on the microphysical level just as one does not do it in the case of pain, since in both cases one conceives the property as dispositions in terms of primary qualities. Conceptually speaking, there is nothing "like" the idea of a secondary quality in the fire. Locke moves then on in §17 to restate his point:

"§17. The particular *Bulk, Number, Figure, and Motion of the parts of Fire, or Snow, are really in them, whether any ones Senses perceive them or no: and therefore they may be called real Qualities, because they really exist in those Bodies. But Light, Heat, Whiteness, or Coldness, are no more really in them, than Sickness or Pain is in Manna. Take away the Sensation of them; let no the Eyes see Light, nor the Nose Smell, and all Colours, Tastes, Odors, and Sounds, as they are such particular Ideas, vanish and cease, and are reduced to their Causes, i. e. Bulk, Figure, and Motion of Parts.*"²¹⁴

Let us first become aware of the different aspects which are clearly mentioned. First, he identifies secondary qualities with primary ones of the microphysical level: "[Secondary qualities] are reduced to their Causes, *i. e.* Bulk, Figure, and Motion of Parts." Second, Locke compares the reality status of sensible qualities with that of other secondary qualities which both are opposed to the reality status of microphysical primary qualities (cp. the first two sentences). All the ingredients of Locke's reality doctrine are present. Now, the alleged problem of interpretation arises with respect to the first part of the second sentence. There, Locke seems to ascribe to secondary qualities the existence conditions of ideas of secondary qualities and thus to equate the former with the latter. Does he not assert that there are no secondary qualities, if one does not perceive them, and that they are thus reduced to primary qualities? Does he not identify secondary qualities with what he calls at other places ideas of secondary qualities?²¹⁵

However, Locke speaks very carefully of secondary qualities vanishing only in so far "as they are such particular *Ideas*". Thus he does not simply equate secondary qualities with

²¹⁴ 138f, II.viii.17.

²¹⁵ Cp. 139f, II.viii.18f and 375f, II.xxxi.2. The latter passage will be discussed subsequently to the quoted one in the main text.

our ideas of them. He does talk about the reduction of secondary qualities and of their non-existence if they are not perceived, but only with respect to secondary qualities in so far as they are ideas: "Take away the Sensation of them; ... and all [secondary qualities], as they are such particular *Ideas*, vanish and cease, and are reduced to their Causes, *i. e.* [primary qualities]." That is, if one does not perceive secondary qualities, they vanish in so far as they are ideas. We can elucidate this on the backdrop of the advanced reading.

Certainly, Locke is pressing his point, and confuses the reader by pushing his rhetoric over the edge of immediate comprehensibility. But he does so only to stress the issue of the reality of microphysical primary properties and the non-reality status of secondary qualities: bodies have a figure, but not a colour - if they are conceived as being independent from the way we represent them. Locke maintains: if one understands secondary qualities of bodies independently of the ideas they cause ("Take away the Sensation of them"), one comprehends secondary qualities in terms of primary qualities ("[secondary qualities], as they are such particular *Ideas*, are reduced to their Causes, *i. e.* [primary qualities].") so that in this sense bodies do not have secondary qualities ("[secondary qualities], as they are such particular *Ideas*, vanish and cease"). Locke thus insists that sensible qualities are in the same way real in bodies as other secondary qualities are real in bodies: "But *Light, Heat, Whiteness, or Coldness, are no more really in them, than Sickness or Pain is in Manna.*" The reality status of secondary qualities is not related to their existence in human minds, but to their existence in bodies. Secondary qualities are not said to cease to exist if they are not perceived, but that they have to be identified with primary qualities, if they are conceived not in relation to our sensations but as the causes of sensations. In the same light one has to read §18:

"§18. A piece of *Manna* of a sensible Bulk, is able to produce in us the *Idea* of a round or square Figure; and, by being removed from one place to another, the *Idea* of Motion. This *Idea* of Motion represents it, as it really is in the *Manna* moving: A Circle or Square are the same, whether in *Idea* or Existence; in the Mind, or in the *Manna*: And this, both *Motion and Figure are really in the Manna*, whether we take notice of them or no: This every Body is ready to agree to. Besides, *Manna* by the Bulk, Figure, Texture, and Motion of its Parts, has a Power to produce the Sensations of Sickness, and sometimes of acute Pains, or Grippings in us. That these *Ideas of Sickness and Pain are not in the Manna*, but Effects of its Operations on us, and are no where when we feel them not: This also every one readily agrees to. And yet Men are hardly to be brought to think, that *Sweetness and Whiteness*

are not really in Manna; which are but the effects of the operations of Manna, by the motion, size, and figure of its Particles on the Eyes and Palate; as Pain and Sickness caused by Manna, are confessedly nothing, but the effects of its operations on the Stomach and Guts, by the size, motion, and figure of its insensible parts; [...]."²¹⁶

At first, one might be tempted to read Locke again, as commentators usually do, to insist that: bodies have primary qualities independently of whether we perceive them, whereas bodies have secondary qualities only if one perceives them. But bearing in mind what Locke means by the reality of microphysical primary properties, he rather makes the following claims:

- our mental representation of motion depicts motion in the same terms as one would conceive motion independently of any of our mental representations of motion ("The *Idea* of Motion represents it, as it really is in the *Manna* moving")
- the property to have the form of a circle or of a square is conceived in the same terms, whether with regard to our mental representation of them or with regard to the way manna has them from a perception-neutral viewpoint ("A Circle or Square are the same, whether in *Idea* or Existence; in the Mind, or in the *Manna*")
- manna is conceived to have both motion and form independently of whether we attribute motion and form to manna in virtue of a mental representation of motion and form, since manna has motion and form from a perception-neutral viewpoint ("And this, both *Motion and Figure are really in the Manna*, whether we take notice of them or no").

Likewise one has to read Locke when he subsequently insists: sweetness and whiteness are effects like sickness and pain and are therefore not really in the manna, since all four qualities are to be understood as effects of microphysical primary qualities of the manna. Again, one has to remember that Locke speaks here of secondary qualities in so far as they are ideas or mental representations which are indeed effects caused by the manna: *qua* mental representations, secondary qualities disappear if bodies are grasped from a causal perspective.

True, in this paragraph there is no straight forward reference to secondary qualities being

²¹⁶ 138f, II.viii.18.

dispositions as there is in the other passages where secondary qualities are qualified as ideas and as being not really in bodies. This has certainly led many readers to the view that in this context secondary qualities are mental states, namely ideas of secondary qualities. However, as we have seen at the beginning, this interpretation of the reality status of qualities does not work out for key passages. But since it is possible, one should therefore read §18 along the lines of the advanced reading of the reality doctrine. One should rather understand Locke to put his point in a confusing way, instead of being deeply confused or ambiguous about the reality status of qualities. Moreover, one should not be too strict with Locke, since §18 does not serve as his first attempt to make his point intelligible. It seems to me, in §18 Locke wants to stress the analogy of sensible qualities to pain, since he believes that the reader will concede him the non-reality status of pain. From a scientific perspective, there is literally speaking no pain in the manna - and so is no sweetness.

A similar passage can be highlighted in the same way, namely Locke's thought experiment of a world without perceptions in II.xxxi.2. To see this, we have to take into account the context as well, especially because it includes both the comments which Ayers reads in favour of his view as well as the utterance showing that the pain analogy has to be understood along the lines suggested here.

“'Tis true, the Things producing in us these simple *Ideas*, are but few of them denominated by us, as if they were only the causes of them; but as if those *Ideas* were real Beings in them. For though Fire be call'd painful to the Touch, whereby is signified the power of producing in us the *Idea* of Pain; yet it is denominated also Light, and Hot; as if Light and Heat, were really something in the Fire, more than a power to excite these *Ideas* in us; and therefore are called *Qualities* in, or of the Fire. But these being nothing, in truth, but powers to excite such *Ideas* in us, I must, in that sense, be understood, when I speak of secondary *Qualities*, as being in Things; or of their *Ideas*, as being in the Objects, that excite them in us. Such ways of speaking, [...] truly signify nothing, but those Powers, which are in Things, to excite certain Sensations or *Ideas* in us.”²¹⁷

The argument begins with Locke's delineation of the popular belief that bodies are not only the cause of simple ideas, but that these ideas are also “real Beings” in bodies. The

²¹⁷ 375f, II.xxxi.2.

subsequent sentences to the end of the paragraph make plain that the topic is again the reality of qualities. This indicates, at the opening of the argument Locke rejects the widespread opinion that sensible qualities are not understood as being only powers - as one should in the case of secondary qualities - but as "real Beings" or real qualities respectively. Importantly, Locke does not criticize that secondary qualities are portrayed as features, namely as powers or dispositions, but that they are regarded as real. It thus shows up again: to be real is not a question about being a property or not, but about being what kind of property.

In the subsequent sentence Locke illustrates his claim by a comparison between pain and sensible qualities which entails the same result. The alleged difference between pain and sensible qualities like light and heat consists for Locke in the false assumption that sensible qualities "were really something in the Fire, more than a power to excite these *Ideas* in us". One conceives mistakingly sensible qualities, but not pain, as real. Secondary qualities are portrayed as powers of bodies which are not real.

In the next sentence Locke reasserts that secondary qualities are only powers. The punchline is to warn the reader not to mistake his talk of "qualities" in connection with secondary qualities as a depiction of these properties as being real qualities. This has already been indicated in the preceding sentence where Locke states that 'quality' is commonly applied to sensible qualities because of the belief that they are real. More importantly, at the end of the then following sentence Locke emphasizes: when saying that secondary qualities are in bodies or that ideas of secondary qualities are in bodies, he means that (ideas of) secondary qualities are nothing but powers. Given our interpretation of 'being nothing but powers', Locke asserts: (an idea of) a secondary quality *is* in a body in the way a disposition is, but not in the way a real quality is.

Having reconstructed the background, we can now turn to the thought experiment itself. Locke invites us to imagine a world without perceptions and sensible beings:

"Since were there no fit Organs to receive the impressions from the Fire, or the Sun, there would yet be no more Light, or Heat in the World, than there would be no Pain if there were no sensible Creature to fell it, though the Sun should continue just as it is now, and Mount *Ætna* flame higher than ever it did. Solidity, and Extension, and the termination of it, Figure, with Motion and Rest, whereof we have the *Ideas*, would be really in the World as they are, whether there were

any sensible Being to perceive them, or no: And therefore those we have reason to look on as the real modifications of Matter; and such as are the exciting Causes of all our various Sensations from Bodies."²¹⁸

At first glance it seems again as if Locke maintained that secondary qualities are sensations of secondary qualities and that secondary qualities would not exist if there were no sensations or ideas of them. Does Locke not assert that light and heat are only in so far in a world without perception as pain is? And is pain not a mental state, i. e. an idea? If this were correct, Locke would present a thoroughly confused argument since the thought experiment is apparently introduced to establish what has been said before, namely that secondary qualities are not real in virtue of them being just *powers*. However, there is no need to interpret him in this way, since his comparison of pain has to be understood differently. We have just seen that in this context Locke comprehends pain as a power to cause ideas, i. e. as a feature of bodies and not of minds. Crucially, Locke says: "For though Fire be call'd painful to the Touch, whereby is signified the power of producing in us the *Idea* of Pain; [...]". Thus, when Locke imagines the reality status of sensible qualities in a world without perceptions by analogy to pain, he portrays sensible qualities as powers. Moreover, one can easily read the thought experiment in the light of the advanced interpretation. This is indicated at the end of his reasoning where Locke draws the conclusion that primary qualities are the only types of properties in terms of which one has to describe bodies if understood as the causes of sensations: "And therefore those [scil. primary qualities] we have reason to look on [...] as are the exciting Causes of all our various Sensations from Bodies." That is, from the viewpoint explaining only primary, but no secondary qualities are ascribed to bodies. Correspondingly, one can understand the thought experiment as an attempt to convey the reality status of secondary qualities. Given a world without perceptions, there is no basis to conceive properties of bodies in relation to mental representations, since there are no sensible beings to have ideas. By contrast, it does make sense to describe bodies in terms of primary qualities, since they depict bodies from a perception-neutral viewpoint. The same thought is evidently entailed in Boyle's argument against real qualities:

²¹⁸ 376, II.xxxi.2.

“[...] if there were no sensitive beings those bodies that are now the objects of our senses would be but dispositively [scil. dispositionally], if I may so speak, endowed with colours, tastes, and the like; and actually but only with those more catholick affections of bodies, figure, motion, texture, etc.”²¹⁹

The point is that in a world without sensitive beings, e. g. when only one complex body like a metal or stone exists, “it would be hard to shew that there is physically any thing more in it than matter and the accidents we have already named”²²⁰ This becomes plain in another passage as well:

“I do not deny but that bodies may be said in a very favourable sense to have those qualities we call sensible, though there were no animals in the world: for a body in that case may differ from those bodies which now are quite devoid of quality, in its having such a disposition of its constituent corpuscles, that in case it were duly applied to the sensory of an animal, it would produce such a sensible quality which a body another texture would not: as though if there were no animals there would be no such thing as pain, yet a pin may, upon the account of its figure, be fitted to cause pain, in case it were moved against a man’s figure.”²²¹

Boyle’s punchline is that in a world without sensitive beings one may speak of sensible qualities in terms of dispositions, but there is no real basis to characterize them *qua* sensible qualities. In the light of this parallel, the suggested reading of Locke’s comments appears natural.

Perhaps more importantly, the interpretation has shown that Locke’s comparison between pain and sensible qualities does not imply that secondary qualities are comprehended as ideas in connection with the reality doctrine. Quite the contrary, the pain analogy establishes that secondary qualities are truly properties of bodies. The pain analogy serves as an argument for the claim that sensible qualities are only dispositions but no real qualities. For Locke the reader is ready to concede that pain is non-real. Pointing out the similarities between sensible qualities and pain, Locke intends to convince him or her that sensible qualities are secondary qualities and not real ones.

The analysis made plain, moreover, that Ayers is wrong in reading the passage as Locke’s

²¹⁹ Boyle (1772), III, 25.

²²⁰ Boyle (1772), III, 22.

²²¹ Boyle (1772), III, 24.

declaration of an ambiguous use of 'secondary quality'.²²² According to Ayers, Locke delineates in II.xxxi.2 that ideas of secondary qualities stand primarily for perceptions in the sense of blank effects and secondarily for the powers to cause these perceptions. Correspondingly 'secondary quality' is taken to denote either properties or sensations in the sense of blank effects. However, this is simply not what Locke says. He conceives secondary qualities as dispositional properties and not as (simple) ideas; and simple ideas are not understood as sensations in the sense of self-representing blank effects but as representations of the property causing them in sensation.

To conclude, given a precise analysis of the nexus between the reality status of qualities and their role in a theory of mental representations on the backdrop of contemporary corpuscularian theory, one can read Locke's various explanations as presenting a coherent view on the reality of qualities. The reality doctrine assesses which conceptual type of properties bodies have from a perception-neutral standpoint. The reality status of a quality thus corresponds to the resemblance status of its idea.

In the light of the parallels between Boyle's and Locke's position, the question naturally arises whether the latter simply re-states the former. Three differences indicate that Locke transcends Boyle. First, Locke has positive concept of real qualities. Whereas Boyle uses 'real quality' to denote unintelligible properties which are not corpuscularian, Locke refers with this term to features that exist from a perception-neutral perspective. Second, Locke develops the notion of resemblance which characterizes the relationship between two conceptions of the same properties, namely as they are conceived in mental representations and as they are conceived from a perception-neutral perspective. The third distinction relates to the topic which has already been alluded to at the end of the last chapter. The presence of corpuscularian theory in Locke's explanations of resemblance and qualities leads to the question whether this epistemological perspective is meant to be a specific corpuscularian one or a general, theory-neutral viewpoint applying *prima facie* to all kinds of theories of perceptions. I have argued that the topic of resemblance, and therefore of the reality of qualities as well, is apparently too general to be bounded up with a particular scientific account. But the issue will finally be settled in the next chapter.

²²² Ayers (1991), I, 63f.

4. THE REALITY OF PRIMARY AND SECONDARY QUALITIES

Another still open issue is Locke's argument for the reality doctrine in general and for the thesis that sensible qualities are non-real in particular. All this will be taken on in the next section as part of Locke's theory of primary and secondary qualities.

5. Locke's Theory of Qualities

In the chapter on ideas of substances, one of Locke's chief contentions is that our everyday ideas of bodies include mainly secondary qualities, which are non-real or nothing but powers, and only few primary qualities, which are real or in the things themselves.²²³ This account is based on previous results, namely on the analysis of resemblance and qualities in II.viii. Locke defines here primary and secondary qualities and advances an argument to establish both that sensible qualities are non-real, or respectively that our ideas of them are not resemblances, and that corpuscularian properties are primary qualities and real, or respectively that our ideas of corpuscularian features are resemblances. In addition, as the comments in the chapter on ideas of substances display, Locke takes it for granted that everyone who reflects on his or her ideas will concede that our ideas of bodies include only few corpuscularian, primary qualities and for the most part secondary qualities, especially sensible qualities. Likewise, he assumes consent that the features he regards as non-sensible, secondary qualities are genuinely non-real. Thus, though Locke does present an argument that corpuscularian properties are primary qualities, i. e. that we do partly depict bodies by real properties, the focus is clearly on the non-reality of sensible qualities. More importantly, given these presumptions and his argument in II.viii, Locke can justify his chief contention that our everyday ideas of bodies include only few real, primary qualities and mostly non-real, secondary qualities. I will call this whole account Locke's theory of qualities.

In the light of the so far developed reading of the reality status of qualities, the theory of qualities is an assessment of our everyday grasp of bodies from a perception-neutral perspective. That is: Locke's claims on which type of qualities are included in our common ideas of bodies specify the cognitive content of the ideas with respect to a scientific understanding of the represented properties. In principle, this account of our everyday knowledge of bodies can still be reconciled with Alexander's general view that

²²³ 300, II.xxiii.8; 301, II.xxiii.10; 317, II.xxiii.37.

the comments on qualities relate to corpuscularian theory.²²⁴ For, given Alexander were right, the causal perspective would be bounded up with corpuscularian theory and would therefore have to be conceived as a specific corpuscularian standpoint. On the contrary, according to the here advanced interpretation, the perception-neutral perspective is theory-neutral, i. e. it is not confined to or bounded up with a specific account of mental representation. One leading question therefore is whether Locke examines our common ideas of bodies from a specific, corpuscularian viewpoint or from an ideal scientific one. Since the theory of qualities includes the reality doctrine and since the doctrine corresponds to the chief assertions on resemblance, the difference between these topics is, by and large, that the focus is either on features *qua* primary or secondary qualities, or on features *qua* real or non-real qualities, or on ideas being resemblances or dissemblances. The theory of qualities, the reality doctrine and the resemblance theory concern assertions corresponding to each other: for instance, that sensible qualities are secondary qualities, that sensible qualities are non-real, and that their ideas are not resemblances. Thus, Locke's argument on qualities establishes all three accounts.

An interpretation of Locke's reasoning on qualities first affords a clarification of the definition of primary and secondary qualities. it will become plain that the distinction is not confined to corpuscularian theory, but is rather related to an account of bodies from an ideal perception-neutral viewpoint. Subsequently, the full argument will be reconstructed in the context of resemblance theory and reality doctrine. Here the issue will finally be settled whether Locke's reasoning intends to establish corpuscularian theory or a theory-neutral assessment of our ideas of bodies from an ideal perception-neutral viewpoint.

a. Locke's Definition of Primary and Secondary Qualities

We begin with Locke's notion of secondary qualities. In the discussion of the reality doctrine we have seen that the striking similarity between Locke's wording in §10 and §14

²²⁴ This view is implied by Alexander's contention that "Locke took over and developed the distinction from Boyle, as an essential part of the corpuscular philosophy". Cp. Alexander (1985), 118.

of II.viii indicates that secondary qualities are defined as non-real properties, namely as features being nothing but dispositions which are to be explained in terms of primary qualities in a perception-neutral account of bodies and their properties.²²⁵ More precisely, in §10 secondary qualities are not identified with primary qualities, but with corpuscularian properties, i. e. with features in terms of which dispositions like secondary qualities are elucidated in corpuscularian theory, e. g. form and solidity. On the face of it, this suggests that secondary qualities are not defined as the properties which are reducible according to a correct or ideal theory, but as the properties which are reducible according to corpuscularian theory. This would mean, first, 'secondary quality' is a technical term of corpuscularian theory and, second, there would be in fact no secondary qualities if corpuscularian theory were false. If in a true, comprehensive or ideal theory of bodies, their dispositions were not to be identified with corpuscularian qualities, there would be no secondary qualities since no dispositions would fulfill the definition of secondary qualities. But there is one passage which displays that, if pressed, Locke understands secondary qualities solely by being non-real and not necessarily as reducible to primary qualities.

Locke asserts that (ideas of) secondary qualities might be in fact to be explained by features which are not primary qualities or corpuscularian properties respectively and of which one does not have yet any comprehension: (ideas of) secondary qualities "[depend] all (as has been shewn) upon the primary Qualities of their minute and insensible parts; or if not upon them, upon something yet more remote from our Comprehension".²²⁶ What Locke evidently wants to express is that the features he has determined as secondary qualities are truly secondary qualities whether they are to be elucidated in terms of corpuscularian properties or other features. In either case, he insists, the so-called secondary qualities are reducible, i. e. they have to be explained in terms of properties which are of a different conceptual type. This shows that, if pressed, Locke portrays secondary qualities not as features which are to be identified with corpuscularian properties, but as features which are dispositions in an ideal theory. 'Secondary quality' is

²²⁵ Cp. 4b.

²²⁶ 544, IV.iii.11.

not a technical term of corpuscularian theory which has an extension only if corpuscularian theory is largely right. To the contrary, a secondary quality is understood as a feature that is reduced to other features in an ideal scientific account of bodies. Consequently, one has to read §10 as defining secondary qualities as being non-real features, i. e. as being of a conceptual type in terms of which bodies are not conceived from an ideal perception-neutral viewpoint.

We now turn to primary qualities. In his definition of primary qualities Locke first gives three abstract characterizations (which are syntactically separated by semicolons) and then makes a thought experiment which identifies corpuscularian properties as primary qualities, e. g. bulk and form. In his abstract portrayals Locke defines primary qualities as those properties no body can do without: in whatever state a body is, whatever changes it suffers, whether a body is perceivable or not, these features are inseparable from the body. Primary qualities are the properties every body has:

“§9. Qualities thus considered in Bodies are, First such as are utterly inseparable from the Body, in what estate soever it be; such as in all the alterations and changes it suffers, all the forces can be used upon it, it constantly keeps; and such as Sense constantly finds in every particle of Matter, which has bulk enough to be perceived, and the Mind finds inseparable from every particle of Matter, though less than to make it self singly be perceived by our Senses. *v.g.* Take a grain of Wheat, divide it into two parts, each part has still the same qualities; and so divide it on, till the parts become insensible, they must retain still each of them all those qualities. For division (which is all that a Mill, or Pestel, or any other Body, does upon another, in reducing it to insensible parts) can never take away either Solidity, Extension, Figure, or Mobility from any Body, but only makes two, or more distinct separate masses of Matter, of that which has but one before, all which distinct masses, reckon'd as so many distinct Bodies, after division make a certain Number. These I call *original* or *primary Qualities* of Body, which I think we may observe to produce simple *Ideas* in us, *viz.* Solidity, Extension, Figure, Motion, or Rest, and Number.”²²⁷

One should not understand Lockean primary qualities to be determinable properties, as some commentators do.²²⁸ The notion of shape, for example, is a determinable property in the sense that the feature of having a shape has to be determined or specified with

²²⁷ 134f, II.viii.9.

²²⁸ Cp. Mackie (1976), 14.

respect to each body, since bodies have always a determined or specific shape. 'Shape' does not denote to every body the same particular shape, but only some particular shape which varies amongst bodies. However, this interpretation does not work out, because solidity is not a determinable property. According to Locke's technical term of 'solidity', which is roughly equivalent to 'impenetrability',²²⁹ there are not various kinds of solidity as there are different kinds of shape. There is simply solidity. Every body, whether it is water, a diamond or a single corpuscle, is called in the same sense solid. The example of solidity shows that primary qualities are not determinable properties. Primary qualities are simply features being general enough to be properties of all bodies.²³⁰ The feature of having the shape of a globe, by contrast, is too specific, i. e. not every body has it.

After having advanced the three abstract portrayals of primary qualities, Locke expounds a thought experiment in the course of which he identifies primary qualities with corpuscularian properties. Given this structure of the reasoning, it is natural to read the thought experiment as an argument for specifying which features are primary qualities, i. e. which properties fulfill the previously given definition. This "grain-of-wheat argument" determines with which features a body cannot do without: even if a body is divided in unperceivable parts, each resulting body has still solidity, form, etc. In the last sentence of §9 Locke then sums up that primary qualities are the properties mentioned in the grain-of-wheat argument. The thought experiment is a reasoning validating by analogy that the mentioned corpuscularian properties are primary. The analogy is between perceivable and unperceivable bodies, arguing that the latter always retain solidity, extension, form and mobility despite any possible kind of alteration just as the former do. The analogy thus implies that all bodies, whether perceivable or not, have corpuscularian properties.

In the light of Locke's use of the thought experiment to establish that corpuscularian properties are primary qualities, 'primary quality' seems like 'secondary quality' not to be a technical term confined to corpuscularian theory in the sense that it has extension only if corpuscularian theory is largely correct. Primary qualities are not defined as being

²²⁹ 122f, II.iv.1.

²³⁰ Cp. Kienzle (1997), 97.

corpuscularian properties; rather, a reasoning is presented to identify the former with the latter. This shows, both concepts can have extension even if Boyle's theory is fundamentally flawed. This strongly suggests that the quality distinction is meant to relate to an ideal account of bodies.

This conclusion is confirmed, even if §10 is differently interpreted in order to justify a "corpuscularian reading" of Locke's notion of primary qualities. Alternatively, one could insist that the thought experiment does not determine which properties fulfill a previously given definition, but is rather part of this foregoing portrayal. Furthermore, in the last sentence Locke is conceived to finally define primary qualities as being corpuscularian properties fulfilling the preceding depiction. However, since 'secondary quality' is not regarded as a specifically corpuscularian term, as argued above, corpuscularian theory would effectively be reduced to the assumption that every body has corpuscularian features if primary qualities were understood to be defined as features which are possessed by every body according to corpuscularian theory. But this conception of primary qualities would certainly not do justice to Boyle's hypothesis. And this last consequence is rather implausible since Locke is so well acquainted with the theory.

Correspondingly, the distinction between being real and being non-real relates to an ideal theory of mental representation as well. Locke's epistemological perspective is an ideal one being not confined to corpuscularian theory. Locke believes of course in the corpuscularian claim that the properties he calls secondary qualities are truly to be explained by corpuscularian properties, i. e. by features which corpuscularian theory has determined as real qualities. This is the reason why Locke usually portrays secondary qualities as reducible to corpuscularian, real properties, e. g. in his definition of secondary qualities in §10. Yet, when engaged in scientific speculation, as we have just seen, Locke is prepared to concede that corpuscularian theory might be false and that secondary qualities are then not to be identified with corpuscularian, real qualities.

One can enhance the analysis. On the backdrop of §§7-8,²³¹ Locke introduces the quality distinction in §§9-10 in order to clarify the relationship between an idea, i. e. an intentional state representing a property, and the property causing the mental

²³¹ Cp. 3a.

representation and being the content of an idea. In other words, Locke draws the distinction in order to specify which simple idea resembles the property it is about, namely that only ideas of corpuscularian properties are resemblances but not ideas of sensible qualities. Moreover, the reasoning in the chapter on ideas of substances shows that Locke is interested in resemblance and qualities to determine the cognitive content of our ideas of bodies: which of the features included in our ideas are real. Given this backdrop, the thrust of the quality distinction is clearly an epistemological one. The distinction serves to determine which of the properties, by which we depict bodies, are of the same conceptual type in terms of which one conceives bodies as independent of how they are mentally represented. Locke's understanding of qualities thus relates to an ideal account of bodies from a perception-neutral viewpoint. In this sense, the conception of primary and secondary qualities is intended to be theory neutral, i. e. to be appropriate for an ideal account and not to be confined in its employment to the truth of any particular theory.

Correspondingly, if the quality distinction is not confined to Boyle's hypothesis, then certainly is so the notion of resemblance either. This implies, the viewpoint of resemblance is an ideal scientific one. Locke therefore does not aim at establishing corpuscularian theory, as Alexanders contends. Rather, he transforms Boyle's scientific issue of explaining human sense perception of bodies in the genuinely epistemological issue of assessing our conceptions of bodies from an ideal scientific, perception-neutral standpoint.

Coming back to the topic of qualities, at first sight, there are two curious aspects about Locke's quality distinction. Locke treats the quality distinction as if it were complete, i. e. as if it classified all the properties bodies have in being either primary or secondary. However, given his definitions, there might be properties being neither primary nor secondary. For, if there were explanatory basic or real qualities which are not shared by all bodies, these real qualities would neither be primary nor secondary since they are neither common to every body nor non-real. In other words, there is a "conceptual gap" between primary and secondary qualities. It seems to me, Locke has not recognized this due to his belief in corpuscularian theory. According to the theory, on the one hand, corpuscularian properties are primary and real, since all bodies are supposed to have them and since all

features of bodies are assumed to be reducible by corpuscularian properties. And, on the other hand, corpuscularian properties are regarded as the sole features in terms of which bodies have to be understood from a scientific viewpoint. If one therefore identifies primary qualities with corpuscularian properties in the light of corpuscularian theory, primary qualities are the only real qualities bodies have. On this background, it becomes plain why Locke conceives the quality distinction as complete. Corpuscularian theory bridges the conceptual gap: primary qualities add up to real qualities so that primary qualities are opposed to secondary qualities which are defined as non-real properties. Features of bodies are seen as being either real or non-real, namely as being either primary or secondary.

Another reason why Locke does not draw a complete distinction of qualities might be his objective. After all, he wants to examine our ideas of bodies as to which of the entailed features are real. He is thus concerned with corpuscularian properties, sensible qualities and other (secondary) qualities. In addition, Locke apparently believes that corpuscularian properties are real. This matches his grain-of-wheat argument which despite its simplicity is taken to indicate strongly that corpuscularian properties are primary and thus real. Moreover, according to Locke there is no question that all the other, known qualities, which are not corpuscularian features or sensible qualities, are secondary. And with respect to sensible qualities Locke clearly holds, as the quotation above shows, that they are secondary in any case whether they are to be reduced to corpuscularian properties or to other ones of which we do not even have a conception. Thus, the range of features Locke has in mind when discussing qualities are properties of whose quality status he has strong convictions. Corpuscularian properties are primary, all the other features are secondary. Locke holds this belief of course in the light of corpuscularian theory. Given therefore corpuscularian theory, the quality distinction files, despite its "incompleteness", all the properties being contained in our ideas of bodies.

There is another striking aspect of the quality distinction. After having defined 'primary quality', this depiction of primary qualities virtually disappears in his further comments. Instead, primary qualities are portrayed as being real, as being in the things themselves and by their explanatory role in a theory about human mental representations of bodies. And these characterizations have turned out to be equivalent. It seems to me, the reason

for the disappearance of the defining portrayal of primary qualities is again Locke's leaning towards corpuscularian theory. According to this account, the only qualities which are real are primary, namely corpuscularian properties. Identifying primary qualities with corpuscularian features, it is natural for Locke to equate primary qualities with real qualities.

But having said all that, should one not expect Locke to define primary qualities as real properties in the first place instead of determining them as features all bodies have? This would indeed be the conceptually straight forward way, since in the subsequent passages Locke is interested in properties which are real, but not in features which are possessed by every body. However, Locke's train of argument affords first the notion of primary quality as he defines it and then the notion of real quality. On the basis of his definition Locke specifies first the set of primary qualities by his grain-of-wheat argument in §9. He then outlines a corpuscularian theory of sense perception which entails the assumption that corpuscularian properties are primary. Locke's depiction of corpuscularian properties as primary serves here as a premise to make intelligible a corpuscularian theory of perception. And it is thereby where corpuscularian properties acquire the feature of being real, since ideas of primary qualities and ideas of secondary qualities are said to be produced by bodies that are understood in terms of corpuscularian properties.

Of course, Locke could have disentangled his concepts by defining first primary and secondary qualities as real respectively non-real and by introducing subsequently the notion of a property being shared by all bodies to get his argument off the ground. However, Locke does not present his theory in this conceptually more matured form because he has corpuscularian theory before his eyes according to which real qualities are equivalent to the properties being possessed by every body. Yet, as the discussion of secondary qualities has revealed above, if pressed, Locke is prepared to concede that there might be other, yet unknown features which are real and in terms of which one has to explain secondary qualities.

One can add a further, critical remark in this context. Given Locke's definition of primary qualities, there might be none. For it is possible that smaller bodies have properties of a conceptual type which is not also instantiated by bigger bodies. In the extreme case, atoms might be conceptually conceived radically different than macrophysical objects. Again,

one sees that despite its theory neutrality the quality distinction is designed in the light of corpuscularian theory in the very end.

b. The Argument

Having clarified the quality distinction, we can move on to assess the argument. It has already been indicated, Locke develops the quality distinction in the context of his resemblance theory.²³² His topic is the assessment of which idea resembles the property that causes the idea (§7). As the reality doctrine has shown, the notion of being a real quality corresponds to his conception of an idea being a resemblance. A property is real if it is of the same conceptual type in terms of which bodies are depicted as being independently understood of the way the feature is mentally represented. An idea is a resemblance if the idea represents the property in the same terms in which the feature is portrayed as being independently grasped of the manner the idea represents the property. To come to grips with resemblance, Locke first clarifies his general use of 'idea' and 'quality' and then introduces 'primary quality' and 'secondary quality' (§§8-10). As we have seen, the quality distinction is drawn in the light of corpuscularian theory. Yet, the pair of concepts is neutral to or not part of the corpuscularian hypothesis. It is an epistemological distinction going along the lines of the resemblance status of ideas and the reality status of qualities. Moreover, while defining primary qualities, Locke presents the grain-of-wheat argument to establish corpuscularian properties as primary.

In §11 Locke maintains that we have to conceive bodies to interact by impulse when producing ideas in us: "§11. The next thing to be consider'd, is how *Bodies* produces *Ideas* in us, and that is manifestly *by impulse*, the only way which we can conceive Bodies operate in."²³³ Locke states thus a requirement for every plausible hypothesis of sense perception, namely that causal interaction between bodies and human minds has to be explained in terms of impulse. Of course, corpuscularian theory fulfills this requirement. As Rogers has pointed out, in the face of Newton's theory of gravitational forces, Locke

²³² Cp. 3a.

²³³ 135f, II.viii.11.

softened the original version (in the first three editions of the *Essay*) of this paragraph which had excluded the possibility that bodies could operate upon each in another way than by impulse.²³⁴ But although Locke allows implicitly from the fourth edition onwards (as just quoted) the existence of gravitation, the way gravitation works is for him still inconceivable.²³⁵ For him only the conception of impulse and motion makes comprehensible how bodies act upon each other. §11 sets thus the stage for the introduction of a corpuscularian theory of perception in §§12-13.

In §§12-13 a corpuscularian theory of the genesis of mental representations is outlined. Locke does not go into details just as he does not do in other passages as well.²³⁶ Apparently, for him it is sufficient to make intelligible the kind of explanation corpuscularians give. More specifically, Locke is interested in making plain that in a theory of perception features causing ideas of primary and of secondary qualities have to be understood in terms of (microphysical) primary qualities. In §§12-13 Locke focuses on primary qualities and on some sensible qualities, namely on colours and smells. §13 ends with the conclusion that ideas of colours and smells are in the same way not a resemblance as the idea of pain is.²³⁷ Given the advanced interpretation of resemblance and of the pain analogy, in §13 Locke simply concludes the dissemblance status of ideas of colours and smells from the non-reality status of colours and smells which they have according to the sketched corpuscularian theory of perception. Colours and smells are understood from the causal viewpoint in terms of primary qualities, i. e. in terms of other

²³⁴ Cp. §11 of the fourth edition with the first sentence of the first three editions: "The next thing to be consider'd, is how *Bodies operate* one upon another, and that is manifestly *by impulse*, and nothing else." Cp. Rogers (1978), 225f. But despite this change of views on Locke's side by Newton's natural philosophy, Locke might have influenced Newton's philosophical, or epistemological, views much more than is traditionally thought. Rogers argues this point in a series of interesting articles as to Newton's "methodological empiricism" and "epistemological empiricism". Cp. Rogers (1979), 195-205.

²³⁵ *Works* IV, 467f. Cp. Rogers (1978), 225f.

²³⁶ 133, II.viii.4f; 140, II.viii.22; 287, II.xxi.73; 547f, IV.iii.16.

²³⁷ Implicitly, Locke makes another point on dissemblance. According to the Aristotelian theory of sense perception, a quality affects the senses not by corpuscles, but by a form being specific for the property. Given Locke's corpuscularian account, however, no forms are involved in perception. Hence, there cannot be the alleged Aristotelian resemblance relationship between a secondary quality and its idea which is supposed to be intelligible in the light of a form which is transmitted from the quality to the mind. Cp. McCann (1994), 64.

concepts as the ones by which they are grasped as being represented by our ideas of colours and smells.

In §§14-15 Locke moves on to generalize his point. §14 contends that not only colours and smells but also other sensible qualities like tastes and sounds are non-real and have to be identified in terms of primary qualities from the explanatory perspective. In §15 Locke then concludes from the non-reality status of sensible qualities the dissemblance status of their ideas. Likewise, he deduces that ideas of primary qualities are resemblances. The subsequent paragraphs of II.viii highlight the principal claim that only ideas of primary qualities are resemblances and that ideas of sensible qualities - like the ideas of other secondary qualities - are dissemblances. As will be delineated, he thereby appeals to experiments, or everyday experience respectively, to undermine an Aristotelian theory of sense perception and of real qualities which thus serve as additional support for the corpuscularian account. And since Locke assumes consent that non-sensible secondary qualities are not real, in II.viii Locke's reasoning focuses clearly on sensible qualities. The aim of the argument is to refute the popular belief that sensible qualities are real and that our ideas of them are resemblances.²³⁸

On the basis of this argument in II.viii, Locke can easily assess our ideas of bodies in II.xxiii. Our ordinary ideas, Locke maintains, portray bodies mainly only by non-real features or respectively secondary qualities. Bodies, he contends, are primarily depicted by powers, namely by mediately perceivable secondary qualities or by sensible qualities.²³⁹ And since according to the argument not only mediately perceivable but also immediately perceivable or sensible qualities are non-real, we grasp bodies notably in terms of non-real properties. As Locke's remarks show, this is most obvious as to chemical substances where even form and bulk are disregarded for characterizing bodies.²⁴⁰ In other words, our everyday knowledge does not conceive bodies chiefly from the ideal epistemological-perspective, i. e. from the perception-neutral standpoint. This account of our knowledge is even more disillusioning if one considers that for Locke ideal knowledge of bodies would depict them not by macrophysical, but by microphysical primary qualities, i. e. by

²³⁸ 142, II.viii.25.

²³⁹ 317, II.xxiv.37.

²⁴⁰ 381, II.xxxi.8.

real essences.²⁴¹

Evidently, Locke's claims as to qualities and his corresponding contentions of resemblances are related to a corpuscularian-mechanical theory of bodies, their qualities, and our perception of them. But how is his reasoning exactly to be understood?

Importantly, one should distinguish between arguments relating to a general mechanical understanding of bodies and specific claims relating to corpuscularian theory. In §11 Locke asserts that a mechanical understanding of perception is the only kind of explanation at hand which makes the process of generating ideas or mental representations intelligible. One can conceive interaction between bodies and human minds only in terms of impulse. Moreover, this mechanical conception of perception can be spelled out differently, i. e. not only by corpuscularian theory. Similarly, given the simplicity of the grain-of-wheat argument, it effectively asserts that bodies can be comprehended only in terms of the mentioned corpuscularian properties, e. g. solidity. Every body, whether perceivable or not, has to be understood as having these features. And, again, the conception of bodies represents only a framework for a mechanical account of bodies which can be spelled out differently, since it leaves open how to comprehend the relationship between properties, the inner structure of bodies, etc. The thought experiment establishes effectively that in any mechanical account of bodies the mentioned properties are primary qualities. Thus, in §§9 and 11 Locke does not demonstrate Boyle's hypothesis. Instead, characterizing bodies in the only way we can conceive of them, the two arguments represent a general mechanical account of bodies and their relation to ideas. Locke's contentions about impulse as well as about corpuscularian features being primary qualities make up the only conceivable conception to grasp bodies in relation to our ideas of them, namely a general mechanical one.

Up to this point, it has only been asserted that *as a matter of fact* in §§9 and 11 Locke argues for a general mechanical account, not specifically for Boyle's hypothesis. But does Locke also view his claims in this way? Given the evident generality of the contention that bodies interact by impulse, Locke cannot believe that the claim establishes corpuscularian theory. As to the grain-of-wheat argument, Locke certainly echoes Boyle

²⁴¹ Cp. 10c.

who has previously used a similar reasoning in his corpuscularian theory to establish that bodies have to be conceived in terms of corpuscularian properties.²⁴² At first sight, one could therefore take the thought experiment to demonstrate Boyle's hypothesis. On the other hand, since for Locke the only conceivable conception of bodies is a mechanical one and since the thought experiment evidently determines only which features are primary, Locke need not to regard the argument as establishing corpuscularian theory in particular. Moreover, corpuscularian features coincide by and large with the set of physical properties which have generally been regarded as primary or explanatory basic in the mechanical tradition going back to Galileo.²⁴³ Thus, an argument that establishes corpuscularian features as primary qualities can likewise be seen as determining generally which properties have to be primary according to a mechanical account. More importantly and decisively, Locke seems to identify corpuscularian theory with more specific claims than that bodies interact by impulse or that corpuscularian properties are primary. He refers explicitly to corpuscularian theory more or less only when he outlines more specific theses of the hypothesis, e. g. that animal spirits transfer motion from the senses to the brain. Locke apparently identifies corpuscularian theory with its particular claims as to the details of the constitution of bodies and their causal interaction on the human senses. In this light, the grain-of-wheat argument serves to establish for any kind of mechanical account which features are primary.

²⁴² Boyle presents the following thought experiment in *The Origin of Forms and Qualities*: "[...] if we should conceive that all the rest of the universe were annihilated, except any [scil. any one] of these intire and undivided corpuscles ... it is hard to say what could be attributed to it, besides matter, motion (or rest), bulk, and shape. Whence by the way you may take notice that bulk, though usually taken in a comparative sense, is in our sense an absolute thing, since a body would have it, though there were no other in the world." Boyle (1772), III, 22. Locke's deviding of a grain of wheat, if continued, would eventually yield the same result, namely the set of properties which are ascribed to a single corpuscle.

²⁴³ Galileo (1968), VI, 347: „Per tanto io dico che ben sento tirarmi dalla necessità, subito che concepisco una materia o sostanza corporea, a concepire insieme ch' ella è terminata e figurata di questa o di quella figura, ch' ella in relazione ad altre è grande o piccola, ch' ella è in questo o quel luogo, in questo o quel tempo, ch' ella si muove o sta ferma, ch' ella tocca o non tocca un altro corpo, ch' ella è una, poche o molte, nè per veruna imaginazione posso separarla da queste condizioni; [...]". That is: „Whenever I conceive any material or corporeal substance, I immediately feel the need to think of it as bounded, and as having this or that shape; as being large or small in relation to other things, and in some specific place at any given time; as being in motion or at rest; as touching or not touching some other body; and as being one in number, or few, or many. From these conditions I cannot separate such a substance by any stretch of my imagination." Cp. Drake (1957), 274

Locke argues for a minimal account of bodies which represents the only way we can conceive of them, and signifies explicitly further claims as more doubtful hypotheses. But, as his identification of primary qualities with corpuscularian features shows, he tends to view a general mechanical account already in the perspective of Boyle's theory. If pressed, Locke would certainly maintain that the grain-of-wheat argument applies to any mechanical account. Yet, on the other hand, the thought experiment effectively determines primary qualities as those features which, in Locke's terms, Boyle has specified as real qualities. Thus, in Locke's comments there is a distinction between a general mechanical account, on the one hand, and corpuscularian theory which spells out this conception, on the other hand, but this distinction is not clear-cut. The reason apparently is that for him Boyle's hypothesis is unmatched. Corpuscularian theory is for Locke the most convincing, unrivaled mechanical theory. Speaking of a mechanical account of bodies, their qualities and their relation to ideas, is conceiving bodies in corpuscularian terms and properties. It is therefore natural for Locke to regard corpuscularian theory as the only conceivable account at hand and thus to treat qualities in accordance with Boyle's hypothesis.

In short, the two arguments in §§9 and 11 respectively establish a general framework for a mechanical theory of bodies and their relation to perception. He then fills out this account by the assumption of corpuscularian theory in §§12-13. For Locke a mechanical account is the only one providing us with a *scientific conception* of bodies which is best spelled out by the unmatched corpuscularian theory. This corresponds to the structure of the argument. After having advanced the grain-of-wheat argument and his claim as to impulse, Locke assumes explicitly the corpuscularian hypothesis to make intelligible how one has to understand perception in mechanical terms. Crucially, it shows up that there is no particular reasoning for corpuscularian theory itself.

In the same light, one has to read Locke's declarations that the programme of the *Essay* does not consist in scientific investigations, e. g. in developing a theory of sense perception. At various places, he distinguishes his epistemological project to determine the extent and origin of knowledge from natural philosophy. These remarks stand usually in connection with excursions into natural philosophy to ensure the reader that

his reasoning does not require a discussion of scientific questions.²⁴⁴ Given the use of corpuscularian theory in his argument, the punchline apparently is that Locke regards his analysis as not requiring a debate whether corpuscularian theory is really true. For Locke it is sufficient to argue for an outline of the only satisfying model making sense perception conceivable, namely a corpuscularian-mechanical one. This aim of the argument fits with Locke's contention that we can imagine secondary qualities to be explained in terms other than corpuscularian qualities, but that we do not have any conception of these other, unknown features. Since Locke does not present any argument why in *any* case the so-called secondary qualities are truly secondary, one might, however, regard Locke to be a bit dogmatic on this subject matter. Here Locke adheres to a characteristic claim of Boyle's corpuscularian theory, namely that sensible qualities and other dispositional properties are reducible. To sum up, Locke argues for his contentions about qualities by outlining a corpuscularian-mechanical account making plausible that his claims hold.

Moreover, Locke's comments on a corpuscularian-mechanical theory cannot mean to prove its truth. First, the grain-of-wheat argument serves only as a good reason for believing an hypothesis to be true, but not as a proof yielding knowledge. This becomes manifest in Locke's account of hypotheses. Analogies can only make plausible, but do not demonstrate the truth of hypotheses.²⁴⁵ This means, for Locke his analogy serves as strong evidence for the hypothesis that corpuscularian properties are primary. One should therefore not mistake Locke's thought experiment as a proof for the existence of corpuscularian properties and, eventually, of primary qualities. The aim of the grain-of-wheat argument is to make plausible that corpuscularian properties are features every body has.

Second, when saying that we cannot conceive bodies acting on our senses otherwise than by impulse, Locke just points out that we do not have any other conception of interaction and does not attempt to prove that bodies have to act on us by impulse. He should be understood in this way, since he concedes as to secondary qualities that they might have

²⁴⁴ 133, II.viii.4f ; 140, II.viii.22; 287, II.xxi.73; 547f, IV.iii.16.

²⁴⁵ 666f, IV.xxvi.12.

to be identified with properties other than corpuscularian features, namely with properties of which we do not have a conception.

Third, though corpuscularian theory provides the most convincing explanation, Locke calls in these and other passages the corpuscularian theory explicitly a hypothesis.²⁴⁶ Again, this is confirmed by and is in accordance with his theory of knowledge and hypotheses. Corpuscularian theory is a hypothesis whose truth is uncertain. This epistemic status of corpuscularian theory is not surprising, however, given Locke's mansided criticism of the theory. He points to the limitations of the explanatory power of corpuscularian theory with respect to: the cohesion of corpuscles which make up a compound, the acting of bodies on one another by impulse (not to speak of gravitational forces),²⁴⁷ and the causal interaction between mind and body.²⁴⁸ - All this indicates, when advancing corpuscularian theory, Locke assumes the most reasonable and available account of bodies to assess the reality status of qualities and the resemblance status of our ideas.

It becomes manifest why Locke presents only a sketch of corpuscularian theory. For, if a corpuscularian theory of perception is more or less the unrivaled hypothesis and if the reasoning cannot yield knowledge in the first place, one needs to delineate corpuscularian theory only to the extent that it becomes sufficiently conspicuous how the argument runs in principal, namely an argument establishing the reality doctrine and the resemblance theory on the basis of assuming corpuscularian theory. Given the alternatives, Locke has neither to delineate Boyle's hypothesis nor to justify it in detail.²⁴⁹

This leaves us with the two arguments which are supposed to demonstrate a mechanical framework for any account of bodies. Are they good? First, the grain-of-wheat argument is certainly far from being convincing even though Locke is in distinguished company, namely with Boyle.²⁵⁰ All bodies we perceive do not only have the corpuscularian

²⁴⁶ Cp. 136, II.viii.13: "Let us suppose at present, [...] [scil. the corpuscularian theory]". Cp. 547, IV.iii.16: Locke calls the corpuscularian theory the "corpuscularian Hypothesis".

²⁴⁷ For Locke, Newton's gravitational force is like a mystery for which one cannot even propose a hypothesis, i. e. which is inconceivable. Cp. *Works* IV, 467f. Cp. Rogers (1978), 225f.

²⁴⁸ Cp. 10e.

²⁴⁹ 139f, II.viii.22.

²⁵⁰ Boyle presents a similar thought experiment in *The Origin of Forms and Qualities*: "[...] if we should

properties Locke mentions but also sensible qualities, e. g. colours. If the analogy were sound, it would prove as well, for example, that colours are primary: since all perceivable bodies retain colour whatever change they undergo, every unperceivable body is coloured. Second, given Locke's belief that gravitation is inconceivable, it is natural for him to assume as a mechanist that impulse is the only conceivable manner in which bodies interact with human senses. Given Locke's historic context, his arguments and assumptions are certainly not inappropriate, but they are not satisfying either.

As indicated, Locke adds further reasonings to his main argument which, *pace* McCann, render implausible an alternative, Aristotelian account of perception and real qualities.²⁵¹

One can distinguish between four experiments, or types of everyday experience respectively, that are directed against Aristotelian theory and that thus supersede those passages in which Locke insists emphatically on sensible qualities being on par with non-sensible secondary qualities.²⁵² According to Aristotelian theory, at least as Locke conceives it,²⁵³ the perception of sensible qualities involves the communication of a substantial form, or a real quality respectively. As we have seen, a real quality is conceived as a property which bodies have from an explanatory viewpoint. Change in the perception of the features of a body indicates change of its constitution, i. e. of its properties, and change of the latter causes a corresponding change in perception. On this backdrop, one can naturally highlight §16, and §§19-21, as Heyd has shown.²⁵⁴

First, in §16 Locke argues that, depending on the distance, the same fire causes the idea of warmth and the idea of pain. This contradicts Aristotelian theory which implies that the

conceive that all the rest of the universe were annihilated, except any [scil. any *one*] of these intire and undivided corpuscles ... it is hard to say what could be attributed to it, besides matter, motion (or rest), bulk, and shape. Whence by the way you may take notice that bulk, though usually taken in a comparative sense, is in our sense an absolute thing, since a body would have it, though there were no other in the world." Boyle (1772), III, 22. Locke's deviding of a grain of wheat, if continued, would eventually yield the same result, namely the set of properties which are ascribed to a single corpuscle.

²⁵¹ McCann downplays the impact of Locke's considerations on the intelligibility of Aristotelian theory because he believes that the quality distinction is entailed in our notion or common sense understanding of bodies and their causality. Cp. McCann (1994), 65ff. According to McCann, the mentioned experiments "are not supposed to be decisive counterexamples to the Aristotelian theory of qualities". Cp. McCann (1994), 66.

²⁵² 137ff, II.viii.17f; 141f, II.viii.24f.

²⁵³ Cp. *Works*, IX, 215.

²⁵⁴ Heyd (1994), 19-27.

change of the idea of warmth to the idea of pain represents an alteration in the constitution of the fire. But the fire is the same, only our sensation of it changed because the perceptual conditions are different. Second, in §19 porphyry is said to cause sensations of colour when striking by light, but not to do so in darkness. Locke similarly presumes here that turning on or off the light does not alter the constitution of porphyry. Hence, this contradicts Aristotelian theory which implies that "real alterations are made in the *Porphyre*"²⁵⁵ because the change of perception is not explained by light, but by the transmission of real qualities. Third, in §20 Locke refers to the change of the sensible qualities of almonds when they are pounded. Here it is presupposed that pounding can only alter the physical structure of bodies, but not any Aristotelian real qualities. This contradicts Aristotelian theory which implies that the change in sensible qualities goes hand in hand with an exchange of sensible qualities *qua* real qualities, e. g. that there is privation of sweetness and acquisition of oiliness. By contrast, according to the corpuscularian story, there is only a change in texture, i. e. in the arrangement of corpuscles, but no process of privation and acquisition of real qualities. Fourth, in §21 the same water is described to cause different sensations of temperature (when one hand has been previously cooled), i. e. one hand feels warmth, the other one coldness. Given however Aristotelian theory, this implies that the same water has contrary properties which is impossible. From an explanatory perspective, water cannot be both cold and warm, if both properties are taken as real qualities.

In turn, the experiments represent empirical support for a corpuscularian account of sense perception and real qualities since it can convincingly explain the phenomena, as Locke makes plain. On the other hand, the appeal to everyday experience is of course no conclusive evidence for the truth of corpuscularian theory. But given the alternatives, the corpuscularian account is clearly established as the only conceivable explanation.

To conclude, the issue of Locke's theory of qualities is to assess qualities contained in our ideas of bodies from a perception-neutral perspective. This is his philosophical programme. The quality distinction is designed as part of a conceptual framework for an ultimate, scientific account of bodies and their properties. Locke's notions of qualities are

²⁵⁵ 139, II.viii.19.

not part of corpuscularian theory. Yet, Boyle's hypothesis illustrates the quality distinction and, more importantly, makes it intelligible, as the conceptual gap between primary and secondary qualities has revealed. McCann is therefore wrong to take Locke to advance a distinction that simply reflects our common sense conception of bodies and their causality.²⁵⁶ In fact, McCann's view introduces incoherences into Locke's argument since, according to him, the common sense view of sensible qualities is that they are real. On the contrary, the topic of resemblance and of real qualities, and thus of the quality distinction, relates to an explanatory account of bodies, their properties, and our perception of them. Moreover, it becomes manifest that Locke does not genuinely intend to develop an argument for corpuscularian theory. *Pace* Alexander, the *Essay* is not a grand epistemological argument for Boyle's theory by showing that the assumption of the hypothesis leads to an adequate and plausible account of our everyday experience.²⁵⁷ True, Locke does claim that corpuscularian theory coheres with or, perhaps, even naturally grows out of everyday experience, and that it is intelligible on a general mechanical backdrop which is argued for. But notwithstanding the corpuscularian hypothesis is assumed as a premise to establish epistemological claims as to the reality status of qualities and corresponding contentions of the resemblance status of ideas. And for this reason only Boyle's hypothesis is justified in the light of a general mechanical conception of bodies and everyday experience. The issue of Locke's analysis that our ideas portray bodies mainly by non-real features is an epistemological claim which is rendered

²⁵⁶ Cp. McCann (1994), 65ff. McCann (1994), 66f: "On this view of Locke's arguments, the distinction between primary and secondary qualities is [...] a natural consequence of the ways we ordinary people think of the world, for better or worse."

²⁵⁷ Alexander (1985), 7: "I believe this form of argument figures largely in Locke's *Essay*, in particular, in the way in which it uses the corpuscular hypothesis: if an account of our everyday experience and description of the world based on the best available scientific hypothesis were adequate and plausible then this would provide powerful indirect support for that hypothesis."

plausible by corpuscularian theory.

Part II

NAMES, SPECIES, AND ESSENCES

Introduction

As Locke declares, he had to discover in the course of writing the *Essay* that an assessment of human knowledge affords a systematic, separate analysis of the role which words play.²⁵⁸ Locke therefore conceives the third book of the *Essay* on language as an important part of his overall epistemological programme. This epistemological outlook manifests in Locke's focus on general terms and universal propositions, since for him knowledge of the latter is the kind of knowledge which, in principle, enlarges our understanding at most since it relates to many particulars at once.²⁵⁹ On first sight, however, one cannot discern an epistemological issue. The first step of Locke's argument is the development of a positive account of general terms which determines their signification and the nature of the species they denote. On this backdrop, he subsequently assesses the so-called

²⁵⁸ 401, II.xxiii.19.

²⁵⁹ 578, IV.v.10.

imperfections and abuses of words. Finally, Locke proposes a use of general terms which takes into account their imperfection and abuses. But what is the epistemological issue underlying the comments on names of bodies?

Generally speaking, I will argue that Locke advances his account to establish partly, or at least to pave the way for, his contemporary conception of a science of bodies. As will first be contended, the aim of the account of species and their essences is not simply to substitute his own views for Aristotelian ones. Rather, Locke primarily intends to make plain that contemporary classifications of bodies are far from being an ideal scientific sorting (cp. chapter 6), irrespective of whether they are Aristotelian or Lockean schemes.

This argument will be underscored by a radical re-interpretation of Locke's notion of real essence (cp. chapter. 7). In the light of previous results as well as of further aspects, 'real essence' is understood to be part and parcel of an ideal scientific classification. Given the "omnipresence" of the concept, this reconstruction has considerable impact on Locke's overall argument, especially on his theory of knowledge as we will see in part three.

This classificatory issue is further deepened and complemented by Locke's disclosure of the imperfection and abuses of names of bodies (cp. chapter 8). Locke attempts here to reveal important Cartesian and Aristotelian notions and connected knowledge claims as being based on an improper use of terms. These concepts are central for a Cartesian and Aristotelian science of bodies so that Locke's analysis adds up to a refutation of their conceptions of a science of bodies. Considering the influence which Cartesian and Aristotelian views enjoyed in Locke's time, his rejection is a remarkable attempt to annihilate these competing theories at once and all together on purely linguistic grounds. This is also the aspect of the epistemological programme which Locke most strongly emphasizes. As he declares in the *Epistle to the Reader*, he attempts to expose alleged "deep Learning, and heighth of Speculation" as the "frivolous use of uncouth, affected, or unintelligible Terms" and as "[v]ague and insignificant Forms of Speech, and Abuse of Language".²⁶⁰ Locke likewise intends to highlight that language leads naturally to false knowledge claims and fruitless debates: "[t]he greatest part of the Questions and Controversies that perplex Mankind [depend] on the doubtful and uncertain use of

²⁶⁰ Epistle, 10.

Words".²⁶¹ In this sense, the language critic is supposed "[to remove] some of the Rubbish, that lies in the way to Knowledge".²⁶² That is, Locke attempts to open the path for true knowledge by destructing wrong theories in the light of his analysis of language. And as we will see, Locke is indeed interested in the defects of language use virtually only in so far as they obstruct the enhancement of our scientific grasp of bodies.

On the backdrop of this dismissal of abuses, obscure notions, and untenable knowledge claims, Locke recommends a use of words in connection with his own theory of names, species, and essences. In fact, this account already establishes essential aspects of the kind of science of bodies which Locke approves. That is, the analysis of language paves the way for a conception of science which is developed and justified in the fourth book on knowledge. It thus becomes plain that the programme of Locke's argument on names of bodies is an analysis of their signification and usage in order to establish a specific conception of a science of bodies and to bury alternative ideas. The issue is what a science of bodies can and should consist in.

But despite Locke's rhetorical stress on the "ill use of words", one should not misconceive his account in two ways. First, the core of the argument is accomplished in the positive account of names, species, and essences. For Locke characterizes here the signification of names of bodies which will then serve in later parts as the basis of the reasoning. Locke's criticism of alternative theories as being rooted in abuses of words therefore explains, strictly speaking, only the source of what goes wrong in the opponent's reasoning. Second, for Locke language is not only a natural source for obstructions of knowledge, but also an indispensable means to establish comprehensive knowledge. Language is conceived as essential for the progress of knowledge because it is a crucial instrument for thinking and for the communication of thought.²⁶³ The use of words thus makes it possible to enlarge human knowledge in the first place. Accordingly, one has to

²⁶¹ Epistle, 13.

²⁶² Epistle, 10.

²⁶³ 476, III.ix.1ff.

conceive Locke's pronounced language critic and his suggestions of how to use words in scientific discourse: the use of words is necessary for the systematic advancement of knowledge - but to achieve progress one has to use them in the right way.

6. Species and Essences

In his comments on general terms, Locke proposes a theory of classification, namely an account of what species are. He raises two chief claims with respect to sorts of bodies. First, species are determined by nominal essences and not by real essences. Second, nominal essences are made by men, not by nature. Locke thus puts forward a theory of, first, the criteria by which species are determined and, second, how in turn these criteria are determined. Moreover, the account is levelled at sorts to which speakers referred at his time by either scientific or common terms. This becomes plain partly by his examples and partly by remarks indicating that the sorts he speaks of are neither identical with nor equivalent to species representing an ideal scientific classification of bodies.

In this way, the topic that the classification scheme being entailed in “our” concepts is not an ideal scientific one is evidently present in his comments on species and their essences like in many other parts of the *Essay*. This is also the dominant view amongst commentators, since one usually agrees that for Locke one ideally sorts bodies in accordance to properties of the explanatory, microphysical stage.²⁶⁴ My point will however be that this topic is not more or less loosely linked to the reasoning on species and essences as it seems to be on the face of Locke’s remarks. Rather, his comments are manifestations of an issue overarching the two main arguments: in his chapter on the names of substances, Locke aims at demonstrating that prevailing classification schemes principally differ from an ideal scientific scheme. That is, contemporary classifications are neither identical with nor even equivalent or analogous to an ideal scheme. This is a crucial step forward for Locke’s programme, since the assessment of our everyday species implies the refutation of the Aristotelian science of bodies and the foundation or conception of an alternative corpuscularian one. As will become plain in chapter eight,

²⁶⁴ This view is usually expressed by saying that, according to Locke, bodies are ideally sorted by their real essences. Cp. Ayers (1970), 39; Mackie (1975), 100. Yolton concedes that Locke’s views entail that, in my words, an ideal science of bodies depicts them by real essences, but insists that Locke himself is not able to see this. Cp. Yolton (1970), 33.

on the backdrop of his theory of species and their essences, Locke can reveal Aristotelian knowledge claims as unintelligible and being based on an untenable abuse of words.²⁶⁵ To reconstruct content and force of Locke's own view on species, it is sufficient to focus on those parts of his reasoning which directly argue for his two chief contentions. We will therefore set aside the various other strands, e. g. objections raised against alternative accounts of species like Aristotelian theory which attempt to show its unintelligibility as an explanatory account,²⁶⁶ although we will touch on some of them in the present and the following chapters as well.²⁶⁷ The key will be an adequate comprehension of what real essences are in this context. The interpretation thus proceeds as follows. The backdrop of both arguments is Locke's view on the signification of general terms which will therefore be highlighted first and what can be done straight forwardly since they are well known. Subsequently, the first argument will be assessed and then the second one, since the latter is based on the result of the former. On this backdrop, I will argue that Locke's grasp of his two key concepts, namely the distinction between nominal and real essences, shows that his theory of the species of bodies assesses our ordinary species in the perspective of ideal scientific sorts. An appropriate understanding of Locke's claim that species are made by man and not by nature will thereby serve as the key to disclose his account.

a. Locke's General Semantic Views

Norman Kretzmann²⁶⁸ has rightly identified the main thesis of Locke's semantic theory as the claim that, by and large,²⁶⁹ a general term stands immediately for an abstract idea: "The use then, of words, is to be sensible marks of ideas; and the ideas they stand for are their proper and immediate signification".²⁷⁰ Moreover, since an abstract idea represents

²⁶⁵ Cp. 8c.

²⁶⁶ Cp. especially 448f, III.vi.14-20.

²⁶⁷ Cp. 7d-e.

²⁶⁸ Kretzmann (1968), 124.

²⁶⁹ 404ff, III.ii.1ff. Some general terms are said to signify the absence of ideas, however. Cp. 133, II.viii.5; 403, III.i.4. Moreover, not all signs being words stand for ideas. The so-called particles signify relations between ideas. Cp. 471ff, III.vii.

²⁷⁰ 405, III.ii.1. Cp. 405, III.ii.2. Consequently, if parrots use words, Locke does not conceive them to have any

the entities being depicted by the idea, a general term is likewise conceived to signify the entities being represented by the idea for which the word stands.²⁷¹ As Locke explains, since an abstract idea can portray various entities due to its abstractness or generality, a general term signifies a class of entities: “That then which general Words signify, is a sort of Things; and each of them does that, by being a sign of an abstract *Idea* in the mind, to which *Idea*, as Things existing are found to agree, so they come to be ranked under that name; or, which is all one, be of that sort”.²⁷²

This understanding of the signification of general terms manifests Locke’s general comprehension of the relationship between language, thought and world which was common at his time and conceived to be maintained by Aristotle.²⁷³ Language signifies thought, and thought refers to, or represents, the world. Words gain semantic content in virtue of their relationship to thought. This is manifest in Locke’s claim that words, if taken by themselves, do not signify anything and do so only if they are related to ideas.²⁷⁴ There is no “natural connexion”²⁷⁵ between words and entities in the world. A connection is only established by a conventional nexus between a name and an idea. Thus words refer to entities in the world in virtue of these entities being referred to by thought: “[...] this abstract *Idea*, being something in the Mind between the thing that exists, and the Name that is given to it; [...]”.²⁷⁶ In this sense, words refer only indirectly to the world, namely via thought. And this relationship is expressed by Locke when he explains the reference or extension of a general term by the class of entities which the idea represents that is signified by the word.

There has been a recent debate of what Locke means by the primary signification of a

reference or meaning, since they are not used as signs standing for ideas. Cp. 402, III.i.1f. But this is likewise the case when people use words without a definite primary signification, i. e., roughly speaking, without knowing their meaning. Cp. 407f, III.ii.7; 614, IV.viii.7.

²⁷¹ 414, III.iii.11f.

²⁷² 414, III.iii.12. Consequently, if parrots use words, Locke does not conceive them to have any reference or extension, since they are not used as signs standing for ideas and can therefore not denote entities. Cp. 402, III.i.1f. But this is likewise the case when people use words without a definite primary signification, i. e., roughly speaking, without knowing their meaning. Cp. 407f, III.ii.7; 614, IV.viii.7.

²⁷³ Cp. Ashworth (1984), 56 and 62.

²⁷⁴ 405, III.ii.1.

²⁷⁵ 405, III.ii.2; 408, III.ii.8.

²⁷⁶ 386, II.xxxii.8.

term. Clearly, he identifies an idea as the primary signification of a general term. But what does this mean? Traditionally, Locke is conceived to assert a theory of meaning in the sense that he determines the extension of a word as the idea being signified by the term.²⁷⁷ Several commentators have however attempted to revise this view, proposing different alternatives. To come to grips with the issue, I begin with E. J. Ashworth.

Ashworth makes two important points by highlighting aspects of Locke's main thesis in connection with a medieval discussion. As she argues, in saying that ideas, and not entities in the world, are the primary signification of words, Locke takes sides in a medieval discussion of how to determine the relationship between language, thought, and world, i. e. an adequate order of priority amongst words like categorematic terms, abstract ideas, and classes of entities.²⁷⁸ Locke's contention that words primarily signify ideas is simply the claim that words denote entities in the world only by means of ideas.²⁷⁹ This manifests in his argument that words, if taken by themselves, signify nothing, i. e. that words do not refer to anything if they are not related to ideas,²⁸⁰ and that the extension of a term is the class of entities being represented by the idea that is signified by the word.²⁸¹ Ashworth's second major point is likewise correct that Locke does not assert that words denote ideas and not entities in the world. Locke is rather in line with the medieval standard view that entities are the extension of terms irrespective of whether they primarily signify ideas or entities.²⁸² This becomes evident in Locke's claim that words signify ideas only in order to denote entities: "[...] our Words signifie nothing but our *Ideas*, yet being designed by them to signifie Things [...]"²⁸³

Ashworth however sees an even stronger affinity between Locke's account and the medieval topic with the result that Locke's main thesis does not concern meaning.

²⁷⁷ Cp. Alston (1964), 22; Bennett (1971), 27; O'Connor (1967), 131.

²⁷⁸ Ashworth (1984), 62 and 64.

²⁷⁹ Ashworth (1981), 324f.

²⁸⁰ 405, III.ii.1. Correspondingly, according to Locke, parrots use words without any meaning because their terms do not stand for ideas. Cp. 402, III.i.1f. But this is likewise the case when people use words without a definite primary signification, i. e., roughly speaking, without knowing their meaning. Cp. 407f, III.ii.7; 614, IV.viii.7.

²⁸¹ 414, III.iii.12.

²⁸² Ashworth (1984), 62; Ashworth (1981), 322 and 325.

²⁸³ 577, IV.v.8.

‘Primary signification’, she claims, adds up to the medieval concept ‘*significatio*’ which is the central concept of the mentioned medieval discussion. Accordingly, she takes Locke’s primary signification of a word to be what the term makes known.²⁸⁴ In this sense, she says, a word can make known either concepts or entities in the world (or both). She thus distinguishes Locke’s primary signification from the reference and the meaning of terms, i. e. from their extension and intension. Moreover, on the backdrop of her conception of meaning as what is given in a definition or translation,²⁸⁵ she turns to Locke’s explanations on definition and identifies the meaning of a general term with a “series of simple ideas”.²⁸⁶ The result is that not Locke’s main thesis, but his explanation of definition is about meaning.²⁸⁷

Michael Losonsky convincingly destructs Ashworth’s argument in this respect.²⁸⁸ In a nutshell, she conflates a theory of meaning with a theory of definition and reads the medieval notion of *significatio* into Locke’s concept of signification.²⁸⁹ He rather highlights Locke’s comments in connection with contemporary discussions relating to communication and linguistic meaning.²⁹⁰ According to him, this shows that Locke’s notion of ‘primary signification’ and his main thesis concern likewise linguistic meaning. Losonsky thus supports Kretzmann’s interpretation that Locke’s distinction between immediate and mediate signification corresponds to the modern distinction between intension and extension, i. e. between meaning and reference.²⁹¹

In principle, I join Kretzmann as well. There are two contexts in which an idea *qua* primary signification of a term is conceived as its meaning or intension. First, in Locke’s explanation of definition an idea *qua* primary signification is depicted as a set of features

²⁸⁴ Ashworth (1984), 60-64; Ashworth (1981), 310f. Ashworth enlarges on the scholastic background of Locke’s theory of words in the earlier article. She however concedes that it is difficult to pinpoint Locke’s knowledge of the medieval discussion. Cp. Ashworth (1981), 303f. This difficulty is also manifest in J. R. Milton’s effort to identify scholastic authors with whose work Locke was acquainted. Cp. Milton (1984).

²⁸⁵ Ashworth (1981), 311.

²⁸⁶ Ashworth (1981), 325f.

²⁸⁷ Ashworth (1981), 326.

²⁸⁸ Losonsky (1994), 124-130.

²⁸⁹ Losonsky (1994), 125 and 141.

²⁹⁰ Losonsky (1994), 130-141.

²⁹¹ Kretzmann (1968), 131f. Cp. Yolton (1970), 210 and 215.

comprising the meaning of a word: “For Definition being nothing but making another understand by Words, what *Idea*, the term defined stands for, a definition is best made by enumerating those simple *Ideas* that are combined in the signification of the term Defined: [...]”.²⁹² Of course, like in many other contexts, simple ideas are here understood as properties; for Locke does certainly not intend to make the daring claim that in a dictionary a general term is defined by a list of simple ideas *qua* intentional objects. Second, in connection nominal essences an idea *qua* primary signification is also comprehended as a set of features comprising the meaning of a term. As will shortly be delineated, the nominal essence of a species is for Locke the set of properties determining kind-membership. Locke thereby identifies a nominal essence with the abstract idea that is signified by the term which denotes a species. Thus, in this context an abstract idea is identified with its content. If one therefore understands the meaning or intension of a term to be the kind of characterization which a speaker knows, if he or she knows its meaning, and which a speaker uses to establish the reference of the word or respectively that determines its extension, an idea *qua* primary signification is here the intension or meaning of a general term.

However, in other contexts ideas *qua* primary significations are intentional objects or intentional states respectively. In other words, ideas are linked to mental states as being their content: “[...] *Words in their primary or immediate Signification, stand for nothing, but the Ideas in the Mind of him that uses them* [...]”.²⁹³ This also manifests in Locke’s comments on communication which are centred around the claim that a speaker can only attempt to convey the primary signification he or she attaches to a word since other people do not have direct access to the idea of the speaker.²⁹⁴ That is, the root of Locke’s issue of communication is the “mental privacy” of the primary signification which a speaker attaches to words when using them.²⁹⁵ Moreover, as we have seen, it is crucial for Locke that ideas *qua* primary signification are *intentional* objects, i. e. the content of *mental* representations, in order to explain the reference or extension of a general term. A

²⁹² 413, III.iii.10.

²⁹³ 405, III.ii.2.

²⁹⁴ 408, III.ii.8; 409, III.iii.2; 476f, III.ix.3ff.

²⁹⁵ Cp. Brandt and Klemme (1997), 170.

word denotes the class of entities being represented by the signified abstract idea. It is therefore not unimportant that Lockean primary signification is not simply a set of features, but the set of features that is included in a mental representation.²⁹⁶

From Locke's perspective, there is of course no big difference between ideas *qua* sets of features determining the reference of general terms and ideas *qua* intentional objects determining the reference of words, since the features characterize the intentional objects. One intentional object is distinct from other ones in virtue of the properties characterizing it. In his comments on semantics, e. g. on communication, Locke can thus easily move back and forth between the intentional object that is signified by a term to its meaning. In this sense, one has to pay attention not to read modern distinctions too readily into Locke where he does not attempt to make any.²⁹⁷ To conclude, Locke's comments include a theory of meaning in two important respects. The reference or extension of a general terms is identified with the class of entities in the world that are represented by the idea being signified the word; and the meaning or intension of a term is said to be the set of properties being the content of the idea that is signified by the word. Locke's comprehension of species is closely attached to his account of words. According to him, a species is commonly understood as the class of entities which is signified by a general term: "[for an entity] to be of any Species, and to have a right to the name of that Species, is all one".²⁹⁸ Given this grasp of 'species', Locke can directly deduce from his view on the meaning of general terms that a species is the class of entities being represented by the idea which is signified by the word.²⁹⁹ The topic of species therefore is

²⁹⁶ The here defended account clearly differs from the Landesman's interpretation, since he rejects Kretzmann's reading. Cp. Landesman (1976), 24 and 34f. However, I am not sure about the root of the disagreement since I am not clear about the ontological status which according to Landesman ideas have *qua* intentional objects: "Ideas in the required sense are themselves outside the mind; they are not private mental entities; they are intentional objects, things conceived and thought of"; "Ideas as immediate significations are things in so far as they are conceived of. Things signified and things immediately signified are the same things." Cp. Landesman (1976), 34 and 33.

²⁹⁷ Having said that, one could agree with Lowe in so far that ideas *qua* primary significations do also serve for Locke to express thought. Yet, I disagree with him that this is the sole or primary conception of primary signification. Cp. Lowe (1995), 144-49.

²⁹⁸ 414f, III.iii.12. Cp. the footnote after the next one.

²⁹⁹ 414, III.iii.12: "That then which general Words signify, is a sort of Things; and each of them does that, by being a sign of an abstract *Idea* in the mind, to which *Idea*, as Things existing are found to agree, so they come

not only confined to bodies (and spirits), but relates to sorts of any kind of entities. Yet, as his comments show, the issue of species especially arises with respect to bodies, since he regards the topic to be only controversial there.³⁰⁰

Locke similarly determines the essence of a species. According to him, the essence of a species is commonly understood as “[what] makes any thing to be of that Species”.³⁰¹ In other words, the essences of species are what determines kind membership. And since species are classes of entities being signified by a name, Locke’s notion of essences implies that essences are ascribed to entities only if they are denoted by a name. Given this understanding of ‘essence’, Locke can again easily infer from his previous conclusion (namely, that a species is the class of entities being represented by an idea which is signified by a name) that the essence of the sort is the abstract idea.³⁰² That is, Locke derives from his comprehension of ‘species’, of the signification of general terms and of ‘essence’ that the essence of a species is the abstract idea being signified by the respective term. To say that essences are abstract ideas, of course, is effectively an identification of essences with the sets of features which are the content of ideas. For the possession of

to be ranked under that name; or, which is all one, be of that sort.”

³⁰⁰ Locke conceives this result as a deviation from the traditional, Aristotelian view, namely that ‘species’ does not apply to entities other than substances like bodies. Cp. 462f, III.vi.38; 465, III.vi.41. On the other hand, Locke does not regard himself as modifying an existing concept, but rather as elucidating an old concept anew and aright. This becomes evident when he blames the Aristotelians to have misconceived the issue of species in an unintelligible way. Cp. 573, IV.iv.17. For Locke, the fundamental meaning of ‘species’ is the class of entities which a general term signifies and which thus is represented by the abstract idea being signified by the name. Cp. 414, III.iii.12; 462f, III.vi.38f.

³⁰¹ 414, III.iii.12. Locke again regards the given explication as simply reporting the common meaning of the word in question, namely of ‘essence’, as his remarks on ‘nominal essence’ show: “And this we shall find to be that, which the Word *Essence* imports, in its most familiar use”. Cp. 417, III.iii.15. Cp. also 440, III.vi.4. Substituting the Aristotelian understanding of essences by his own one is therefore correcting a false conception of what essences are. Similarly, Locke conceives his explication of ‘real essence’ as elucidating another, but less widespread use of ‘essence’. Cp. 417, III.iii.15.

³⁰² 414f, III.iii.12: “That then which general Words signify, is a sort of Things; and each of them does that, by being a sign of an abstract *Idea* in the mind, to which *Idea*, as Things existing are found to agree, so they come to be ranked under that name; or, which is all one, be of that sort. Whereby it is evident, that the *Essences of the sorts, or* (if the Latin word pleases better) *Species of Things, are nothing else but these abstract Ideas.* For the having the essence of any Species, being that which makes any thing to be of that Species, and the conformity to the *Idea*, to which the name is annexed, being that which gives a right to that name, the having the *Essence*, and the having that *Conformity*, must needs to be the same thing: Since to be of any Species, and to have a right to the name of that Species, is all one.”

these sets determines whether an entity is represented by an idea, i. e. whether an entity is member of the species represented by the idea.

After having established this result in the chapter on general terms, Locke moves there on to distinguish between two different meanings of 'essence'. He calls essences determining kind membership nominal essences and distinguishes them from so-called real essences.³⁰³ We turn to the notion of real essence in the next chapter, but a provisional understanding as to the real essences of bodies is helpful for what follows. Locke maintains that people conceive the real essences of bodies in two different ways, namely in an Aristotelian and in a corpuscularian one.³⁰⁴ Locke highlights the former one in connection with the Aristotelian doctrine of forms and comprehends the latter ones as sets of microphysical properties in terms of corpuscularian primary qualities. For Locke, bodies do not possess Aristotelian real essences, but corpuscularian real essences. Aristotelian real essences are even unintelligible according to him.³⁰⁵

b. The First Argument

We have seen, in the light of his theory of meaning Locke elucidates what he takes to be our common notions of essences and species.³⁰⁶ Locke is interested in this because it has tremendous impact on a theory of our classification of bodies. The immediate upshot is that the abstract idea, i. e. nominal essence, determines which entities belong to the sort being depicted by the idea. In the chapter on the names of substances, Locke can thus easily decide whether bodies are sorted in species in virtue of nominal essences or real

³⁰³ 417, III.iii.15.

³⁰⁴ 417f, III.iii.17. Cp. 7c.

³⁰⁵ 380, II.xxxi.6; 418, III.iii.17; 448f, III.vi.14-20.

³⁰⁶ Similarly to 'species' and 'essence', Locke explains the notion of a property being essential to an entity. A feature, he argues, is commonly said to be essential to an entity in the sense that it belongs to an entity *qua* being the member of a sort (440, III.vi.4). This means, if a property is part of a species's nominal essence, the feature is essential to the entity in virtue of being specimen of the sort. That is, a property is essential to an entity always with respect to its being member of a species. In no other way, Locke insists, a feature is essential for an entity. For if one does not conceive an entity with respect to its membership of a species, all properties are equally essential to the entity or respectively are not essential to the entity at all (440ff, III.vi.4-6).

essences, given his presupposition of what is true for him past doubt, namely that ideas do not include real essences - no matter what real essences precisely are. For, since Locke believes that one can easily become aware of the fact that general terms signify an abstract idea representing a sort of entities by properties not being real essences and since he regards his analysis of 'species' and 'essence' as elucidating common notions, from his perspective the argument consists in a simple analysis of how we talk about entities belonging to species. Consequently, when Locke examines the question, whether real or nominal essences determine the boundaries of species, his answer is clear-cut:

“§7. The next thing to be considered is, by which of those Essences it is, that *Substances are determined into Sorts, or Species*; and that 'tis evident, is *by the nominal Essence*. For 'tis that alone, that the name, which is the mark of the Sort, signifies. 'Tis impossible therefore, that any thing should determine the Sorts of Things, which we rank under general Names, but that *Idea*, which that Name is design'd as a mark for; which is that, as has been shewn, which we call the *Nominal Essence*. [...] And I desire any one but to reflect on his Thoughts, when he hears or speaks any of those, or other Names of Substances, to know what sort of *Essences* they stand for.”³⁰⁷

Locke supplements this main argument by further objections against the possibility that real essences determine species. But given Locke's straight forward view, these reasonings can only be meant to make plain why real essences do *really not* specify sorts. His arguments are of many kinds. One objection often raised is that bodies cannot be classified into species in virtue of their real essences because we do not know them, i. e. since we do not have ideas of them.³⁰⁸ This reasoning is effectively equivalent to his main argument where he presupposes that our ideas do not include real essences. And as long as one grants Locke our ignorance of real essences, this reasoning applies whether one conceives real essences in corpuscularian or Aristotelian terms. By contrast, other objections seem to be directed rather against either corpuscularian or Aristotelian real essences since in these passages Locke depicts real essences in terms of corpuscularian internal constitutions or Aristotelian forms.³⁰⁹ But since it is Locke's main argument that establishes his view that

³⁰⁷ 443, III.vi.7. Cp. 447f, III.vi.13; 452, III.vi.24.

³⁰⁸ 442, III.vi.6; 444, III.vi.9.

³⁰⁹ For instance, 443f, II.vi.8f and 445, II.vi.10.

bodies are sorted in virtue of nominal essences not being equivalent to real essences, I will not go into the details of his objections against the claim that bodies are sorted as to Aristotelian or corpuscularian real essences. We will however reconstruct two objections as to corpuscularian real essences in the next chapter when discussing Locke's notion of (corpuscularian) real essences.³¹⁰

c. The Second Argument

After having established in the chapter on the names of substances that we sort bodies in virtue of nominal essences which are not real essences, Locke asks there whether nominal essences are made by men or by nature. What does he mean by that? One passage in the chapter on general terms suggests that to say nominal essences are made by men simply means that nominal essences are made by men in virtue of being abstract ideas which are generated by the mind of human beings.³¹¹ In this sense, a nominal essence is obviously the "Workmanship of the Understanding",³¹² given Locke's theory of essences and ideas. However, the more detailed explanations in the chapter on the names of substances show that Locke has a far more complex thesis in mind. The issue is to understand aright our everyday classification of bodies in the perspective of an ideal scientific one.

The main thrust of the argument is to refute that there are "precise and *unmovable Boundaries*" classifying bodies in species, being "*made by Nature, and established by Her amongst Men.*"³¹³ Nominal essences, Locke insists, are not "exactly copied from precise Boundaries set by Nature, whereby it distinguish'd all Substances into certain *Species.*"³¹⁴ To speak simply of precise boundaries set by nature, may seem vague; but this is no lack of clarity on Locke's side, since he finds this position unintelligible, as his criticism of the

³¹⁰ Cp. 7d-e.

³¹¹ 415, III.iii.12.

³¹² 415, III.iii.12.

³¹³ 454, III.vi.27.

³¹⁴ 454, III.vi.27.

Aristotelian theory of forms shows.³¹⁵ The punchline of Locke's dismissal of precise, unmovable boundaries becomes plain, if one draws on Locke's own positive account where he spells out what he means by saying that nominal essences are made by men. After having repeatedly argued for his view, Locke makes a stock-taking in §§36 and 37:

“§36. This then, in short, is the case: *Nature makes many particular Things, which do agree one with another, in many sensible Qualities, and probably too, in their internal frame and Constitution: but 'tis not this real Essence that distinguishes them into Species; 'tis Men, who, taking occasion from the Qualities they find united in them, and wherein, they observe often several individuals to agree, range them into Sorts, in order to their naming, for the convenience of comprehensive signs; under which individuals, according to their conformity to this or that abstract Idea, come to be ranked as under Ensigs: so that this is of the Blue, that the Red Regiment; this is a Man, that a Drill: And in this, I think, consists the whole business of Genus and Species.*

§37. I do not deny, but Nature, in the constant production of particular Beings, makes them not always new and various, but very much alike and of kin one to another: But I think it is nevertheless true, that *the boundaries of the Species, whereby Men sort them, are made by Men; since the Essences of the Species, distinguished by different Names, are, as has been proved, of Man's making, and seldom adequate to the internal Nature of the Things they are taken from. So that we may truly say, such a manner of sorting of Things, is the Workmanship of Men.*”³¹⁶

Locke outlines the following picture. Humans generate ideas of bodies in virtue of their experience, i. e. they make ideas comprising a set of properties on the macrophysical level. These ideas or nominal essences respectively distinguish bodies into species. True, Locke concedes, there are similarities amongst bodies on the microphysical level: bodies “*do agree with another [...] in their internal frame and Constitution*”. Yet, he insists, we do not sort bodies in virtue of these microphysical similarities, i. e. (corpuscularian) real essences: “*but 'tis not this real Essence that distinguishes them into Species*”. Rather, it is one's collections of experienced sets of properties on the macrophysical stage, i. e. one's ordinary nominal essences, which determine species: “*'tis Men, who, taking occasion from the Qualities they find united in them, and wherein, they observe often several individuals to agree, range them into Sorts*”. This means, Locke maintains that species are

³¹⁵ 457, III.vi.30.

³¹⁶ 462, III.vi.36.

not sorts classifying bodies in virtue of their (corpuscularian) real essences.

As we have just seen in connection with §36, Locke calls the kind of microphysical similarities, which he speaks of in this context, the real essences of specimens. In §37 Locke insists again on his view. Importantly, he claims there that “the Essences of the *Species, whereby Men sort them (scil. substances), [...] are [...] seldom adequate to the internal Nature of the Things they are taken from.*”³¹⁷ Given the nexus to §36, this means on the face of it that our ordinary nominal essences do not sort bodies in accordance to their real essences in the sense that they do not classify bodies in correspondence to their microphysical similarities. Thus, here Locke has not in mind the kind of microphysical resemblances which correspond to a nominal essence that comprises features of the macrophysical level and that is shared by all members of a species. For microphysical similarities are depicted as, first, underlying and, second, as differing from the resemblances which exist among bodies on the macrophysical stage and which are represented by our nominal essences. But if real essences do not comprise the microphysical properties that correspond to nominal essences, what kind of microphysical resemblances are they?

When debating in another passage whether nature sets unmovable boundaries, Locke similarly points out that our ordinary species do not depict bodies by their resemblances “which would best shew us their most material differences and agreements [on the explanatory, microphysical stage]”.³¹⁸ Apparently, Locke’s dismissal of the view that our species are made by nature includes the assertion that ordinary species do not sort bodies into classes which mirror their most substantial resemblances on the explanatory, microphysical stage. Now, it seems to me hardly disputable that the “most material differences and agreements” are the kind of microphysical similarities according to which bodies are ideally to be classified in Locke’s eyes. Thus, taking all quoted passages together, in the second argument (corpuscularian) real essences are conceived as the microphysical similarities by which one would ideally depict and sort bodies into species and which do not correspond to known resemblances on the macrophysical stage.

³¹⁷ 462, III.vi.37.

³¹⁸ 458, III.vi.30.

In turn, in this perspective one has to read the claim that ideas are the workmanship of the understanding and the denial that nominal essences reflect precise boundaries amongst bodies which are set by their real essences. Locke makes two points. First, nominal essences are made by men in the sense that speakers generate ideas in virtue of their own experience of similarities existing among bodies on the macrophysical level. Second, whether one conceives real essences in Aristotelian or corpuscularian terms, nominal essences are not determined by nature in the sense that our species represent a classification of bodies in accordance to their unknown real essences, i. e. in correspondence to the resemblances existing on the explanatory stage in virtue of which bodies are ideally to be sorted. Arguing that our classification scheme is made by us and not by nature, Locke maintains that the scheme does not reflect one which can be said to be present in nature in any stronger sense than simply that on the macrophysical stage the similarities exist among bodies by which bodies are depicted and classified by the scheme. In other words: there is no reason to assume that the scheme expresses an underlying order in nature which is established by unknown real essences. Instead, as the first contention tells us, the scheme simply represents the sorting of bodies which corresponds to the ideas a speaker has acquired. These two claims are raised independently of the question whether real essences are corpuscularian or Aristotelian ones. When refuting the essences-are-made-by-nature thesis, Locke especially attacks Aristotelian theory, but not exclusively.³¹⁹ The difference between spelling out the thesis in corpuscularian and in Aristotelian terms is only that the latter position is less comprehensible due to the unintelligible notion of Aristotelian forms.

So far to the reconstruction of Locke's position. But what are Locke's arguments for holding it? There are two chief reasonings. First, there is Locke's own positive account of how nominal essences are made in the light of one's experience of bodies. Second, there is a principal objection against the alternative view that nominal essences are copies from

³¹⁹ Cp. 452, III.vi.24: "§24. Upon the whole matter, 'tis evident, that 'tis their own Collections of sensible Qualities, that Men make the Essences of their several sorts of Substances; and that their real internal Structures, are not considered by the greatest part of Men, in the sorting them. Much less were any *substantial Forms* ever thought on by any, but those who have in this one part of the World, learned the Language of the Schools: [...]"

precise boundaries. Locke's strongest argument certainly is his own account of the formation of nominal essences. But in his debate these explanations stand in the rhetoric shadow of his principal objection, since Locke expounds his own account of nominal essences in his discussion of the objection. The reason for this is, it seems to me, that for Locke the objection obviously manifests the falsity of the alternative view. I now spell out the two reasonings which are both present throughout the discussion whether nominal essences are made by nature or by man.³²⁰

First argument. The exposition of Locke's position of course has already alluded to his own positive account. In addition, we are in fact familiar with the details of Locke's theory of the genesis of nominal essences, since it is effectively equivalent to his theory of the formation of ideas because of the identification of nominal essences with abstract ideas. As we have seen in the first chapter, speakers form an idea of bodies by copying a set of properties which they have repeatedly found to coexist in bodies. In this sense, an idea is depicted as borrowing its content and union from nature, namely from an experienced set of coexisting properties.³²¹ It follows that nominal essences are the workmanship of the understanding: nominal essences are sets of properties determined by the selection humans choose. And for this reason nominal essences are in no stronger sense made by nature than that they correspond to sets of properties found in nature.

Second argument. Locke's principal objection against the alternative view is based on the observation that our general terms are not used by all speakers to signify the same species or ideas respectively: nominal essences cannot be made by nature, Locke argues, because if they were made by nature, this would mean that a general term would be used by every speaker for the same species or idea, but this is simply not true. Locke exemplifies this as to 'man'. Controversies which entities are properly called a human being show that people use 'man' differently.³²²

In addition to pointing out the fact of non-equivocal use of names, Locke explains why people do not use the same word with the same signification. Since subjects acquire ideas or nominal essences in virtue of their own experience, this experience varies from

³²⁰ 453-62, III.vi.26-37.

³²¹ 455f, III.vi.28f.

³²² 453ff, III.vi.26f.

speaker to speaker, for what reason they do not use the same word to stand for the same idea. For instance, 'gold' signifies bodies having a specific yellow colour for children, whereas 'gold' stands for bodies having a specific yellow colour, weight and fusibility for other people.³²³ On the other hand, if one takes into account what Locke says in a different context, there is also a certain degree of conformity between the ideas being designated by the same term by various speakers since subjects intend to use the words with the meaning other speakers do due to the need of being understood.³²⁴ Thus, there is both conformity as well as variation amongst the ideas of subjects which they signify by the same words as Locke's example of gold demonstrates. And the variation between ideas being signified by the same term establishes for Locke that nominal essences cannot be made by nature, but by humans, i. e. that speakers generate nominal essences in virtue of their own experience of coexisting properties on the macrophysical level.³²⁵

In fact, Locke has a third argument at hand. In other parts of his comments, Locke points out that Aristotelians have to make intelligible what it means that there are precise real essences by which nature is supposed to distinguish bodies into species.³²⁶ Given this criticism of Aristotelian theory, one might expect Locke to raise a similar objection in connection with the issue whether nominal essences are made by nature or by men. That is, Locke could have demanded an explanation of how one has to understand precisely that nature distinguishes bodies in species by nominal essences reflecting boundaries set by real essences. However, Locke seems not willing to discuss the issue in this way. For, when he raises his principal objection, he consciously concedes - hypothetically - the possibility that there might be precise boundaries as the if-clause indicates: "Since the Composition of those complex *Ideas*, are, in several Men, very different: and therefore, that these Boundaries of *Species*, are as Men, and not as Nature makes them, if at least there are in Nature any such prefixed Bounds."³²⁷ That is, the diversity of ideas being called by the same name shows that there are no species which sort bodies in accordance

³²³ 458, II.vi.31.

³²⁴ 408, III.ii.8; 409f, III.iii.3.

³²⁵ 453-62, III.vi.26-37.

³²⁶ 448f, III.vi.14-19.

³²⁷ 457, II.vi.30.

to some prefixed bounds, *even if* they existed. Thus, in this context Locke apparently intends to refute the alternative view not by questioning its intelligibility, but by referring to facts demonstrating the falsity of the theory. Yet, this shows, Locke has a third substantial argument in peto, namely to point out that it has not yet been highlighted convincingly how nature can distinguish bodies into species by unknown real essences.

d. The Overarching Issue

It has become apparent that the topic of the two leading issues of species is a theory of classification, namely which features serve as criteria to determine kind membership and how these criteria are established. Locke argues, firstly, that we usually sort bodies in species by nominal essences and not by unknown real essences and, secondly, that nominal essences are made by us in virtue of our experience of coexisting properties and not by nature in accordance to unknown real essences.

Furthermore, in connection with the second argument the sorting of bodies as to (corpuscularian) real essences is conceived as the end of classification. Correspondingly, the kind of species Locke discusses are species which do not represent an ideal scientific scheme. This is the reason why in his debate classifications are on par whether they are made by the laymen or by scientists: the schemes are alike if conceived in the ideal, scientific perspective. In this sense, there were for Locke only “ordinary” species at his time. The second argument assesses our ordinary species and essences in the perspective of an ideal classification.

This shows that the essence distinction expresses the opposition between the sets of properties as to which bodies are ordinarily classified and the sets as to which bodies are ideally sorted. On the one hand, an ideal scientific classification of bodies as to their microphysical similarities is in Lockean terms a sorting according to their (corpuscularian) real essences or internal constitutions respectively. On the other hand, our usual notions of bodies represent a classification scheme that sorts bodies as to nominal essences comprising features on the macrophysical level. But to say that is not to claim that the opposing roles of real and nominal essences in classification are of a

conceptual kind. This of course is not the case, since (ideal) nominal essences comprise real essences. Yet, in the debate, nominal essences are always understood as not comprising real essences and real essences are conceived as consisting of the microphysical similarities as to which bodies are ideally sorted. Thus, as a matter of fact, real and nominal essences fulfill these roles.

On the backdrop of this reading of the second argument, the essence distinction apparently serves the same purpose when used in the first argument. There, Locke argues in one passage that it must be the nominal essence with respect to which we sort bodies, simply because, on the one hand, we are ignorant of their real essences whereas, on the other hand, we do know their nominal essences because they make up the content of our ideas: “Nor indeed *can we rank, and sort Things, and consequently (which is the end of sorting) denominate them by their real Essences, because we know them not.*”³²⁸ In the light of the second argument, the quote implies on the face of it that the goal or purpose of scientific classification is expressed by saying that bodies are sorted as to their (corpuscularian) real essences, i. e. as to their similarities among their internal constitutions.³²⁹ This means, real and nominal essences perform here the same roles, namely to characterize ordinary species respectively ideal scientific sorts.

Summing up, in the comments on the names of bodies the essence distinction is effectively understood as expressing the contrast between ordinary species and ideal scientific sorts. This in turn has implications for the topic of the comments. Firstly, Locke’s way of debating the issue what determines our ordinary species as to the question whether sorts are determined by real or by nominal essences means that he assesses whether ordinary species are identical or equivalent to ideal sorts or not. He insists, they are not. Secondly, the second argument aims at excluding the possibility that ordinary species are ideal scientific ones even if they are not determined in the light of real essences. This is indicated by the role of the essence distinction and by the order of Locke’s reasoning to discuss whether nominal essences are determined by humans or by nature after having settled the first question. He intends to exclude the possibility that

³²⁸ 444, III.vi.9.

³²⁹ Cp. 647, IV.xii.12. Locke implicitly declares the goal of scientific knowledge as conceiving bodies as to their real essences.

Aristotelians accept that our ordinary species are sorted by nominal essences different from their real essences, but reaffirm that the species are still determined by the real essences by arguing that nominal essences are regulated by the unknown real essences. In the light of the essence distinction, Locke therefore insists that ordinary species are not equivalent or identical to ideal ones when arguing that species are man-made. Consequently, the overarching topic of the comments on names of bodies is to contrast the classification scheme entailed in our everyday concepts with an ideal scientific one. The claim is: our common species do not classify bodies into the same sorts as one would ideally do from the scientific perspective, since resemblances on the macrophysical level are superficial and do not generally correspond to microphysical similarities.

The comments on names of bodies thus re-establishes what Locke has contended in his explanations on archetypes. As has been pointed out in the first chapter,³³⁰ to depict bodies by their real essences, is to grasp and classify them from the ideal scientific viewpoint. In the perspective of science, our ordinary nominal essences are only a remedy for the time being, namely as long as real essences are unknown.³³¹ From the scientific viewpoint, nominal essences serve only as proviso for real essences, since the scientific end of classification is to sort and to grasp bodies in terms of their real essences. This goal of scientific classification will be further delineated in the following chapter where Locke's notion of real essences will be determined.

³³⁰ Cp. 1b.

³³¹ Cp. 10c.

7. Real Essences

The notion of real essences is present in large parts of the *Essay*, which often relate to bodies in particular, namely in his accounts of archetypes, species, knowledge, and the imperfection and abuses of names. A correct grasp of the notion is essential for a precise understanding of what Locke contends as to bodies. Controversies about the details are still going on,³³² but the concept is typically determined by elucidating the real essences of bodies (and of any other kind of entities) in terms of Locke's defining portrayal, namely that the real essence of the member of a species is that on which the species's nominal essence and other coexisting properties depend. The nowadays orthodox view on real essences, established by Woolhouse,³³³ reads the depend-on relationship as an explanatory one: the real essence of a specimen is what explains the nominal essence and other coexisting properties. The topic of real essences is thus conceived to be the explanation of properties. This means more specifically in the case of bodies that the real essence of a specimen is thought to consist of the microphysical structure corresponding to the features making up the nominal essence of the sort. Spelling out Woolhouse's formula differently as to some of Locke's comments, several commentators complement this reading by taking there the real essence of a body to be the set of all the microphysical properties the body has.³³⁴

By contrast, I will argue that the prevailing line of interpretation cannot coherently be squared with the characterizations which real essences of bodies receive in Locke's various arguments. His theories of species, archetypes and knowledge afford a different notion of real essences as commonly ascribed to him. Locke's definition of real essences should instead be understood in the light of his major claims and in particular on the backdrop of his theory of archetypes. In turn, the leading theme of real essences is not the explanation of properties serving in our everyday classification of bodies, but the

³³² Cp. 7c.

³³³ Cp. 7c.

³³⁴ Cp. 7c.

epistemic project of an ideal scientific comprehension of bodies as specimens of sorts, a comprehension which underlies our everyday understanding and classification. It thus becomes plain that the notion of real essences serves Locke as the conceptual nexus to link different threads of his most substantial comments on bodies. Correspondingly, real essences emerge in the centre of a network of contentions which virtually are all elements of his assessment of the extent of human knowledge.

I intend to show first in 7.1 that the role, which real essences play in the various parts of Locke's theory of bodies, suggests a different understanding of 'real essence' in general and of the real essences of bodies in particular. The argument proceeds as follows. First, Woolhouse's approach to comprehend the definition of the real essences of bodies will be criticized and modified; I will then point out that the defining portrayal alone does not sufficiently specify what real essences are; and, subsequently, the notion of real essence, its specification as to bodies, and the implications for the topic of real essences will be highlighted on the backdrop of Locke's other explanations, e. g. his account of archetypes. In other words, to conceive the defining portrayal of real essences in the light of Locke's further comments on them leads to a different understanding of what the issue of real essences is. In 7.2, this claim will be underpinned in two ways. First, the analysis of two passages shows that there Locke consciously characterizes real essences as proposed. Secondly, a careful interpretation of Locke's comments reveals that they do not support competing views on the real essences of bodies in contrast to what is usually thought. The advanced reading will moreover be confirmed in the next chapter, since the discussion of the fifth abuse of language makes plain that the proposed comprehension of real essences is present there as well.

7.1 The Real Essences of Bodies

a. 'Real Essence' and the Depend-on Relationship

Locke's dominant portrayal of real essences depicts the real essence of a specimen as what both the nominal essence of the sort and coexisting properties *depend on*, a portrayal which is present in his definition of 'real essence' as well as throughout the *Essay*.³³⁵ Locke also uses alternative wordings, e. g. a real essence is what these features flow from. Locke does not precisely elucidate the depend-on relationship. Consequently, there is a need to interpret Locke's definition in the light of his further comments what is the deeper reason for the ongoing debate of what real essences are. Besides the passages discussed in 7.2, there are additional comments which commonly serve as textual evidence to establish the orthodox line of interpretation. But they are not conclusive, as I will argue now.

Commonly, the depend-on relationship is explained in the light of Locke's comparison between the real essence of natural substances and the mechanical set-up of artificial substances. Features of the macrophysical level, Locke says, depend on the real essence of a natural substance just as the outer appearances of a clock, e. g. the moving of the hour hand, depend on the inward contrivances of a clock, i. e. its springs and wheels.³³⁶ The backdrop of this analogy is Locke's grasp of both types of entities as machines.³³⁷ Artificial substances are machines being designed and constructed by human beings, natural

³³⁵ Below, I will interpret Locke's definition of real essences in detail. Cp. 7c

³³⁶ 440, III.vi.3.

³³⁷ 463f, IV.vi.39; 586f, IV.vi.11.

substances are bodies being produced by nature.³³⁸ For Woolhouse, the analogy imparts that the real essence of a natural substance causes and explains features of the macrophysical level just as the so-called inward contrivances of a clock, i. e. its springs and wheels, cause and explain the so-called outer appearances of the clock, e. g. the moving of the hour hand.³³⁹ In this sense, Woolhouse and other commentators comprehend the depend-on relationship as an explanatory relationship and a real essence as the causal basis of a nominal essence. They regard the real essences of bodies (being conceived of as natural substances, not as artificial substances) as the sets of properties that on the microphysical stage correspond to the features which a nominal essence consists of. In this sense, a real essence is understood as the causal basis of a nominal essence, namely as the set of microphysical properties in terms of which the features on the macrophysical level are identified and explained.³⁴⁰ Properties are thus conceived as depending on a real essence in the sense of being reducible to the real essence.

However, it is doubtful whether Locke really wants to convey this kind of depend-on relationship with his analogy. First of all, one cannot simply equate the relationship holding between the internal constitutions of natural substances and their nominal essences with the relationship holding between internal contrivances of artefacts and their outer appearances, since Locke emphasizes fundamental differences between artificial and natural substances. For whereas there is hardly any difficulty to come to grips with a classification of artefacts since one depicts artefacts by known features of their internal contrivances known to us, there are contraversies in the case of natural substances since one is ignorant of their internal constitutions.³⁴¹ In other words, to classify artefacts as to their internal contrivances is not problematic according to Locke since they consist of macrophysical features being epistemically accessible to us, whereas the sorting of natural substances as to their internal constitutions leads to difficulties since they consist of microphysical features which we do not know. This shows, Locke is clearly aware of the fact that the internal contrivances of artificial and natural substances differ in

³³⁸ 464, III.vi.40.

³³⁹ Woolhouse (1971), 111f, 118, and 126; Woolhouse (1983), 99-103.

³⁴⁰ Cp. Ayers (1991), II, 67f; Mackie (1975), 78; Yolton (1970), 33.

³⁴¹ 464, III.vi.40.

kind, namely that the internal contrivances of artefacts comprise macrophysical features whereas the real essences of natural substances consist of microphysical features. When Locke elucidates the depend-on relationship as to the real essences of natural substances in terms of a comparison to artificial substances, one can therefore not simply equate the former case with the latter one. This means, it is not evident how the analogy is exactly to be understood, since it is not clear which aspect is meant to be the one being common to both cases.

More importantly, the common line of interpretation is even less convincing because the analogy would not hold if it had to be understood in the suggested way. In the case of natural substances, we have seen, the explanatory relationship is taken to relate to sets of properties which are causally interrelated in the sense of being reducible to each other. Macrophysical properties like colours are identified with microphysical features. But in the case of artefacts the explanatory relationship holds between sets of properties which are causally interrelated in a temporal way, one being the effect of the other. Outer appearances like the moving of the hour hand and the striking of the clock are causally explained as effects of the internal construction of the clock but are not reduced to features of the mechanical set-up.

In addition, the prevailing comprehension of the depend-on relationship cannot apply to all types of species. *Pace* Woolhouse,³⁴² Mackie has rightly pointed out³⁴³ that Locke introduces the essence distinction not only with respect to the species of natural substances, but as to every sort. But contrary to species of bodies, the real essences of specimens of other sorts are identical with their nominal essences. For example, both the

³⁴² According to Woolhouse, the notion of real essence applies only to modes and substances, but not to simple ideas. Cp. Woolhouse (1971), 19 and 118. However, this contradicts Locke's ascription of real essences to simple ideas. Cp. 421, III.iv.3. The root of Woolhouse's view is that he takes Locke's concept of real essence to be an explanatory one which genuinely concerns only substances. Cp. Woolhouse (1971), 111ff, 118, 125ff. As a further consequence, Woolhouse allegedly detects several fundamental incoherences because he cannot square the assumed conception of real essences to modes. For him, the conception of modes excludes the possibility that they possess real essences, and Locke adheres to a (false) quasi-geometrical model of *apriori* knowledge as to bodies because he conflates mathematics with natural sciences due to his ascription of real essences to modes. Cp. Woolhouse (1971), 125ff. According to the here proposed reading, there is no need to ascribe these incoherences to Locke's theory. The real essences of bodies are only Locke's paradigm.

³⁴³ Mackie (1975), 88f.

real essence and the nominal essence of triangles is space being enclosed by three straight lines. And consequently, being in line with his identification of nominal and real essence and his characterization of real essences in terms of the depend-on relationship, Locke regards the non-defining features of triangles as depending on their real essence, namely on the properties defining them as triangles.³⁴⁴ But, crucially, the depend-on relationship cannot mean here to be a causal one, since the defining properties of triangles cannot intelligibly be said in the relevant sense to be the cause of their other mathematical properties. One does not identify the triangle's property that the sum of its three angles is equal to two right ones with its feature of being a space which is enclosed by three straight lines. There is no property reduction in the case of triangles which is analogous to the identification of being yellow with a specific microphysical structure. This means, the ascription of the depend-on relationship in cases like triangles refutes the prevailing view that the real essences of bodies are defined as the properties with which nominal essences are identifiable.

The last objection makes furthermore plain that one has to elucidate the depend-on relationship in a way which fits all types of species. But in which way? The key to Locke's comprehension of real essences lies in his tendency to associate the depend-on relationship with necessary connections. Necessary connections, we will see,³⁴⁵ come into play in the context of deductive, demonstrative knowledge, namely that perception of (the holding of) a necessary connection leads to the recognition of a fact, e. g. that specimens of a sort have a property. According to the primary usage of 'necessary connection', a necessary connection holds between two ideas.³⁴⁶ For instance, there is a necessary connection between the idea of the sum of the angles of a triangle and the idea of being equal to two right angles.³⁴⁷ That is, grasping the necessary connection between the two just mentioned ideas results in knowing that the sum of the angles of a triangle is

³⁴⁴ 382, II.xxxi.11; 418, III.iii.18.

³⁴⁵ Cp. 9d and 10c.

³⁴⁶ Cp. 544ff, IV.iii.10-14. Locke speaks here of necessary connections holding between two ideas expressing the coexistence of a property, represented by one idea, with the defining properties of a species, represented by another idea. This case corresponds to Locke's examples in passages where he discusses propositions like 'All gold is yellow'. Cp. 582-85, IV.vi.6-10.

³⁴⁷ 585, IV.vi.10.

equal to two right angles. The grasp of a necessary connection turns thus out to be the comprehension of a proof, as Locke himself maintains.³⁴⁸

Necessary connections therefore relate to an entity's possession of its properties. This becomes apparent in those passages as well where Locke speaks of necessary connections holding between entities and their properties and understands them as equivalent to necessary connections holding between the idea of entities and their properties: the necessary connection indicates that the entities possess the features.³⁴⁹ Now, crucially, in the same context features depending on a real essence are said to have a necessary connection with the real essence or with primary qualities respectively as well. That is, the depend-on relationship between a real essence and other properties of a specimen corresponds to a necessary connection between (the idea of) the real essence and (the ideas of) the properties. This means, the recognition of a feature depending on a real essence therefore leads to demonstrative knowledge that entities having the real essence possess the property. This close nexus between the two relationships manifests in Locke's interchangeable use of 'dependence', 'connection' and similar terms.³⁵⁰ Locke apparently understands the depend-on relationship as roughly equivalent to the necessary-connection relationship. To be precise, the depend-on relationship is more specific than a necessary connection, since it is confined to relationships concerning real essences.

Having said that, I suggest to comprehend the depend-on relationship in a way that applies to species of all kinds of entities and that is understood in the light of both the link of depend-on relationships to necessary connections and the analogy to artefacts; namely, in terms of an explanatory relationship relating to the possession of properties. Features of an entity depend on its real essence in the sense that the entity's possession of these features is explained by the entity's possession of its real essence: the entity has the features in virtue of its real essence. And explaining the possession of features consists in making plain why having the real essence entails the possession of the features.

³⁴⁸ 532, IV.ii.3f. In this context, Locke speaks of proofs in terms of intermediate ideas. But since necessary connections hold between two ideas if and only if there are intermediate ideas, the comprehension of a proof is the grasp of the holding of a necessary connection. Cp. 9c.

³⁴⁹ 583ff, IV.vi.8ff; 589f, IV.vi.15.

³⁵⁰ Cp. 545, IV.iii.12; 546, IV.iii.14; 582, IV.vi.5ff; 584f, IV.vi.10; 589f, IV.vi.15.

This conception of real essences implies for the real essences of natural substances that they are not *defined* as the microphysical properties with which features of the macrophysical level are *identified*. Of course, properties being defined as the set of features which explain the possession of the features making up everyday nominal essences are also the kind of features with which properties of the macrophysical level are to be identified. But this is only an additional aspect of the real essences of natural substances, not their defining feature, according to this line of interpretation.

But even given this modified comprehension of the depend-on relationship, one cannot read Locke's standard portrayal as truly being a definition of 'real essence' since the depend-on relationship does not sufficiently characterize real essences. As noted above, only in the case of bodies real essences are not identical with nominal essences. Of course, if one gets to know the microphysical properties of bodies, one could generate ideas depicting classes of bodies whose nominal essences are the real essences of their specimens. The point however is that there is the possibility of nominal essences being not equal with real essences solely in the case of bodies. But why? What determines that the nominal essences of our everyday species of bodies afford real essences being different from them while the nominal essences of all other species are equal with their real essences? This difference between the real essences of bodies and of other entities is neither based on nor accountable by the depend-on relationship, namely that real essences are the kind of properties in terms of which one explains the possession of the nominal essence and other coexisting features. This becomes evident in two ways.

First, there are other types of entities whose defining features, or nominal essences, Locke regards as depending on other properties without calling the latter the real essence of the entities. Take for example entities like secondary qualities. Locke conceives secondary qualities as features being identical with microphysical structures and which, in principle, could determine and explain a multiplicity of features on the macrophysical level, just as the microphysical figure of a body determines both, for instance, the visual idea of a cube and the tactile idea of a cube. Thus, such a microphysical structure could be regarded as the "microphysical real essence" of a secondary quality which determines not only the secondary quality but also further, coexisting properties on the macrophysical stage. The case of secondary qualities seem to be perfectly analogous to the one of bodies. But why

does Locke not conceive the nominal essences of secondary qualities to depend on real essences consisting of primary, microphysical qualities?

Second, given the interpretation of 'real essence' in question, one could conceive the everyday nominal essences of bodies as being also their real essences, since according to Locke the nominal essences are sets of properties on which other coexisting features depend. The backdrop of this objection is Locke's contention that there are necessary connections between features on the macrophysical level as well. For instance, impenetrability is said to be necessarily connected with solidity, and Locke claims that a body struck by another one will move.³⁵¹ This means, some features of the macrophysical level could serve as real essences in the sense that other properties depend on them. But why does Locke not conceive nominal essences (of bodies), which comprise these features, as being also real essences? In other words, why is for Locke in the context of essences the possession of properties of the macrophysical level not to be explained in terms of the possession of properties of the macrophysical level, but only in microphysical terms?

To conclude, when Locke portrays real essences in terms of their relationship with nominal essences, he must have an additional depiction in mind that specifies which nominal essences afford real essences being different from them and which nominal essences are also their real essences. 'Nominal essence' and 'to depend on' do not add up to 'real essence'. Nominal essences are determined by the content of an abstract idea; what determines real essences?

There are even more problems to read Locke's standard formula as a proper definition of real essences. Locke speaks only in connection with bodies that real essences are that on which nominal essences depend. With respect to other entities, Locke simply says that the real essence is equal to the nominal essence and that properties other than the nominal essence depend on the real essence. That is, their real essences is not said to depend on their nominal essences. Of course, one can intelligibly maintain that the nominal essence of these sorts depend on their real essences in the sense that the nominal essences *qua* real essence explain why their specimens possess the properties comprising the nominal essence. But this is not how Locke puts it, i. e. in this context he does not speak of

³⁵¹ II.iv.1+5; IV.iii.13.

dependence. And since the nominal essences of ideal sorts of bodies are also identical with their real essences, Locke's choice of words indicates that his formula is tailor-made for our everyday sorts of bodies whose real essences are not equal to their nominal essences.

b. 'Real Essence' in the Light of Locke's Major Arguments

Having said all that, Locke's "definition" of real essences appears in a different light. As Locke declares, he introduces the distinction between real and nominal essences to clarify the common notion of essences. Thus, according to Locke, there has been a conception of essences combining features which he wants to keep separate. His punchline is to demonstrate that nominal and not real essences determine species and kind membership. Locke's distinction between real and nominal essences therefore serves to make plain that, in principle, nominal essences do not have the characteristics of real essences, as it is commonly conceived. But, as just argued, Locke's formula for real essences does not determine whether the specimen of a sort have a real essence different from their nominal essence or whether they coincide. Locke's grasp of real essences is surely linked to the depend-on relationship, but it cannot be the whole story. The description of real essences as what nominal essences depend on thus seems, strictly speaking, not only to apply solely to everyday species of bodies, but apparently also operates with a presumed notion of real essences (which in Locke's eyes is in some sense part of a widespread conception of essences.) Thus: what does this presumed comprehension of real essences consist in?

It seems to me, Locke's depiction of real essences as archetypes entails the answer. An archetype is a conception of the properties which a body serving as a standard for an idea has and which are ideally included in the idea. The archetype of an idea comprises the features which one conceives as comprising a perfect or adequate idea of the standard. An archetype is what one intends an idea to represent, as Locke puts it. In the case of bodies, he determines the archetype of an idea as the real essence which one conceives the idea's standard to possess. Real essences are therefore ascribed to bodies as being the properties as

to which one intends to represent them by an ideal idea. Of course, Locke's conception of archetypes does not only apply to bodies serving as standards, but relates effectively to all bodies insofar as they are represented by abstract ideas as members of species. According to Locke, all bodies are ideally to be depicted by real essences insofar as they are grasped as specimens of sorts of natural substances. (A body, e. g. a human being, does not have to be depicted as a natural substance, e. g. as a human being, but can also be portrayed as a mixed mode, e. g. a musician, whose real essence coincides with its nominal essence.) Thus one's conception of the real essences of bodies specifies as to which features bodies are ideally to be depicted by ideas (portraying bodies as natural substances).

Consequently, pointed likewise out in the first chapter,³⁵² Locke regards our everyday ideas of bodies as proviso for adequate ideas portraying bodies by real essences. When we examine bodies to form an idea of them, Locke maintains, only those properties of the macrophysical level are taken into the idea which one believes to correspond to the real essences of the bodies. Only those features of the macrophysical stage are included into an idea which are conceived as depending on the real essence of the examined body. In this sense, ideas of bodies are called partial representations of their archetypes: the ideas depict the entities they represent not by their real essences, but only by features serving as substitutions for their real essences.

Matters become a bit more complicated because speakers vary in their conception of the archetypes of ideas of bodies. Aristotelians intend to portray bodies by Aristotelian real essences and corpuscularians by corpuscularian real essences. But the deeper reason for the differences in archetypes is a divergent view on what the real essences of bodies are. For Locke conceives the Aristotelian and the corpuscularian view as expressing two different opinions on what the real essences of bodies are.³⁵³ This shows, on the one hand, that one's conception of the real essences of bodies specifies as to which features bodies are ideally to be depicted by an idea. Yet, on the other hand, it becomes plain as well that for Locke Aristotelians and corpuscularians share a common epistemic project despite their divergent views on real essences, namely to grasp bodies as members of species by their

³⁵² Cp. 1b.

³⁵³ 417f, III.iii.17.

real essences. Speakers vary only in their conception of what the real essences of bodies are and consequently also in their conception of the archetypes of ideas of bodies. But they all intend to depict bodies in terms of their real essences.

The theory of archetypes thus implies that sorts of natural substances and their specimens are understood on the backdrop of the epistemic project to represent bodies ideally by their real essences. This grasp of bodies goes beyond the depiction of our everyday ideas and provides a framework for the genesis of ideas, species and (everyday) nominal essences respectively. For example, corpuscularians like Locke regard our common species as provisional classifications which are ideally to be substituted by a scheme sorting bodies in accordance with their microphysical similarities.³⁵⁴ This means, the comprehension of bodies in terms of real essences is an integral part of our grasp of bodies as members of (our everyday) species.

Crucially, if ideas are intended to represent bodies as to their real essences, there are - logically speaking - firstly real essences and secondly ideas and nominal essences. That is, from the viewpoint of our intentions to represent bodies as members of species, natural substances are primarily characterized by or identified with their real essence. The logical priority of the depiction of bodies possessing real essences plays an important role in Locke's comments on archetypes. As indicated, if we are ignorant of real essences, one includes properties in an idea of bodies which are taken to depend on the real essences of the bodies that serve as samples in the formation of the idea. In this sense every property of the macrophysical stage, which depends on the real essence of the standard, is said to have "the same right" to be included in an idea.³⁵⁵ Correspondingly, it would be irrational, Locke maintains, to include the form or bulk of a parcel of gold in an idea of gold because it would be unreasonable to suppose that bulk and form depend on the parcel's real essence.³⁵⁶ That is, for corpuscularians like Locke, it would be unreasonable to assume that the microphysical structures corresponding to macrophysical bulk and form are part of the microphysical similarities existing amongst bodies. This would indeed be irrational, since our everyday experience shows already on the macrophysical level that

³⁵⁴ Cp. 1b.

³⁵⁵ Cp. 1b.

³⁵⁶ 381, II.xxxi.9.

parcels of chemical substances vary too much in their bulk and form (and thus also in the corresponding microphysical structure) for being classified as to these properties. And an appeal to our everyday experience of bodies is justified for Locke, since according to him one makes ideas of bodies in the light of such experience. But if properties on the macrophysical level are to be taken into an idea only if they depend on the real essence of the standard, a speaker must first have a conception of real essences before he subsequently forms ideas, i. e. before he generates nominal essences. In this sense, one's conception of real essences is logically prior to one's conception of nominal essences. Likewise, the comprehension of bodies as possessing real essences is logically prior to our ascription of (common) nominal essences to bodies. Nominal essences are established in the light of one's ascription of real essences to bodies.

The logical priority of real essences embodies Locke's view that one conceives bodies as members of species and as having nominal essences on the backdrop of our comprehension of bodies as possessing real essences and of our intention to represent bodies ideally as to their real essences. And part and parcel of this comprehension is the doctrine that we generate abstract ideas of similarites existing on the macrophysical level as a substitution for a depiction of bodies as to their real essences on which the observed similarities depend. This means, one cannot separate our grasp of bodies in terms of nominal essences from both our grasp of bodies in terms of real essences and the dependence relationship holding between nominal and real essence. But if common nominal essences are grasped as depending on real essences in the first place, Locke's formula of real essences as that on what everyday nominal essences depend simply expresses his belief that common nominal essences comprise features which depend on real essences in order to serve as a substitution for nominal essences being equal to real essences. Therefore, the variance between common nominal essences and real essences is rooted in both our principal grasp of bodies in terms of real essences and in our ignorance of real essences. The inequality between the nominal essences of our everyday sorts and the real essences of their specimens is partly due to our ignorance of real essences and partly to the conception of our epistemic project to comprehend bodies as specimens of sorts by features which do not coincide with the nominal essences of our everyday species.

Locke's portrayal of the real essences of bodies as depending on (our everyday) nominal

essences now appears to be part and parcel of his view on our intentions to depict bodies as specimens of sorts. Locke's formula for real essences is thus not a proper definition of 'real essence', but rather illuminates the notion in the specific context of our common species of bodies. The reason for this is that his interests lie in the topic of natural substances. Another reason could be his belief that the reader is already familiar with a conception of real essences that is present in the common notion of the so-called essences of species. I therefore conclude that Locke does not satisfactorily explain his concept of real essences. But the comments on archetypes indicate on the other hand that he comprehends the real essence of a body as the set of features in terms of which the body is conceived and identified with respect to one's basic epistemic intentions to grasp the body as the member of a sort.

Importantly, the account of the archetypes of other ideas suggests that the just developed understanding of real essences is not only confined to bodies, but represents Locke's general comprehension of real essences. For, if one reads 'real essence' in this way, the theory of archetypes makes intelligible why the real essences of entities other than bodies coincide with their nominal essences. According to Locke, ideas other than those of bodies do depict entities as one intends to. The ideas are perfect or adequate representations of their archetypes. The adequateness of the ideas is explained by the type of conception which their archetypes have. For instance, a simple idea necessarily is adequate because it is intended to represent the type of power that causes the simple idea or mental representation in perception.³⁵⁷ And an idea of mixed modes or of relations is necessarily adequate because it is intended to represent the sort of entity which is characterized by the idea.³⁵⁸ This means, we intend to represent archetypes that are characterized by properties known to us, i. e. by properties of which we have ideas. Thus, all the ideas that are not portraying natural substances are necessarily adequate simply because the relationship between the ideas and their archetypes guarantees that the ideas represent the archetypes as one intends, namely by the sets of features which are included in the ideas. In short, the ideas are adequate because we intend to represent archetypes known to us. This means, if

³⁵⁷ 375, II.xxxi.2; 383, II.xxxi.12.

³⁵⁸ 376f, II.xxxi.3; 383, II.xxxi.14.

one understands here real essences in accordance to their role they play in the comments on the archetypes of ideas of natural substances, the real essences of entities other than of bodies are equal to their nominal essences because one's ideas depict the entities by the features with which the entities are identified by our epistemic intentions to represent the entities as specimens of their sort. Locke's theory of archetypes thus makes plain why real essences do not coincide with the nominal essences of our common species of natural substances and why real essences are necessarily equal to nominal essences in the case of all other sorts.

On first thought, there seems to be an obvious objection against this line of interpretation. Locke speaks of inadequate ideas of mixed modes (or of relations) as well. An idea of mixed modes is inadequate if a speaker intends to generate an idea being equal to the one which another speaker has and if the first one fails to do so. More precisely, the first speaker intends to use a name with the same signification as another person does, but does not succeed. First of all, an idea which is inadequate in this way is not inadequate in the other, previously discussed sense. More importantly, the inadequateness does not really relate to the intentions of the speaker which kind of entities the idea is intended to depict. It rather relates to the objective to use the same name for the same idea. Locke sees this when he concedes: "And on this account, our *Ideas of mixed Modes* are the most liable to be faulty of any other; but this refers more to proper Speaking, than knowing right."³⁵⁹

Locke effectively reiterates this position when asserting that ideas of mixed modes are false in the sense that they do not conform to the ideas which other people signify by the same name. More importantly, Locke's account indicates as well that this kind of falsehood does not apply to ideas of mixed modes exclusively, but also to simple ideas and ideas of substances, even though less frequently.³⁶⁰ This correspondingly implies that all types of abstract ideas are inadequate in this second sense even though this is explicitly ascribed as to ideas of mixed modes only. One should therefore distinguish between two types of inadequacy. The first one relates to what a speaker intends to represent ideally

³⁵⁹ 378, II.xxxi.5.

³⁶⁰ 386f, II.xxxii.9ff.

with an idea, the second one relates to the idea a person intends to signify ideally with a name. And the existence of the latter inadequacy does not refute the advanced reading of the former one in connection with real essences. It rather shows that the issue of archetypes and (in-) adequacy cannot simply be equated with the topic of real essences being equal or different to nominal essences.

It therefore seems to me that Locke's theory of archetypes indicates that he comprehends the real essence of an entity as the set of features in terms of which the entity is conceived and identified with respect to one's basic epistemic intentions to grasp the entity as the member of a sort. This is apparently Locke's core conception of real essences since: it applies to the specimens of all kinds of sorts, elucidates the relationship between real and nominal essences, is logically prior to the notion of nominal essences, and expresses a fundamental assumption of Locke's view on our epistemic venture to classify bodies in species.

This general notion of real essences is easily specified as to sorts of entities not being natural substances since their archetypes guarantee that the real essences of their specimens coincide with their nominal essences. But in the case of bodies one cannot spell out the notion as straight forwardly. Yet, the reconstruction developed so far allows to specify the real essences of bodies in two ways. First, real essences consist of features explaining the possession of properties on the macrophysical stage. Second. Locke speaks of two different kinds of real essences. As argued, this means that according to him speakers vary in their conception of what the real essences of bodies consist in. This implies, speakers must share a common idea of the features by which they want to grasp bodies ideally. In the light of the reconstruction given so far, one naturally looks to the theory of archetypes to find the answer.

In connection with the comments on archetypes, ideas of natural substances are said to be made in order to represent a class of bodies which has been experienced regularly. That is, one intends to sort bodies by features which one has recurrently found to go together in nature, i. e. by features being shared by various bodies. Given the principal character of this conception, it applies to resemblances on both the macrophysical and the explanatory stage. Ideas thus ideally portray bodies by their similarities on the explanatory level, since real essences consist of features on which properties of the macrophysical level depend.

And this account holds whether one believes in Aristotelian real essences or in corpuscularian ones. The real essence of a specimen of a sort of bodies is therefore conceived as comprising of explanatory basic features which the body shares with other ones. Thus, for Locke, the real essence of a body consists of microphysical similarities which it has in common with various other bodies.

Crucially, this understanding of real essences does not appear isolated in connection with archetypes. Rather, the previous chapter showed that Locke characterizes corpuscularian real essences in the context of species in the same way, namely as comprising microphysical similarities as to which one would ideally sort bodies. Likewise, as will be delineated in the third part, the same comprehension of real essences is at work in the theory of knowledge where ideal knowledge of bodies is understood in terms of real essences. Ideas representing bodies as to their real essences are said to be a prerequisite for acquiring a comprehensive, scientific understanding of bodies and their properties.³⁶¹ Real essences are understood as the sets of properties which allow systematic deductive knowledge of bodies.³⁶² Thus, real essences are portrayed again as the sets of features as to which bodies are ideally classified and grasped from a scientific, explanatory viewpoint. Moreover, in this context ideal ideas of bodies are clearly conceived again as depicting natural substances by corpuscularian real essences which indicate microphysical resemblances amongst bodies.

We see, there is a portrayal of the real essences of bodies which runs through Locke's comments on archetypes, species, and knowledge. The real essence of a natural substance comprises microphysical properties in terms of which bodies are ideally comprehended and sorted. A real essence is conceived as the set of explanatory features which a natural substance shares with other ones, i. e. a real essence stands for the microphysical similarities which a body has with respect to other ones. This grasp of bodies in terms of their real essences is one's primary conception of bodies as being specimens of sorts. This is why Locke takes properties of the macrophysical level to make up our ideas or nominal essences only as a substitution for ideas and nominal essences which represent

³⁶¹ Cp. 10c.

³⁶² Cp. 10c.

respectively comprise the real essences of bodies. More specifically, as Locke's account of archetypes, species, and knowledge demonstrates, real essences are microphysical features which *prima facie* do not correspond to known macrophysical resemblances. This understanding of corpuscularian real essences is present in Locke's most substantial arguments on bodies, namely in connection with archetypes, species, and knowledge. Having said that, Locke apparently defines real essences in the light of the third model. When introducing 'real essence', Locke maintains that we talk of essences in the sense of *essentia* "when we speak of the *Essence* of particular things, without giving them any Name."³⁶³ The important bit is that Locke refers to a common usage of the concept of real essences when general terms are not involved. That is, we ascribe real essences to bodies in a context where we do not use a general term. This means, since Locke discusses our everyday use of names, he claims that we ascribe a real essence to bodies when we do not regard them as members of species being characterized by our everyday nominal essences. As we have seen, the theory of archetypes affords an ascription of real essences to bodies without regarding them as members of a particular species. A use of 'real essence' of this kind is involved in one's reference to the real essence of a standard in order to decide which features are to be taken into an idea of the standard. And in this context real essences cannot be understood in the light of the two prevailing models, but in accordance to the third one. This approach to read Locke's defining portrayal of real essences will be reconfirmed and further developed in the next chapter in connection with the fifth abuse of words.³⁶⁴

c. A Third Model for the Real Essences of Bodies

The advanced characterization of real essences contradicts the prevailing interpretations of the corpuscularian real essences of bodies. To come to grips with this, I will first introduce the two dominant models for real essences in the light of Locke's formula for real essences, point then out their differences as to the new characterization and spell

³⁶³ 417, III.iii.15.

³⁶⁴ Cp. 8d.

subsequently out this third, alternative view which has already been largely unfolded. The three models of real essences differ most obviously as to the set of microphysical properties which the models each determine for a corpuscularian real essence to comprise.

Although there is a variety of proposed interpretations how to comprehend Locke's notion of the real essences of bodies, these views can be expressed in terms of two models. According to one model, a real essence is a microphysical structure which on the microphysical level corresponds to a sort's nominal essence. A real essence in this sense is a *sub-set* of microphysical properties which a class of natural substances has in *common* since they share the nominal essence to which the real essence corresponds. This means, a real essence is specific for a species like its nominal essence. And only features of the macrophysical stage which correspond to this set of microphysical properties are conceived as depending on this set, i. e. on the real essence. Thus, one determines first the real essence as the set of microphysical properties corresponding to the features of the nominal essence and determines then the set of properties depending on this real essence as the set of properties on the macrophysical level which correspond to the real essence. For example, if the nominal essence of gold comprises being yellow and having a particular sound, the real essence is the microphysical structure corresponding to these two features and the set of properties depending on the real essence consists of all the features which are likewise determined by this microphysical structure, e. g. the fusibility of gold.

According to the second model, a real essence is the set of *all* the microphysical properties a particular body has. This means, a real essence in this sense is specific for each particular body and without being specific for the body in virtue of being the specimen of a particular sort. Whether one regards a body with respect to its being gold or metal, it has the same real essence, namely the set of all its microphysical properties. And since a real essence comprises all microphysical features, all properties of the macrophysical level are conceived as depending on the real essence.

Mackie and Woolhouse, for example, identify a real essence with a microphysical

structure according to the first model.³⁶⁵ Ayers and Phemister distinguish between two conceptions of real essences, each of them referring to one of the two models.³⁶⁶ By contrast, for Guyer the real essence of body is a microphysical structure, whereas he understands Locke's notion of the real or internal constitution of bodies to denote the set of all the microphysical properties a body has.³⁶⁷ But although Ayers and Guyer interpret Locke's account also in terms of the second model, they take a real essence to be primarily a microphysical structure.³⁶⁸ In sum, commentators usually understand the real essence of a body to be (primarily) a microphysical structure or set of microphysical properties which specimens of a sort have in common and which corresponds to the properties of the nominal essence. Some commentators read in addition several passages to be conversant about real essences being the set of all the microphysical properties a body has. A comparison now shows that the two models do not coincide with the characterization of real essences which are present at least in many of Locke's comments on bodies. We start with the first model. As we have seen, real essences are conceived as microphysical similarities which *prima facie* do not correspond to known macrophysical resemblances. This implies, the real essence of a specimen is not the set of microphysical features corresponding to the sort's nominal essence. For, to say that real essences are microphysical similarities not corresponding to known macrophysical similarities, simply means that real essences do not correspond to everyday nominal essences, i. e. nominal essences which reflect our experience of similarities on the macrophysical level. Thus, in the discussed passages, real essences are not understood as microphysical structures corresponding to nominal essences.

³⁶⁵ Mackie (1975), 78; Woolhouse (1983), 101.

³⁶⁶ Ayers (1991), II, 67f and 73. Phemister (1990), 27f.

³⁶⁷ Guyer (1994), 133. Cp. also Goodin (1998), 150f.

³⁶⁸ It seems to me, Yolton and Alexander waver between the two models in their comments. On the one hand, a real essence appears to be the microphysical (sub-)structure for Yolton which corresponds to a nominal essence, since he speaks of kinds of real essences. Cp. Yolton (1970), 33. On the other hand, a real essence seems to be the set of all microphysical properties a particular natural substance has, since according to him a real essence is the causal basis that gives rise to *all* the features an individual has. Cp. Yolton (1970), 31. Similarly, Alexander calls a real essence the structure being common to specimens at some places, whereas at other places he conceives the real essence of a body as the set of all the properties a particular has. Cp. Alexander (1985), 264 respectively 272.

Locke's theory of the genesis of ideas shows as well that real essences are there not conceived in the light of the first model. As delineated above, for Locke every property may be taken into an idea which depends on the real essence of a body being examined and serving as the standard of the idea. Conversely, it is irrational for Locke to include properties which one cannot reasonably assume to depend on the real essence. In other words, features are included in an idea only if they are regarded to depend on the real essences of the examined bodies. Thus, a speaker has first a conception of the real essences of bodies and generates then the nominal essences of species. This implies, the examiner makes use of a conception of real essences which is logically prior to the notion of the nominal essence of a species. The decision which feature can be taken into an idea, i. e. which feature can make up the nominal essence of a species, is based on the depend-on relationship between the property and the real essence of the body. This however contradicts the first model according to which the logical relationship between real and nominal essence is the other way around, namely that the real essence is understood to be the set of microphysical properties corresponding to a nominal essence. A real essence which is specified in relation to a nominal essence cannot determine before hand which property may make up the nominal essence. This becomes more evident if one takes into account that according to the first model a real essence is specified as to a *particular* nominal essence, whereas in his comments on the genesis of ideas the real essence of the standard is not related to any particular nominal essence since there the real essence is portrayed to determine as to every idea which properties may be taken into an idea.

The second model cannot be at work in the discussed comments as well. As has been argued, in Locke's comments on archetypes, species, and knowledge, real essences are conceived as microphysical similarities according to which one would ideally sort bodies. This implies, in these contexts real essences cannot consist of all the microphysical properties a body has. For, on the one hand, these microphysical similarities are regarded as being shared by various bodies in nature whereas, on the other hand, bodies are not identical as to all the microphysical features they have, as it is obvious from our everyday experience of their differences on the macrophysical level. The appeal to everyday experience is justified here since Locke's own view on everyday species shows that their members are conceived as not being identical with respect to their macrophysical figure.

Living substances are sorted in virtue of the *similarities* of their shape,³⁶⁹ whereas chemical substances are not sorted as to their form and bulk at all.³⁷⁰ Only some structural features of the macrophysical form are at best included into an idea of bodies. Consequently, if at all, bodies are ideally sorted and represented by only some features of their microphysical form.

There is an additional reason why the second model is not present in the theory of archetypes. If the real essence of a body comprised all its microphysical features, every macrophysical property would be conceived as depending on the real essence of a body and thus as being eligible to be included in an idea. This however contradicts Locke's assertion that features depending on the real essence of a body should be included in an idea, whereas for properties not depending on the real essence it were irrational to include them.

Locke's portrayal of real essences in his theory of archetypes, species, and knowledge cannot be understood in the light of one of the two models. On the other hand, Locke's comments suggest a different understanding of corpuscularian real essences. There, the real essence of a body comprises the microphysical similarities according to which it would be classified and characterized in an ideal scientific account. With respect to real essences thus understood, our everyday species are judged to be classifications not representing the relevant resemblances amongst bodies on the microphysical level. Our everyday sorting is provisional. And as to real essences thus understood, one conceives features on the macrophysical level as depending or not depending on real essences and therefore includes the features in an idea or not. According to this third model, properties of the macrophysical level depend on the real essence of a body if they correspond to the microphysical similarities according to which the body would be depicted and classified from an ideal scientific viewpoint. Crucially, Locke's contention that bodies would be sorted in classes different from our everyday species, if one classified them as to their microphysical similarities, or real essences respectively, implies: specimens of an everyday sort do not necessarily share the same real essence, namely the set of

³⁶⁹ 456, III.vi.29.

³⁷⁰ 381, II.xxxi.8.

microphysical properties according to which one would ideally sort them. In other words, the real essences of the members of a sort *differ prima facie*. The real essence is a microphysical structure being *prima facie specific* for a particular specimen of a sort. A real essence is a sub-set of microphysical features which a body has and which might differ from the real essences which other members of the same sort have. The real essence of a particular body is a sub-set of all its properties, since not all microphysical features serve as similarities according to which one ideally classifies the body. And the real essence is *prima facie* specific for the body, in the sense that it *might* be different from the real essences of (some of) the other specimens of the same sort. Of course, if one knew real essences, one could form ideas of species whose nominal essences were identical with the real essences of their specimens.

The talk of *prima-facie* specific real essences should not be misunderstood as implying that bodies have real essences being virtually individual to them. Quite the contrary, since the real essence of a body comprises the microphysical features according to which one would classify it in an ideal scheme, this means in general that numerous bodies share the same real essence. If one knows real essences, one can “grasp at a time whole Sheaves”³⁷¹ of bodies. This goes along with Locke’s major contention that an abstract idea is only introduced when similarities have repeatedly been experienced.³⁷² Moreover, this conception fits in his general framework that one chief purpose of general terms is the grasp and communication of universal propositions that have an application common enough for practical ends.³⁷³

Thus, *pace* Phemister,³⁷⁴ there are in general no species consisting of only one member, since a species is a class being signified by a general term and represented by an abstract idea which reflects repeatedly experienced similarities in nature.³⁷⁵ Only few entities,

³⁷¹ 647, IV.xii.12.

³⁷² Cp. 1b.

³⁷³ 410, III.iii.4; 647, IV.xii.12.

³⁷⁴ Phemister argues that, according to Locke, there is the possibility of “real species” characterized by all the microphysical features a body has. This effectively means that every particular were a real species. See for a discussion of this view Phemister (1990), Goodin (1997), and Phemister (1997).

³⁷⁵ Cp. 1b.

namely Locke's monsters, which he loves so much to talk about,³⁷⁶ are so diversant from the rest that they might be classified each in a separate class or, simply, in a more general one, e. g. mammals. The possibility of monsters does not contradict the proposed reading of real essences, because the purpose of Locke's account of real essences is to point out the difference between a classification scheme in terms of everyday nominal essences and one about real essences. In other words, the essence distinction is designed for a classification theory dealing with ordinary chemical stuffs and biological species, not with mutants.

More importantly than the issue of monsters is that the given explanation of the real essences of bodies leaves open as to which microphysical features one would sort them if one got to know the microphysical properties of bodies. To say one would classify bodies as to their similarities, as Ayers rightly points out, does not specify which similarities are the relevant similarities with respect to which one would sort bodies.³⁷⁷ What determines which microphysical features comprise the real essence of a body being conceived as the member of a sort?

Reading Locke's account of real essences as coherent as possible, the decision which similarities are conceived as classificatory relevant should be understood as arbitrary in the sense that it depends on the choice and epistemic interests of the subject. This position is inherent in the rejection of (Aristotelian) real essences being made by nature and the assertion that nominal essences are man-made. Locke illustrates many times that species and kind memberships are partly a matter of our own decisions, e. g. frozen water might be called either ice or hardened water.³⁷⁸ This conception of classification apparently applies to the microphysical stage as well, since Locke rejects the idea of sorts being established by real essences made by nature.³⁷⁹

Now I will turn to more substantial problems connected with Locke's notion of real essences. The essence distinction is introduced for every general term. This means, the members of species have real essences whether the sorts are more or less abstract, e. g.

³⁷⁶ 448, III.vi.16; 451, III.vi.23; 453ff, III.vi.26f.

³⁷⁷ Ayers (1991), II, 81: "To talk of *relevant* resemblance would be to beg the question, leaving it unexplained what principle of relevance to species-membership there is other than an arbitrary definition."

³⁷⁸ 447f, III.vi.13; 463f, III.vi.39.

³⁷⁹ Cp. 6c.

gold or metal. This contention is substantial for Locke, since it indicates that there is nothing special about the essences of the species of natural substances. Not only the species of bodies have nominal and real essences, but every class of entities being signified by a general term.³⁸⁰ Given this approach, the same conception of real essences has to apply to both the least general species and the more general ones. Locke calls the former 'lowest species' and the latter 'genera'. Importantly, there is a crucial difference between Locke's comprehension of lowest species and of genera. The nominal essence of a lowest species comprises all the features which have been found to go together in the standards when forming the idea.³⁸¹ This implies that an ideal lowest species is characterized by all the microphysical properties one conceives as being relevant for classification. By contrast, a genera is introduced to encompass various existing sub-classes for which reason the genera's nominal essence comprises features being shared by all sub-classes, i. e. one neglects on purpose other features which are included in the nominal essences of the sub-classes. For example, metal is defined by features shared by gold and silver and thus by neglecting several properties being specific for gold or silver.³⁸² This understanding of sorts implies that the same body can be conceived as both a member of lowest species and of genera. And depending on which sort one conceives the body to be a specimen of, one ascribes to him a different real essence.

Given Locke's conception of lowest species, the real essence of a body *qua* member of a lowest species comprises all the microphysical similarities one regards as classificatory relevant. For example, if gold is understood as the sort of bodies being yellow and having a metallic shine, the real essence of a specimen consists of all the microphysical properties as to which the specimen would ideally be sorted as the member of a lowest species in an ideal classification scheme. This conception of the real essences of members of lowest species is clear-cut within the mentioned arbitrariness.

By contrast, given Locke's conception of genera, the real essence of a body *qua* specimen of a genera consists only of a sub-set of the microphysical similarities one regards as classificatory relevant. In this case, the question however arises which type of

³⁸⁰ Cp. 6a.

³⁸¹ 459, III.vi.32.

³⁸² 459, III.vi.32.

microphysical similarities the real essence of a specimen comprises. For example, suppose the nominal essence of metal comprises three features of the macrophysical stage, e. g. having a metallic shine, being magnetic, and being heavier than water. In this case the real essence of bodies *qua* metal certainly comprises the microphysical similarities corresponding to the nominal essence. Yet, there might be further microphysical similarities existing amongst specimens of metal which do not correspond to one's nominal essence. Does the real essence of a piece of metal consist of these further similarities as well? On the backdrop of the thesis that species are man-made, one should assume that the answer depends on the epistemic intentions of the subject, i. e. on its grasp of bodies as metals. If 'metal' were introduced to catch all the similarities existing amongst bodies having the three properties and other features coexisting with these three properties, one would conceive their real essences as comprising all microphysical similarities which coexist with the microphysical similarities corresponding to the nominal essence. But if 'metal' were introduced to catch only the microphysical similarities corresponding to the three properties, one would conceive real essences as comprising only the microphysical similarities corresponding to the nominal essence. Which answer is the right one Locke does not tell us. After all, Locke might have an unclarified conception of real essences as to the genera of natural substances, since he virtually never discusses them. His paradigm are lowest species throughout his arguments.

As we have seen, Locke's notion of real essences is indeterminate in the sense that it partly involves "arbitrary" or personal decisions by the individual speaker to specify which features are conceived as classificatory relevant on the microphysical stage. On the one hand, this is certainly a bit dubious. Yet, on the other hand, given the success story of chemical classification as to lowest species - Locke's preferred example -, his conception of real essences is not unintelligible on first thought, i. e. his appeal to a notion of "relevant" similarities without exactly defining what 'relevant' means. Moreover, Locke is not confined to define "in advance" which properties comprise exactly the real essence of a body to get his arguments off the ground. He only needs to assume that there are similarities on the microphysical level and that one would sort bodies with respect to them to establish that our everyday species are not sorted by these similarities and that

they are the workmanship of the understanding. But it seems to me that in this respect Locke has a rather naive view on this matter, since he does not discuss or even allude to the problem. Apparently, he simply takes it for granted that there are distinctive differences amongst the microphysical properties in virtue of which one can easily classify bodies in sorts on this level. In this context, I may quote Ayers's interpretation of the following passage:

"[...] if the formal Constitution of this shining, heavy, ductil Thing (from whence all these its Properties flow) lay open to our Senses, as the formal Constitution, or Essence of a Triangle does, the signification of the word *Gold*, might as easily be ascertained, as that of *Triangle*."³⁸³

According to Ayers, this passage asserts that in the case of microphysical knowledge:

"[...] we could then fix and agree on a nominal essence consisting of a relatively few mechanical properties, as in the classification of machines with observable working parts, or indeed of geometrical figures: there would not be the same room for confusion as there now is, when we have to select defining properties from an indefinitely large number of powers."³⁸⁴

I agree with Ayers, but would add that here the proposed interpretation is manifest: Locke uses 'formal Constitution' to denote the set of microphysical properties which would best classify a piece of gold. Most commentators share the view that for Locke bodies are ideally classified as to microphysical similarities, but they do not take his notion of real essence to denote them.³⁸⁵

We have conceded that Locke's conception of real essences does not precisely determine which properties the real essence of a specimen comprises and that his distinction between lowest species and genera needs further clarification. On first thought, from today's perspective these aspects might appear so deficient that they cast doubt on, or at least represent *prima-facie* objections against, the proposed interpretation. The opposite seems to be true, however. Locke's account of real essences apparently appeals to a general intuition amongst some of contemporary natural philosophers. This can be seen by

³⁸³ 520, III.xi.22.

³⁸⁴ Ayers (1991), II, 76.

³⁸⁵ Cp. Yolton (1970), 33.

Boyle's attitude towards classification. On the one hand, he makes plain that classification is a matter of human based notions.³⁸⁶ On the other hand, he contends that "there is a vast multitude of portions of matter endowed with store enough of differing qualities to deserve distinct appellations".³⁸⁷ That is: it is us who sort bodies, but, ideally, we have to do it in the right way because bodies "deserve" an appropriate, distinct classification. The same thought is entailed in Marie Boas's account of Boyle:

"[Boyle] had already pointed out that salt of tartar, potash, and vegetable alkalis generally were all the same salt, without insisting that all salts were the same; and similarly he had pointed out that all animal alkalis, spirit of hartshorn, spirit of urine, spirit of soot were identical with spirit of sal ammoniac. Boyle in fact interested himself very early in the problem of chemical classification because it played a part in his attempt to confute the whole theory of chemical elements and principles. He attacked on every occasion both those who over-generalized and tried to assign all chemical substances to a very few classes, and those who tried to separate substances into too many classes by insisting that they must be classed according to their origin."³⁸⁸

In short: Boyle argued that bodies have to be "adequately" classified. In this light, Locke apparently picks up Boyle's idea in terms of his conception of real essences. And as already became clear, Locke incorporates this idea in a highly systematic way which links many substantial topics of his philosophy of language and knowledge, namely his accounts of archetypes, species, imperfection, abuses, and knowledge.

A final remark to Locke's conception of real essences. If one takes all comments into account, Locke's (usage of his) notion of real essences turns out to be slightly incoherent, however. According to Locke, the ascription of real essences to bodies is a supposition although we have good reasons to believe that bodies do have unknown, microphysical properties on which the experienced features depend. For instance, the assumption of microphysical properties allows to highlight the change of features which bodies have on the macrophysical stage.³⁸⁹ But after all, Locke insists, this conviction is only a

³⁸⁶ Boyle (1772), III, 27.

³⁸⁷ Boyle (1772), III, 34f.

³⁸⁸ Boas (1958), 144.

³⁸⁹ 444, III.vi.9.

conjecture.³⁹⁰ His reason for this position is of course his understanding of knowledge. As long as we do not have ideas of the presumed properties, we are strictly speaking ignorant whether bodies possess the features or not. On the other hand, Locke is evidently convinced that there are unknown properties explaining the possession of the features on the macrophysical level. This manifests in his claim that our everyday nominal essences cannot be the real essences of bodies because they cannot explain the possession of features what, however, genuine real essences can:

“But such a complex *Idea* cannot be the real Essence of any Substance: for then the Properties we discover in that Body, would depend on that complex *Idea* and be deducible from it, and their necessary connexion with it be known; as all Properties of a Triangle depend on, and as far as they are discoverable, are deducible from the complex *Idea* of three Lines, including a Space.”³⁹¹

But there is not only the possibility that Locke is mistaken and that there truly is no additional level of explanatory properties. Locke’s conception of real essences is moreover based on his contention that there are resemblances amongst bodies on this level. To depict ideally bodies by their similarities existing on an explanatory basic stage, is for Locke the common epistemic project which Aristotelians, the laymen and corpuscularians share despite their differences. But since the supposition of an explanatory stage and of resemblances existing on this level is only an assumption, it is logically possible for Locke that bodies do not possess properties and similarities on an explanatory stage which is more basic than the macrophysical level. Consequently, if there were no similarities on an explanatory more basic stage, resemblances on the macrophysical stage would be the real essences of bodies since the core conception of ideas of bodies is the representing of bodies by regularly experienced sets of properties. However, real essences comprising features of the macrophysical level apparently contradict Locke’s formula that real essences of bodies consist of features of the explanatory level on which the nominal essence of the sort depends.

This tension in Locke’s account is not unimportant, since the thrust of his ascription of real essences to bodies is to conceive bodies in terms of explanatory features being

³⁹⁰ 442, III.vi.6.

³⁹¹ 379, II.xxxi.6.

different from the macrophysical stage. It shows that the defining portrayal of real essences works only on the supposition that there truly are explanatory more basic similarities which explain properties on the macrophysical level. And the reasoning moreover establishes that, if Locke's theory is pressed, the most fundamental epistemic project turns out to be the depiction of natural substances by the similarities they have.

7.2 Further Textual Evidence

The point I have intended to establish so far is that in many of his substantial arguments Locke makes use of a notion of real essence as reconstructed - whether this is in line with characterizations in other parts of his comments or not. But there might be passages in which Locke uses a different notion of real essences. Perhaps, Locke's comprehension of real essences is ambiguous or simply confused?

In what follows the advanced interpretation will further be confirmed by two passages showing that real essences are consciously understood here in the proposed way. Subsequently, the most prominent textual evidence is renounced that usually is thought to establish one of the two prevailing models. The conclusion is that the advanced understanding of real essences is more or less uniformly present in Locke's explanations. This claim will be further warranted by the next chapter whose discussion on the fifth abuse of words yields the third model to be present there as well.

d. The Experience of Chemists

When arguing in III.vi that one sorts substances as to their nominal and not to their real essences, Locke refers in §8 to the practical experiences of chemists. Expecting to find the same properties when examining different members of the same sort, e. g. of sulphur,

chemists discover on the contrary that specimens often differ. The features in which members vary are said to depend on their respective internal constitution. And Locke concludes from this that bodies are not commonly classified as to their real essences: for, “if Things were distinguished into *Species*, according to their real Essences, it would be as impossible to find different Properties in any two individual Substances of the same *Species*, as it is to find different Properties in two Circles, or two equilateral Triangles”.³⁹² How are here real essences conceived?

“§8. [...] But if Things were distinguished into *Species*, according to their real Essences, it would be as impossible to find different Properties in any two individual Substances of the same *Species*, as it is to find different Properties in two Circles, or two equilateral Triangles.”³⁹³

First of all, Locke speaks of real essences in the corpuscularian sense, since he relates them to internal constitutions. Furthermore, the internal constitutions in question do not comprise all the microphysical properties a chemical substance has. For, if they did, this would mean that the particular microphysical properties corresponding to the macrophysical bulk and figure of a body were part of its internal constitution. But Locke cannot conceive here internal constitutions as comprising these microphysical features, since any two members of a sort would then obviously have different internal constitutions and no chemist could reasonably expect that specimens are alike as to the properties depending on their internal constitutions. Thus, in this context an internal constitution does not consist of all the microphysical properties a body has. Importantly, this suggests strongly that real essences are not conceived as comprising all the properties a body has as well. For, if Locke understood real essences in the light of the first model, Locke would not need to refer to the frustrated expectations of chemists, to conclude that bodies are not distinguished into species as to their real essences. Locke would only need to point to evidently existing variations amongst chemical substances, e. g. to their bulk and form, to be able to argue: “But if Things were distinguished into *Species*, according to their real Essences, it would be as impossible to find different Properties in any two

³⁹² 443, III.vi.8.

³⁹³ 443, III.vi.8.

individual Substances of the same *Species*, as it is to find different Properties in two Circles, or two equilateral Triangles". The two occurrences of 'real essence' cannot therefore be read as denoting the particular set of all the microphysical properties a body has. This is confirmed by Locke's understanding of real essences which is present in his analogy as to mathematical objects. The real essence of equilateral triangles or of circles, i. e. their nominal essence, does not determine all their mathematical properties, e. g. their size.

Decisively, a real essence is equally not understood as a microphysical structure which corresponds to the nominal essence of a species. This is indicated by Locke's argument, namely to establish that bodies are not classified as to their real essences by pointing out that members of the same sort vary in their properties which depend on their internal constitutions. Locke's reasoning implies that in this context internal constitutions are comprehended as consisting of microphysical features which in fact differ from specimen to specimen. The properties in which parcels of sulphur vary are properties which depend on the internal constitutions of the bodies. Thus, referring to experience, i. e. the scientific practice of chemists, Locke claims that members of the same sort often have different internal constitutions. In other words, an internal constitution is grasped as a sub-set of all the microphysical properties a member of a species has and as being *prima facie* specific for the specimen. On this backdrop, the real essences of specimens are apparently depicted as *prima facie* specific as well. This shows up when Locke addresses that members of the same sort could not display different properties, if they were sorted in accordance with their real essences. Evidently, Locke regards here the features in which specimens vary as depending on their real essences. For, if the properties were not conceived as depending on their real essences, he could not reasonably claim that specimens would not differ if they were sorted as to their real essences. In other words: if these properties did not depend on the real essences of bodies, the sorting of bodies as to their real essences would not guarantee that members of a species do not vary any longer as to these properties. This implies that a real essence is *prima facie* specific for a specimen. For, if specimens vary in the properties depending on their real essences, they must have different real essences.

This suggests the third model, on the one hand, and contradicts the first model, on the

other hand. Real essences are not grasped in terms of the first model because if the real essences of specimens were the microphysical properties corresponding to the nominal essence of the sort, every member would have the same real essence and they would be alike as to the properties on the macrophysical level which depend on this common real essence. To put it in different terms, the set of properties which is said to depend on the real essences of specimens exceeds here the set of properties which is determined on the macrophysical level by the set of microphysical features corresponding to the nominal essence of the sort.

Summing up, 'real essence' and 'internal constitution' are used aquivalently, namely to denote microphysical structures being *prima facie* specific for the members of a species. Consequently, the point of Locke's reasoning is to establish that bodies are commonly not classified as to their real essences since they display different features which depend on their real essences. Members of a species which vary as to the properties depending on their real essences are not sorted as to their real essences, since specimens would otherwise share the same real essence and would display the same features depending on this real essence:

"§8. [...] But if Things were distinguished into *Species*, according to their real Essences, it would be as impossible to find different Properties in any two individual Substances of the same *Species*, as it is to find different Properties in two Circles, or two equilateral Triangles."³⁹⁴

More generally speaking, Locke maintains that bodies of the same sort might differ in their real essences because some of them might reveal mutually excluding chemical properties. Thus, there is one nominal essence with which each specimen agrees, but there are in principle many real essences in which specimens differ. This is the point of Locke's comparison of bodies with circles and triangles. Contrary to sorts of mathematical objects, bodies of the same species do not necessarily have the same real essence. Of course, if one knew the real essences of bodies, one could form ideas of species whose nominal essences were identical with the real essences of their members as it is the case with sorts of mathematical objects. The punchline of Locke's argument therefore is that

³⁹⁴ 443, III.vi.8.

members of the same species of bodies have *prima facie* specific real essences. In Lockean terms, bodies are not sorted “according to precise, distinct, real *Essences*”.³⁹⁵ Thus, given the backdrop of the advanced interpretation, Locke’s disclaimer that bodies have precise real essences expresses the contention that real essences are *prima facie* specific.

We have seen, Locke’s argument in §8 gets off the ground only, if real essences (and internal constitutions) are consciously understood in terms of the proposed third model. Moreover, on this backdrop, the beginning of §9 clearly characterizes real essences as the sets of properties in accordance to which one would ideally sort bodies: “§9. Nor indeed *can we rank, and sort Things, and consequently (which is the end of sorting) denominate them by their real Essences, because we know them not.*”³⁹⁶

e. Human-like Creatures

There is another passage entailing similar results in connection with biological individuals. Locke describes here human-like creatures differing in their outer appearance and then asks which of them should be understood as being of the human species. His answer is the expected one: classifying biological individuals as humans depends on the idea one has. If one’s idea portrayed human beings as having reason and language, all bodies having reason and language would rightly be called man, whereas substances would not be conceived as humans if they had either no reason or no language even if they have, for example, a human-like shape. Locke subsequently points out that one could not decide with reference to the real essences of the human-like creatures which of them are to be classified as human beings, since our idea of man does not include any features of the real essences of these bodies. And he similarly claims that one could not classify the creatures in virtue of specific differences amongst their internal constitutions because our idea of man does not include any features of these internal constitutions. The point evidently is: only if we knew real essences or internal constitutions, one could take them into our idea of man and thus classify creatures as

³⁹⁵ 443, III.vi.8. Cp. 502, III.x.20.

³⁹⁶ 444, III.vi.9.

humans in virtue of their real essences or respectively in the light of the differences between their internal constitutions. Moreover, Locke maintains, differences between internal constitutions can only be said to be specific differences in relation to ideas including these internal constitutions. Thus, being in line with his notion of properties being essential for the members of a species, an internal constitution is conceived as being specific for bodies only if the bodies are members of the sort in virtue of possessing the internal constitution, i. e. if the internal constitution is the nominal essence of the species. Locke therefore emphasizes that it is unintelligible to ask which differences amongst the internal constitutions of the human-like creatures are specific as long as we have no ideas which include internal constitutions.

In this discussion, Locke makes the concession that the differences between the creatures on the macrophysical level gives us reason to assume that there are differences between their internal constitutions as well. But, he insists, we cannot sort bodies as to any specific differences amongst their internal constitutions if they are not included in our ideas. Which notions of real essences and internal constitutions are here at work?

“§22. [...] only we have Reason to think, that where the Faculties, or outward Frame so much differs, the internal Constitution is not exactly the same.”³⁹⁷

First of all, since Locke speaks of internal constitutions, real essences are here understood as corpuscularian real essences. Furthermore, Locke apparently wants to argue that creatures are not classified as men in virtue of the differences between their internal constitutions because they are not part of our idea of man although it is true that there certainly are differences amongst their internal constitutions. Importantly, Locke's wording indicates that commonly one only presumes - although quite reasonably - that creatures, which vary obviously on the macrophysical level, do have internal constitutions which differ to some degree: “only we have Reason to think, that where the Faculties, or outward Frame so much differs, the internal Constitution is not exactly the same”. Apparently, the difference between biological individuals having reason and language and biological individuals lacking reason and language is that big for Locke that

³⁹⁷ 450f, III.vi.22.

for him it is well justified to suppose that their internal constitutions have to vary to some extent as well.

Now, this implies, internal constitutions are not comprehended here as consisting of all the microphysical properties a body has. For, if internal constitutions were understood in terms of the first model, there would be no question whether it is reasonable to assume that internal constitutions of these creatures differ. If a real essence comprised all the microphysical features a body has, bodies would have to have different internal constitutions if they varied in features on the macrophysical level. It would be impossible to doubt whether a creature possessing reason had an internal constitution different from that of a creature not possessing reason.

Similarly, internal constitutions are likewise not grasped as microphysical structures corresponding to the nominal essence of a species. To get the opposite interpretation off the ground that internal constitutions are microphysical properties corresponding to a nominal essence, one would have to read Locke as conceiving the human-like creatures to be members of species, e. g. as changelings or drills, when referring to their internal constitutions. For example, when talking of the internal constitutions of creatures having reason and language, one would have to take Locke to regard the creatures to be of a species having the nominal essence of possessing reason and language. However, if internal constitutions were to be comprehended in this way, namely in the light of the first model, Locke could hardly claim that it were only reasonable to assume that the mentioned creatures have different internal constitutions. For, if the creatures were regarded to have nominal essences consisting of their properties on the macrophysical level, it would not only be highly probable that the creatures have different internal constitutions, but they would have to have different ones. If some internal constitutions corresponded to different nominal essences, there would have to be differences amongst the internal constitutions. In other words, if an internal constitution were the microphysical structure which corresponds to a nominal essence, Locke should rather have said: specimens of the same sort share necessarily the same internal constitution, whereas specimens of different sorts possess necessarily different internal constitutions.

The objections against both models shows that Locke speaks of internal constitutions which do not comprise all the microphysical features a body has and which do not

necessarily correspond to the nominal essence of a species. Importantly, Locke's contentions entail that internal constitutions need not to correspond to the properties of a nominal essence. For, if it is possible for Locke that creatures have the same internal constitution, although they differ in properties mutually excluding each other, e. g. to possess and to lack reason, the internal constitution cannot correspond to both sets of properties characterizing the two types of creatures.

By contrast, Locke's explanations become intelligible if one conceives of nominal essences as representing similarities on the macrophysical level and only as approximating microphysical similarities. This means, in this context an internal constitution is grasped in the light of the third model as the microphysical similarities according to which one would ideally sort the body, while maintaining the possibility that the members of both sorts have the same internal constitution. On this backdrop, Locke can reasonably claim that big differences on the macrophysical level between two species are good indications that the members of both sorts differ in their real internal constitutions, i. e. that one would ideally sort specimens of both sorts as to different sets of microphysical properties. On the face of it, in the quoted passage Locke makes use of a notion of internal constitutions which does not correspond to the two traditional models, but to the proposed one. And given Locke's usage of 'real essence' in this context, the passage suggests likewise on the face of it that real essences are conceived in the way as internal constitutions are, namely to be in accordance with the third model.

f. Alleged Textual Evidence for the Two Prevailing Models

So far I have argued that many of Locke's substantial arguments on the real essences of bodies afford and suggest a notion of real essences along the lines of the developed third model and that Locke consciously uses this notion in two passages. The next chapter will add another passage. Moreover, the developed interpretation of 'real essence' can easily be squared with Locke's usage of the concept in many other parts of his comments. To underpin further the proposed interpretation, I will therefore discuss prominent passages which are usually read to demonstrate one of the two prevailing models. But what ever

the comments indicate, given both the textual evidence just presented and Locke's use of 'real essence' in connection with species, archetypes, and knowledge, other passages could only establish that Locke is ambiguous or terribly confused as to his conception of (corpuscularian) real essences. For to refute the alternative interpretation one would have to say more than simply to insist on the traditional textual evidence for the orthodox view. I begin with the second model which takes a corpuscularian real essence to be the set of all the microphysical properties a body has.³⁹⁸ Some commentators³⁹⁹ interpret Locke's official introduction of 'real essence' as characterizing real essences in this way by arguing that Locke means the set of all microphysical properties a body has when explaining its real essence as the *essentia* or being of the body:

*"First, Essence may be taken for the very being of any thing, whereby it is, what it is. And thus the real internal, but generally in Substances, unknown Constitution of Things, whereon their discoverable Qualities depend, may be called their Essence. This is the proper signification of the Word, as is evident from the formation of it; Essentia, in its primary notation signifying properly Being. And in this sense it is still used, when we speak of the Essence of particular things, without giving them any Name."*⁴⁰⁰

Many advocats of the line of interpretation in question apparently take their reading for granted for the following reason.⁴⁰¹ Locke speaks of real essences as to bodies when they are not conceived as specimens, namely "when we speak of the *Essence* of particular things, without giving them any Name." However, we have seen above that this fits perfectly with the third model as well, especially in connection with Lockean

³⁹⁸ Phemister argues forcefully that there are several passages in which 'real essence' has to be read as signifying all the microphysical properties a body has. Two of her passages were differently interpreted above, namely as textual evidence for the third model. The other comments quoted by her do not allow to establish either the first model or the third one, however. Cp. Macke (1976), 97.

³⁹⁹ Cp. Ayers (1991), II, 73. Yolton (1970) seems to understand this passage alike, 30.

⁴⁰⁰ 417, III.iii.15.

⁴⁰¹ Perhaps, commentators believe that this is evident from the Stillingfleet correspondence where Stillingfleet reconstructs Locke's essence distinction as follows: "Essence may be taken two ways: 1. For the real, internal, unknown constitutions of things; and in this sense it is understood as to particular things. 2. For the abstract idea; and one is said to be the nominal, the other real essence." What this means is not clear, given the alternative between the second and the third model. Maybe more importantly, Locke is apparently dissatisfied with the bishop's summary: "Here too, I think, there are some words left out, which are necessary to make my meaning clearly understood; [...]". Cp. *Works*, IV, 79.

archetypes.⁴⁰² Similarly, it is also not obvious that ‘essentia’ and ‘being’ are to be understood in the light of the second model. To talk of the *essentia* or being of a body is simply too abstract than that it is evident what Locke means. More importantly, there are two objections against this reading.

First objection. Locke’s use of ‘essentia’ in other contexts suggests a different reading. Shortly after the definition, Locke speaks of the *essentia* of a triangle.⁴⁰³ The *essentia* of triangles is their real essence or nominal essence respectively, i. e. a space being enclosed by three lines. But contrary to the second model, the real essence of triangles cannot naturally be conceived as an equivalent to the set of all the microphysical features a body has. For this set determines all the body’s other properties, i. e. features on the macrophysical level, whereas Locke’s real essence of triangles does not determine all their (mathematical) properties, e. g. the size of the triangle. A particular triangle is conceived to possess many other properties which are not solely determined by its real essence. For example, a triangle might have a rect angle. But this property does not depend on the triangle’s bare triangularity. Likewise, the property expressed by the proposition of Pythagoras depends not only on bare triangularity, but on rectangularity as well. Thus the *essentia* (or real essence) of triangles, as Locke understands it, is not analogous to the set of all the microphysical properties a body has. Thus, if one does not want to ascribe confusion to Locke, this passage indicates that he does not comprehend the *essentia* or real essence of a body as comprising all its microphysical properties.

Second objection. In the defining portrayal of ‘real essence’, Locke explains the *essentia* of a body as “the very being of any thing, whereby it is, what it is”.⁴⁰⁴ Crucially, Locke’s usage of this expression in other passages suggests that ‘essentia’ should not be read in the light of the second model:

“First, That there are certain precise Essences, according to which Nature makes all particular Things, and by which they are distinguished into *Species*. That every Thing has a real Constitution, whereby it is what it is, and on which its sensible Qualities depend, is past doubt: But I think it has been proved, that this makes not

⁴⁰² Cp. 7c.

⁴⁰³ 418, III.iii.18.

⁴⁰⁴ 417, III.iii.15.

the distinction of *Species*, as we rank them; nor the boundaries of their names."⁴⁰⁵

On the face of it, in the last quoted sentence Locke speaks *in persona propria*, since he refers to something what "is past doubt". But this real constitution can hardly comprise all the microphysical properties a body has, because according to Locke's position one would not even envisage to classify bodies as to a set of microphysical features of this kind. The reason is simple. For Locke, ideas depict bodies in virtue of recurrently experienced similarities. Thus, one would not even attempt to sort bodies into species which are characterized by microphysical properties that are specific for only one body. And since the internal constitution is depicted as that "whereby it is, what is", this suggests that in the defining portrayal Locke does not characterize the real essence of a body as comprising all the microphysical properties the body has.

Since a discussion of Aristotelian real essences is the wider context of the citation, one might claim that Locke really refers to Aristotelian real essences when qualifying real essences as *essentia*, namely as that whereby a specimen is what it is. According to the Aristotelian doctrine, a real essence comprises properties which are shared by each member of a sort and which thus determine only features on the macrophysical stage being common to every specimen. This implies crucially that Aristotelian real essences are not (equivalent to) the set of all the microphysical properties a body has. For if the Aristotelian real essence of a body were analogous to the set of all the microphysical properties the body has, the Aristotelian real essence would not only determine properties on the macrophysical level which the body shares with other specimens of its sort, but likewise all its other features just as the set of all the microphysical properties does. Hence, 'whereby it is, what it is' does not characterize here the real essences of bodies as that on which all their properties of the macrophysical stage depend. This suggests in turn that 'essentia' should likewise not be understood in the light of the second model.

Summing up both objections, there are passages in which Locke apparently does not conceive the *essentia* of an entity as a set of properties which is (analogous to) the set of all the microphysical properties a body has. Locke calls the real essence of a triangle its *essentia*, but the real essence of a triangle does not determine all its other mathematical

⁴⁰⁵ 502, III.x.21.

properties. Locke characterizes the Aristotelian real essence of a body as that ‘whereby it is, what it is’, but the Aristotelian real essence does not determine all the body’s features. This usage of ‘essentia’ and ‘whereby it is, what it is’ contradicts the common view that Locke defines real essences as the second model depicts them. Even worse, I do not see any other passage which on the face of it could serve as textual evidence for the second model. On the other hand, to do justice to this line of reading, it should be added that other alleged textual evidence has been put forward which, however, has above been interpreted differently, namely as incompatible with the second model and in favor with the third one.

By contrast, there are two passages supporting the first model on the face of it. These comments have in particular been advanced as textual evidence for the orthodox reading according to which a real essence is the microphysical structure corresponding to the nominal essence of a species and being common to all members of the sort. However, I will argue, given both the presence of the third model in many of Locke’s most substantial arguments and the two passages where Locke consciously portrays real essences as being *prima-facie* specific, one should read the two comment differently. There is no need to certify confusion or ambiguity on Locke’s side if one highlights one occurrence of ‘real essence’ and one occurrence of ‘internal constitution’ on the backdrop of the third model, i. e. in the light of his other comments. In one famous passage, the real essence of a body is explained as

“that real constitution of any Thing, which is the foundation of all those Properties, that are combined in, and are constantly found to coexist with the *nominal essence*”.⁴⁰⁶

Does Locke here not depict the real essence of a body as the microphysical structure corresponding to the nominal essence of a species which determines the nominal essence and other properties on the macrophysical level?⁴⁰⁷ I do not deny that the real essences of bodies are here depicted in this way. But to read Locke as expounding a coherent position, one should take the quoted comment as not being a comprehensive characterization of

⁴⁰⁶ 442, III.vi.6.

⁴⁰⁷ Ayers interprets this passage as demonstrating the common reading. Cp. Ayers (1991), II, 74.

the real essences of bodies. For the third model conceives likewise the real essences of specimens to determine both the nominal essence of the sort and other properties coexisting with the nominal essence. The decisive difference between the first and the third model is, however, that according to the latter the real essence of a specimen determines *prima facie* also other features which do not always go along with the nominal essence. This additional characteristic is not mentioned in the quoted passage, yet it is clearly present or implied by many of his other comments on species, archetypes, or knowledge - as we have seen. Locke does not point out or emphasize the *prima-facie* specificity of real essences in all contexts, e. g. in the quoted passage, as he does in such where it becomes relevant for the argument. In fact, there are many passages which are in this sense neutral to both, or even to all three, readings.

In the Stillingfleet correspondence, by contrast, Locke clearly appeals to real essences in terms of the first model:

“[...] it is certain that the real essence of all the individuals, comprehended under the specific name man, in your use of it, would be just the same, [...]; because the real essence on which that unaltered complex idea, *i. e.* those properties depend, must necessarily be concluded to be the same.”⁴⁰⁸

“[...] it is impossible but the real constitution on which that unaltered complex idea, or nominal essence, [of a species] depends, must be the same: *i. e.* in other words, where we find all the same properties, we have reason to conclude there is the same real, internal constitution, from which those properties flow.”⁴⁰⁹

No doubt, Locke declares that specimens of the same sort have the same internal constitution, *i. e.*, as Locke's repeated equation of internal constitutions and real essences makes plain,⁴¹⁰ specimens of the same sort have the same real essence. Does this refute the whole argument now? Hardly. Does this passage shows that Locke is hopelessly confused or that he secretly changed his position in the face of Stillingfleet's criticism? Not necessarily.

To assess the significance of Locke's assertions in his reply to Stillingfleet, one has to keep

⁴⁰⁸ *Works*, IV, 89.

⁴⁰⁹ *Works*, IV, 91.

⁴¹⁰ *Works*, IV, 82, 85, 87, 88, and 90.

in mind that Locke does not need to refer to real essences being *prima-facie* specific to refute Stillingfleet's objections. There are two topics at issue, at least from Locke's perspective. The first one is Stillingfleet's insistence that kind-membership is determined by real essences and not merely by Lockean nominal essences.⁴¹¹ Stillingfleet's starting point is that there must be a real essence that underlies the similarities of a species, which are included in its nominal essence. Locke grants this last claim, and in granting it he introduces the notion of real essence as quoted above. Locke rejoins however not only that there certainly is an underlying resemblance which accounts for the observed similarities on the macrophysical stage, but that this real essence cannot determine our species because we do not know them. In this context, all what Locke needs is one's ignorance of explanatory basic features to reject Stillingfleet's contention. Locke's argument holds whether real essences are precise or *prima-facie* specific.

The second aspect of the controversy relates to the question whether species are made by nature or by men.⁴¹² This becomes plain in the light of their respective contentions. Stillingfleet argues for real essences that are in some sense not made by man, but by God (and which therefore determine kind-membership independently from any man-made nominal essences). In Locke's terms of the *Essay*, as we have seen in the foregoing chapter, Stillingfleet claims that species are made by nature, not by man. Consequently, Locke resists both that nominal essences are collections of experienced similarities amongst bodies and that it is unintelligible for him to conceive of real essences that exist in nature in Stillingfleet's strong sense. Correspondingly, Locke concedes only that there are real essences matching man-made nominal essences. Again, Locke does need for his refutation that real essences are *prima-facie* specific.

The reconstruction of the debate made plain that, from Locke's standpoint, he and Stillingfleet agree in a common notion of real essence, but not on further characterizations of real essences. Both understand a real essence as comprising the features on which the nominal essence of a species depends. For Locke, this conception of real essences is both: one which is accepted by Stillingfleet and which allows him to refute

⁴¹¹ Cp. *Works*, IV, 87-91.

⁴¹² Cp. *Works*, IV, 83-91.

Stillingfleet. Given Stillingfleet's orthodox view of real essences, he would hardly have granted real essences being *prima-facie* specific. But to have a common ground is a presupposition to convince another person. In the light of what has been shown above, I therefore read Locke's portrayal of real essences in terms of the first model as a tactical concession to win the argument against Stillingfleet on issues which are not confined to the supposition that real essences are *prima-facie* specific.

Another possibility is of course to take Locke as being confused. In this case, however, he has to be really deeply confused. A direct comparison between a passage of the *Essay* and of the correspondence illustrates this well:

"[...] it is certain that the real essence of all the individuals, comprehended under the specific name man, in your use of it, would be just the same, [...]; because the real essence on which that unaltered complex idea, *i. e.* those properties depend, must necessarily be concluded to be the same."⁴¹³

"§20. That which, I think, very much disposes Men to substitute their names for the real Essences of Species, is the supposition before mentioned, that Nature works regularly in the Production of Things, and sets Boundaries to each of those Species, by giving exactly the same real internal Constitution to each individual, which we rank under one general name. Whereas any one who observes their different Qualities can hardly doubt, that many of the Individuals, called by the same name, are, in their internal Constitution, as different one from another, as several of those which are ranked under different specifick Names. *This supposition, however that the same precise internal Constitution goes always with the same specifick name, makes Men forward to take those names for the Representatives of those real Essences, though indeed they signify nothing but the complex Ideas they have in their Minds when they use them.*"⁴¹⁴

I will come back to the last quoted passage in the next chapter and analyse it in detail. But the contradiction to the preceding citation is apparent. On the one hand, members of the same sort are said to have the same real essence, or internal constitution respectively, namely that "the real essence of all the individuals, comprehended under the specific name man [...] must necessarily be concluded to be the same." On the other hand, experience is said to show that members of the same sort do not have the same internal constitution, or real essence respectively, namely that "any one who observes their

⁴¹³ *Works*, IV, 89.

⁴¹⁴ 501f, III.x.20.

different Qualities can hardly doubt, that many of the Individuals, called by the same name, are, in their internal Constitution, as different one from another, as several of those which are ranked under different specifick Names.”

In any case, whether Locke makes a tactical concession or whether he is confused when replying to Stillingfleet, the two occurrences of ‘real essence’ and ‘internal constitution’ respectively can scarcely establish that Locke has no clear conception of the kind of corpuscularian real essences which he proposes as an alternative to Aristotelian real essences. For, as we have seen above in connection with Locke’s account of the experience of chemists and as will be reconfirmed in the next chapter,⁴¹⁵ Locke consciously contrasts Aristotelian real essences as being precise with his corpuscularian real essences as not being precise. That is, the former ones are depicted as being necessarily common to all members of a species in contrast to the latter ones as being *prima facie* specific for specimens. Moreover, the discussed passages on chemists and human-like creatures cannot be read coherently unless one understands a real essence and an internal constitution respectively to be a microphysical structure in the advanced sense. In addition, as delineated in 7.1, one does not find arbitrarily this conception of real essences in these two passages; rather, it is present in Locke’s arguments on bodies throughout the *Essay*. And having established that, one naturally reads passages on this background where Locke consciously refers to real essences as real essences belonging to a particular body, namely to a particular member of a sort. These comments do not demonstrate that Locke conceives real essences as the third model depicts them. Yet, given the advanced interpretation, he seems to account for the *prima-facie* specificity of real essences when he speaks of them by referring to them as real essences belonging to a particular specimen of a sort. For instance, Locke says that “[t]he particular parcel of Matter which makes the Ring I have on my Finger, is forwardly, by most Men, supposed to have a real Essence.”⁴¹⁶ Thus, even though Locke differently uses his terminology in his reply to Stillingfleet and although he might be even confused there, his conception of real essences as depicted by

⁴¹⁵ Cp. 7d and 8d.

⁴¹⁶ 379, II.xxxi.6.

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the third model is dominant, consciously put forward, and crucial for many of his arguments on bodies. Given the connection to Boyle, Locke seems to spell out Boyle's intuition of classifying bodies "as they deserve" in terms of his conception of real essences.

8. Imperfection and Abuses

Locke puts his comments on the imperfections and abuses of words in the perspective of his epistemological programme to determine the scope of human knowledge. The theory is intended to disclose substantial hindrances for the progress of knowledge and to propose remedies to advance knowledge.⁴¹⁷ The importance which Locke attaches to his comments manifests in his separate discussion of words in an autonomous book which according to him evolved in the course of writing the *Essay*, apparently due to the findings of the imperfections and abuses.⁴¹⁸ Not unimportant for our topic, apparently, this is particularly emphasized in the context of names of bodies, namely as to the Aristotelians and their doctrines.⁴¹⁹ For Locke, the account unmasks scientific debates and philosophical arguments as being based on the abuses and imperfection of names of bodies. And he intends to pave the way for the progress of knowledge by disenchanting these false theories and fruitless debates, i. e. “[to remove] some of the rubbish that lies in the way of knowledge”.⁴²⁰ He thereby distinguishes between different causes of the obstructions of knowledge, namely between abuses as avoidable shortcomings and imperfections as natural or hardly evitable deficiencies of language. On this backdrop, Locke then proposes an ideal to use words in scientific discourse to advance human knowledge.

Yet, despite Locke’s own pronouncement, his discussion of imperfections and abuses is generally underrated in the literature. There is hardly any systematic account of them. By contrast, I will argue that a detailed analysis of the various issues where the theory applies substantiates the prominence which Locke gives to his discussion. As we will see, Locke’s account of how imperfections and abuses obstruct human knowledge of bodies and of what one can do about it raises substantial claims as to our scientific grasp of bodies.

⁴¹⁷ Cp. *Epistle*, 10 and 13f; 507-12, IV.xi.3-8.

⁴¹⁸ Cp. *Epistle*, 10 and 13f; 401, II.xxxiii.19.

⁴¹⁹ *Epistle*, 10.

⁴²⁰ *Epistle*, 10.

In section 8.1, I will begin with Locke's analysis of what the imperfection and abuses of names of bodies consist in. Then, the obstructions of knowledge will be delineated together with the remedies Locke proposes. The account of the fifth abuse will however remain very general in 8.1, since it will separately be highlighted in 8.2 due to the extensiveness of the discussion. The deeper reason is that the advanced interpretation notably diverges from traditional readings, since Locke's comments are again understood in terms of the model of real essences which has been developed in the previous chapter.

8.1 Imperfection and Abuses

a. What the Imperfection and Abuses of Names of Bodies Consist in

Imperfections and abuses arise when speakers deviate from Locke's ideal of using words in thought and communication, namely to use words with a clear and unmistakable signification. This means for the imperfection of names of bodies that the words are ambiguous when used in the corpuscularian way and meaningless when used in the Aristotelian way. In both cases, Locke advances a double characterization of the root of the imperfection. Names of bodies are imperfect either if their signification are not the real essences of bodies, or if words are referred to unknown or only partially known standards.⁴²¹ Both portrayals boil down to mean the same, since the real essences of bodies serve as the standards of names of bodies. If names signify bodies by their real essences, the standards of the names are known because the standards are the real essences and real essences are known if names signify real essences. And if the standards are known, names signify bodies by their real essences because one intends to signify ideally real essences by

⁴²¹ 477, III.ix.5.

one's names. Locke's two causes of the imperfection of names of bodies turn thus out to be equivalent. But why is our ignorance of standards, or real essences respectively, the source for the imperfection of the names of bodies? I will first turn to the corpuscularian use only and later to the Aristotelian use in connection with abuses. This, at first sight, unusual ordering is necessary, however, since Locke does not use his notions of imperfection and abuse fully coherently in connection with bodies so that the borderline between imperfection and abuses blurs.

According to Locke, speakers, who intend to depict corpuscularian archetypes by their ideas, use the same terms to signify similar, but different ideas of bodies to the effect that the terms are used ambiguously, i. e. differently amongst people. Locke's example is 'gold'.⁴²² Whereas a child's idea of gold includes only the colour of a particular type of yellow, other people include more properties in their ideas, e. g. the property of possessing a metallic shine. As a consequence, in the former case 'gold' denotes also tails of peacocks besides golden rings, but not in the latter one. And, depending on their experience, chemists add even more features to their idea so that 'gold' signifies again different classes of bodies. Locke's point is that this kind of imperfection has to evolve if people are ignorant of real essences. For, if one does not know real essences, it is legitimate for everybody to include in one's ideas every set of properties which one finds to coexist on the macrophysical level in the bodies serving as standards when one makes the ideas. The deeper reason for the legitimacy is that every set of coexisting features may serve as a substitute for the unknown real essences of the standards of our ideas if one is ignorant of their real essences. As Locke puts it, every set of properties has the same right to be included in an idea. Names of bodies therefore are ambiguous because everyone can justify one's use of terms by the ideas one has made in the light of one's experience of one's standards and their properties. Likewise, no one can establish a uniform signification for names of bodies because nobody has the right to reject the ideas of other people by insisting on one's own idea as the only true standard for the term everybody uses.⁴²³ In this sense, our ignorance of real essences is the cause of the imperfection: due

⁴²² 485f, III.ix.17.

⁴²³ 482f, III.ix.13.

to our ignorance, real essences cannot serve as a uniform standard in the light of which speakers could adjust their ideas and names. Instead, speakers have their own standards and ideas which determine the signification of their names.

Like imperfections, abuses exist when speakers use words without a clear and unmistakable signification in thought or communication. Locke distinguishes between six types of abuses of which five are significant for names of bodies. All of these five abuses are notably associated with the technical terms employed by the Aristotelians or by other "Sects of Philosophy and Religion".⁴²⁴ if one introduces new terms or uses familiar terms which do not signify a clear and distinct idea (first abuse);⁴²⁵ if one use words inconsistently, see below (second abuse); if one employs common words contrary to their common use or introduces new terms with ambiguous signification (third abuse), e. g. the Cartesian notion of body; or if one understands one's terms to denote existing entities though they do not, e. g. 'substantial Forms' (fourth abuse); if one refers words to entities in the world, namely real essences, which they do not or even cannot denote, see 8.2 (fifth abuse).

On this backdrop, the difference between abuses and imperfections becomes obvious. Whereas the imperfection of names of bodies is based on our ignorance of real essences which for Locke is an undisputable, given matter of fact and in this sense unavoidable, an abuse is evitable if speakers would simply take care about their use of words, namely if one makes sure that one's words stand each for an unmistakable, clear and distinct idea. And speakers have to use imperfect terms, namely words which have inevitably an unequivocal meaning, simply because they have to use a common language in communication.⁴²⁶ If people want to refer to species of bodies even when they are ignorant of their real essences, they have to use imperfect names. This is the punchline that imperfections arise inevitably: they are rooted in the very nature of language, namely to use common signs to express thoughts in communication, e. g. thoughts relating to species of bodies. By contrast, an abuse is an use of words which is avoidable in

⁴²⁴ 491, IV.x.2.

⁴²⁵ 491, IV.x.2: Locke does not give any examples of technical terms abused in this way because, as he declares, they are obvious for everyone who encounters them in conversations or writings.

⁴²⁶ 475f, III.ix.1ff.

communication and with the result that terms have no unmistakable, distinct meaning:

“§1. BESIDES the Imperfection that is naturally in Language, and the obscurity and confusion that is so hard to be avoided in the Use of Words, there are several *wilful Faults and Neglects*, which Men are guilty of, in this way of Communication, whereby they render these signs less clear and distinct in their signification, than naturally they need to be.”⁴²⁷

To understand the distinction between imperfections and abuses in the suggested way is in line with what has been said so far in connection with names of bodies (and what Locke contends as to the imperfections and abuses concerning other types of words). However, Locke’s account of the imperfection as to the corpuscularian use of names of bodies substantially undermines this picture. Names of bodies are said to be imperfect when they are referred to (unknown) Aristotelian real essences because they become meaningless and cannot be rectified in the light of (known) Aristotelian real essences. That is, speakers do not use their words to signify unmistakably clear and distinct ideas. Thus, on the face of it, this account is parallel to the one of the corpuscularian use, as I will now delineate first.

With respect to Aristotelian real essences, the argument consists of two steps.⁴²⁸ First, Locke explains the uncertainty of the meaning of words by the inability of speakers to identify members of species that results from their ignorance of the Aristotelian real essences.⁴²⁹ Locke makes here use of an argument which he develops more in detail at other places.⁴³⁰ It runs as follows. Given the Aristotelian comprehension of names and ideas, speakers refer them to real essences being shared by every specimen. Only those bodies are conceived as members of a species which have its real essence. Thus, it is the real essence and not the nominal essence which according to this use of words sets the boundary of a sort. But if the real essence determined which body belongs to a species and if the real essence is unknown, no specimen could be identified. Therefore, general terms being used in this way, truly signify nothing, neither an idea nor a species. In this

⁴²⁷ 490, III.x.1.

⁴²⁸ 482, III.ix.12.

⁴²⁹ 482, III.ix.12.

⁴³⁰ 470, III.vi.50; 580ff, IV.vi.4f.

perspective, one has to read Locke's analysis that a word being thus used "must be very uncertain in its application": our ignorance of real essences implies that one has no criteria to apply names of bodies so that their application has to be uncertain. One has to read likewise the second step of the argument where Locke concludes from what he just said that the signification of names of bodies can never be established by rectifying them in the light of their standards or real essences respectively: if one does not even know how to apply the names of bodies, it is simply impossible that one can adjust their signification by referring them to (unknown) Aristotelian real essences. In a nutshell: we cannot adjust the meaning of our terms, if they do not have one.

In both cases, i. e. in the corpuscularian and the Aristotelian one, we have seen, Locke determines as the root of the imperfection our ignorance of real essences in the sense that their lack of knowledge does not enable speakers to rectify names in the light of the real essences by which they intend to portray bodies ideally. The common line of both arguments is: that people intend to depict ideally bodies by their real essences, that speakers are ignorant of real essences, and that speakers vary in their use of words since they cannot adjust their use in the light of the (unknown) real essences of bodies. Locke takes this as an obvious fact being displayed in everyday communication, e. g. between children and adults, and in scientific discussions, e. g. which substance is truly gold and which creatures are truly humans.⁴³¹

However, to conceive the imperfection of the Aristotelian use as analogous to the one of the corpuscularian use is only to follow Locke's official setting; namely, that, on the one hand, there is the distinction between imperfections and abuses, and that, on the other hand, there are the different kinds of imperfections and abuses. But a closer look reveals that the fifth abuse is identical with the Aristotelian use of names of bodies. In both cases, one refers words to species of entities characterized by (unknown) Aristotelian real essences. Curiously, this implies, the imperfection relating to the Aristotelian use is an imperfection relating to an abuse. Thus, there is a tension in Locke's account since imperfections are officially contrasted as being "inevitable" with abuses as being "avoidable". Of course, one may say: once one supposes the fifth abuse, the imperfection

⁴³¹ Cp. 454f, III.vi.27; 458, III.vi.31; 461f, III.vi.35.

occurs inevitably. But this way of putting it can hardly cover up the fact that this is contrary to the point which Locke intends to make with his two notions, namely to introduce a clear-cut distinction. Thus, as a matter of fact, his characterization of imperfections as inevitable in contrast to abuses as avoidable is in harmony with the imperfection of names of bodies as to the corpuscularian use (and with the imperfections concerning other words), but not with the imperfection as to the Aristotelian use. To be more precise, since the Aristotelian use is identical with the fifth abuse, the Aristotelian use is as avoidable and dispensible as Locke portrays the fifth abuse. And according to Locke, the Aristotelian use should be substituted for the corpuscularian one.

b. The Obstructions of Knowledge and Locke's Remedies

In which way do the imperfection and abuses of names of bodies obstruct communication or thought and, as a consequence, knowledge? What kind of remedies does Locke propose? In this context Locke distinguishes between two cases, namely between the civil or common use of words and the philosophical one.⁴³² The former is the usage of words in everyday's conduct, the latter the one in scientific discourse. That is, Locke distinguishes between different contexts in which words are used. Importantly, for Locke the imperfection seriously hamper only scientific discourse, but not everyday conduct.⁴³³ Locke probably beliefs as to the common use that the difference between the ideas of speakers do either not become relevant or are too obvious to cause (serious) confusion and misunderstanding. And he could explain this by his view that speakers have the general inclination to adjust the signification of their names as to the ideas of other people in order to be understood in communication.⁴³⁴ That is, due to our efforts to use common names as other speakers do, the usage of names does not vary too much to destruct everyday conduct.

Quite the contrary, the philosophical use. Imperfections here introduce ambiguities

⁴³² 476, III.ix.3.

⁴³³ 509f, III.xi.3ff.

⁴³⁴ Cp. 386, II.xxxii.8; 406f, III.ii.4; 407, III.ii.6.

leading to fruitless discussions which are in fact only about the meaning of words, e. g. whether a bat is a bird and whether bodies not being malleable are gold.⁴³⁵ Locke does not become tired to emphasize the hindrance for the progress of knowledge which is caused by misunderstandings due to unclarified ambiguities.⁴³⁶

Similarly, abuses. Locke's focus is clearly on the philosophical use as his examples show which chiefly relate to technical terms of the Aristotelians or of other "Sects of Philosophy and Religion".⁴³⁷ His criticism aims primarily at the Aristotelians which according to him obscure knowledge by a theory of species and essences that is merely based on an abuse of words. Locke recurrently criticizes the technical terms of Aristotelian theory as unintelligible and meaningless, e. g. 'form', 'species' and 'essence'.⁴³⁸ He seems to regard these notions as crude conceptions evolving in the aftermath of the fifth abuse, since he conceives the Aristotelian understanding of real essences, i. e. the doctrine of forms, as comprising additional extravagant assumptions and thus as unnecessarily topping the fifth abuse.⁴³⁹ Below, in 8.2, we will give a full account of the types of false knowledge claims which are raised by the Aristotelians in connection with the fifth abuse.

Of course, other abuses like the ambiguous or inconsistent use of terms occur in the common use and hamper everyday communication to some degree. But Locke does not claim that the abuses make common conduct unintelligible as they do with regard to scientific discourse. This is again best exemplified by the fifth abuse, i. e. the referring of names of bodies to species characterized by unknown real essences. According to him, the fifth abuse is not only practised by Aristotelians, but also by laymen.⁴⁴⁰ However, Locke's analysis implies that the abuse does not really become relevant in the civil use of the laymen. The reason is obvious. As Locke repeatedly points out, since words are effectively meaningless when abused in this way, speakers could not identify any specimens if they really applied their words as they intend to do. For instance, one could not identify a ring of gold or a piece of fish in the jewellery shop respectively on the market, if one referred

⁴³⁵ 511f, III.xi.7; 461, III.vi.35.

⁴³⁶ *Epistle*, 13f; 523f, III.xi.26f; 642, IV.xii.6.

⁴³⁷ 491, IV.x.2.

⁴³⁸ 380, II.xxxi.6; 445, III.vi.10; 448, III.vi.15; 571ff, IV.iv.16f.

⁴³⁹ 502f, III.x.20f. Cp. 8.2.

⁴⁴⁰ Cp. 8.2.

'gold' and 'fish' to unknown real essences. Communication would be impossible, if the fifth abuse were truly practised in everyday conduct. We will come back to this below.⁴⁴¹ The fifth abuse is therefore effectively confined to scientific debates, e. g. what is the true definition or real essence of humans.⁴⁴²

But besides the fifth abuse there is another substantial source of obstruction in the scientific realm of bodies which is chiefly based on the second abuse, i. e. the inconsistent use of terms. This is the topic of maxims. In his discussion of maxims, Locke attacks the Aristotelian belief that the so-called maxims can serve as basic principles from which all other truths are to be deduced.⁴⁴³ Maxims are very general and intuitively known propositions, e. g. 'Whatever is, is', which can supposedly serve as axioms to prove other propositions. Contradicting allegations raised against him, Locke agrees with the Aristotelians that knowledge of maxims is genuine knowledge, since they are propositions being intuitively known. Yet, he points out, maxims do not help to enhance knowledge in the sense that they serve as a foundation of our knowledge.⁴⁴⁴ For the kind of propositions which maxims are supposed to prove are grasped independently of the maxims because the propositions are intuitively known as well, e. g. 'White is white'.⁴⁴⁵ Quite the contrary, Locke contends, instead of advancing knowledge, the belief in maxims rather hinders the progress of knowledge. For maxims can easily be mistaken to establish contradictory propositions in the course of an abuse of words, namely of using the same term for different ideas. Locke illustrates this as to 'man'. Children whose idea of man include the feature of having a white skin can demonstrate that 'black people are not humans' is not true. However, people whose ideas incorporate only a human-like shape can reason that the proposition is true. Similarly, the latter speakers can likewise conclude that changelings are humans, whereas changelings are not humans for those subjects whose ideas include rationality and speech as well. And so on. From the modern perspective, this seems to be rather uninteresting. But Locke has disputes of his time in

⁴⁴¹ Cp. 8c.

⁴⁴² 499f, IV.x.17.

⁴⁴³ 595, IV.vii.8; 596f, IV.vii.10.

⁴⁴⁴ 605, IV.vii.14. Cp. 493f, III.x.6.

⁴⁴⁵ 592, IV.vii.4.

mind, e. g. whether certain creatures are humans and can therefore be baptized, which were relevant at his time.⁴⁴⁶

In addition, Locke's criticism of Aristotelian maxims applies to Descartes's notion of body.⁴⁴⁷ Given Descartes's idea of body that bodies are bare extension, Locke exhibits, one can conclude with the maxim 'Whatever is, is' that there cannot be a vacuum. However, if 'body' signifies an entity comprising not only extension but solidity as well, one can establish with the maxim 'The same thing cannot be, and not be' that there might be a vacuum. But the two contradictory claims have only the word 'body' in common, i. e. a term which signifies a different idea in each case. And contradictory claims, Locke complains, lead to confusion which hinder us to grasp things correctly.

In fact, the Cartesian example is more complex than it first appears because the third and fourth abuse are involved as well. First, as Locke's example of the third abuse shows, the Cartesian idea of body does not comply with the everyday one although this is suggested by signifying the Cartesian idea by the common term 'body'.⁴⁴⁸ Second, the fourth abuse is present because Cartesians imply that their notion of body refers to existent entities, namely the ones which we commonly call body, although we do not know whether Cartesian body exists in the world, since this idea has not been acquired from experience.⁴⁴⁹ That is, Cartesians suppose their idea to depict the kind of entities to which one usually refers as body although the idea does not portray the entities in the way we commonly grasp them as bodies. Thus, the name that signifies the idea, i. e. 'body', is taken to denote our everyday bodies. This means that, contrary to the Cartesian doctrine, the name 'body' is not referred to the Cartesian idea of body, but stands for entities which are not depicted by the idea - when Cartesians relate 'body' to our common bodies. In this sense, Locke accuses Cartesians to take words to stand for (commonly known) entities but not for (their official) ideas:

"But because Men mistake generally, thinking that where the same Terms are preserved, the Propositions are about the same things, though the *Ideas* they stand

⁴⁴⁶ 453ff, III.vi.26f.

⁴⁴⁷ 603ff, IV.vii.12f.

⁴⁴⁸ 493, III.x.6.

⁴⁴⁹ 604f, IV.vii.12ff.

for are in truth different. Therefore these Maxims are made use of to support those, which in sound and appearance are contradictory Propositions; as is clear in the Demonstrations above-mentioned about a *Vacuum*. So that whilst Men take Words for Things, as usually they do, these Maximes may and do commonly serve to prove contradictory Propositions.”⁴⁵⁰

To “take Words for Things”, is the reason why Cartesians wrongly believe that their propositions and ideas have to apply to the entities to which one usually refers ‘body’ in everyday conduct. But since everyday bodies are differently conceived as being bodies than the Cartesian idea suggests, the common notion of body allows the possibility of a vacuum in contrast to the Cartesian idea. The Cartesian confusion to believe that their conception of bodies is in line with our grasp of the entities commonly understood as bodies leads to the kind of confusion and error in scientific debates and learning Locke persistently complains about.⁴⁵¹ Locke’s intriguing analysis of the Cartesian doctrine of bodies and the impossibility of the vacuum well illustrates why he attaches that much importance to our “ill use” or abuse of words throughout the *Essay*.

On the backdrop of this account, Locke proposes remedies of the imperfections and abuses. He does this in the light of his ideal that words should have a unmistakable, clear and distinct signification. This means that words like names of bodies have to signify for all speakers the same clear and distinct idea in communication. But since this is difficult to achieve, as the imperfection of the corpuscularian use well exemplifies, it follows that one has to make sure that other speakers grasp the ideas which are signified by one’s names. Only in this way one can prevent confusion and fruitless debates which are caused by terms that are differently understood by speakers. In other words, to avoid the obstructions of knowledge by imperfections and abuses, one has to use only words with an unequivocal meaning whose signification one can properly convey to other people. For this reason Locke points out that one should make plain one’s ideas, which are

⁴⁵⁰ 606, IV.vii.15.

⁴⁵¹ In a similar context, Locke appears to present additional linguistic arguments against the Cartesian notion of body as well as against an Aristotelian conception of matter. Cp. 450, III.vi.21; 493f, III.x.6; 498f, III.x.15; and Puster (1997), 187-95. However, as Ayers has indicated, one should rather conceive these remarks as polemic. Presupposing our common notions of body and matter, Locke intends to show the absurdity of the claims that (the substratum of) body is identical with extension and that matter is identical with body. Cp. Ayers (1991), II, 52-55.

signified by names of bodies, by partly showing the most distinctive properties to other speakers, e. g. the colour being specific for specimens, and partly by defining their other features.⁴⁵² Consequently, Locke demands the composition of a natural history, i. e. a dictionary settling the signification for names of bodies.⁴⁵³

At first thought, this seems to much of a good thing. Do we have to carry a dictionary with us when buying fish or jewellery in order to ensure that we really get what we want? However, Locke's concern is here again the philosophical use, not the common one. On the other hand, having said that, the demand of a canonical scientific vocabulary might not sound very revolutionary for a modern reader. Locke's backdrop however is not today's interconnected scientific community with established nomenclature. The situation of his time is instead represented by the publications of the Royal Society. Experimental findings of both the laymen and scientists were there reported in an effort to make them known.⁴⁵⁴ Not surprisingly therefore, at Locke's time, the scientific classificatory vocabular was hardly standardized, difficult to survey and thus from his perspective incurably ambiguous. On this backdrop, Locke proposes natural history as a remedy, namely an encyclopaedia compiling the scattered experimental results of scientists in a conceptually unequivocal way. Locke is thereby realistic enough to see that one cannot reform language at the conference table.⁴⁵⁵ The proposal of a natural history is thus not leveled at practices of a contemporary scientific community, but serves as an ideal which at his time philosophically conscious researchers should aim at when ever possible in their private research and in discourse with other scientists.⁴⁵⁶ At most, Locke aims at establishing a uniform terminology for scientists organized in the Royal Society, since the Society was initially committed to corporate experiments.⁴⁵⁷

Locke's demand of a natural history is proposed as a remedy for both the imperfection and the abuses of names of bodies. But one can conceive the proposition as aiming at the imperfection of the corpuscularian use in order to make the use of names as uniform as

⁴⁵² 518ff, III.xi.19-22.

⁴⁵³ 520ff, III.xi.24f.

⁴⁵⁴ Hunter (1981), 37.

⁴⁵⁵ 520ff, III.xi.24f.

⁴⁵⁶ Cp. 509, III.xi.3.

⁴⁵⁷ Hunter (1981), 37f.

possible. For, after all, in the case of abuses the only possible true remedy is the abandonment of them, the respective vocabulary, and the related theories of species, essences, maxims, etc. The kind of obstructions caused by the Aristotelian use or by other abuses can be best avoided by simply abandoning them. In this sense, one can conceive the development of a nomenclature as a “positive” measure and the abandonment of abuses as “negative” measures to enhance human knowledge of bodies.

We have seen, Locke’s criticism as to the imperfection and abuses of names of bodies is primarily leveled at contemporary language use in scientific contexts, namely the kind of scientific vocabularies which existed at Locke’s time.⁴⁵⁸ Moreover, Locke makes the important point that the ambiguity of names of bodies is primarily due to a natural deficiency, or imperfection, which is inherent in our use of these terms and which can only be overcome with an ideal scientific-classificatory vocabulary. His argument is thereby not trivial, but linked to Locke’s theory of archetypes and real essences. The upshot is that names of bodies “naturally” obstruct the progress of knowledge because speakers put them in the perspective of their epistemic project to depict bodies by similarities on the explanatory stage (and, ideally, by their real essences). By contrast, abuses are generally conceived as being avoidable and as the result of a rather careless use of words.

But this official setting is substantial undermined by the fifth abuse, as has been maintained above. Locke depicts the fifth abuse also as the imperfection of the Aristotelian use. More importantly, as I will argue next, the fifth abuse is caused by a “natural fallacy” and is thus similar to the imperfection of the corpuscularian use. And the seemingly clear-cut distinction between imperfections and abuses blurs furthermore if one takes into account that other abuses of names of bodies, e. g. the introduction of unintelligible technical terms by the Aristotelians, are understood to flow from the fifth abuse.

The analysis which has been so far developed has not yet discussed the fifth abuse in detail. What is still missing, is a precise account of the obstructions caused by the abuse and of the fifth abuse itself. Both issues will be reconstructed hand in hand, since his

⁴⁵⁸ Cp. 484f, III.ix.15f; 488f, III.ix.20f; 520f, III.xi.24.

examples for the fifth abuse are crucial to understand his explanations.

8.2 The Fifth Abuse in Detail

As already indicated, the fifth abuse exists when one refers words to entities in the world, which they do not or even cannot denote.⁴⁵⁹ This effectively means that one abuses words when one refers names to species of bodies which are conceived as being characterized by a real essence (and not by a common nominal essence). To be precise, this kind of referring names to real essences is an abuse only because the speakers are ignorant of real essences, i. e. because the names do not signify an idea of the real essence which the subjects presume. Names being thus used are in fact meaningless, since they do not stand for any idea. One cannot identify any specimen, Locke argues, since one does not have an idea including a nominal essence which comprises the properties determining and specifying kind membership. But if this is so, one might wonder how it is possible for people to believe that their names do have a signification. How is it possible that speakers abuse words in a way in which words truly become meaningless? The question is not unimportant, since an analysis reveals that the fifth abuse leads to substantial false knowledge claims and to misconceptions of species of bodies and their essences. The answer to both issues lies in the reconstruction of the details, namely of Locke's examples when explaining the fifth abuse. The contexts with which Locke illustrates the fifth abuse will first be reconstructed, since the roots of the fifth abuse have to be analysed in connection with Locke's examples. On the other hand, in the light of the latter interpretation, I will argue that the fifth abuse is present in another prominent context as well.

⁴⁵⁹ 499, III.x.17.

c. Contexts in which the Fifth Abuse Occurs

Locke first illustrates the abuse as to one's understanding of the meaning of universal propositions about the attribution of properties to species. His example is, as so often, 'gold'.⁴⁶⁰ If one claims 'Gold is malleable', everyday speakers usually do not understand the proposition as saying: what I call gold, i. e. what is characterized by my idea or nominal essence of gold, is malleable. Instead, they interpret the sentence to express: what has the real essence of gold is malleable, thereby meaning that malleableness depends on the real essence of gold. 'Gold' is thus not referred to an idea or nominal essence, but is supposed or intended to stand for a real essence. However, since one does not know real essences - and in particular not unintelligible real essences defining our common species - one's general terms are referred to entities which by no means they can signify.

Locke moreover exemplifies the abuse with respect to the discussion of the Aristotelians which is the true definition of a species, e. g. 'man'.⁴⁶¹ If one believes that one's own definition of 'man' truly captures the real essence of man, whereas alternative definitions are conceived as failing to do so, 'man' is understood to have a meaning which universally applies to all these so-called definitions, namely to stand in each case for the alleged real essence of man which the proponents of each definition believe to have discovered. But since advocates of definitions of species are ignorant of the supposed real essences of species, they refer their general terms like 'man' to entities which they cannot signify.

Locke mentions a third context where everyday speakers in general and Aristotelians in particular abuse names of bodies in this way. Locke draws a comparison with mixed modes. With respect to names of mixed modes, one conceives correctly that the modification of the idea signified by a word implies a change of the species being signified by the word. The reason is that one alters the nominal essence and thus the set of properties which entities must have to count as a specimen if one includes or excludes properties in an idea. But in the case of bodies one usually does not regard the addition of

⁴⁶⁰ 499f, III.x.17.

⁴⁶¹ 500, III.x.17.

further properties to an idea as an alteration of the idea. Rather, speakers usually conceive the modification as making the idea more perfect. If one adds fixedness to one's idea of gold, one regards the idea to represent more accurately the species which is generally called gold and which is characterized by a real essence. The name 'gold' is again abused to refer to a species that is allegedly defined by a supposed real essence of gold. One assumes that 'gold' stands for a species defined by a real essence and that fixedness depends on this real essence so that the new, enriched idea is thought to depict more adequately the alleged species gold which is presumably characterized by the so-called "real essence of gold". The believe that members of a sort have the same real essence warrants in the eyes of the abuser that further features, which some specimens possess, are likewise shared by all other specimens. For this reason an idea is regarded to portray the same sort more accurately if properties are added. However, Locke insists, since one changes the nominal essence by the addition of further properties, the idea does not represent the same species anymore, but rather a different one. Yet, abusers refer their names of bodies to entities which they do not signify.

As Locke rightly insists in a similar context,⁴⁶² this kind of misconception of one's ideas and words is an abuse of words, and not of ideas. For it is the role words play in the eye of the abuser: names signify species characterized by alleged real essences which warrants for the abuser to substitute the name of a species for the real essence of a species, i. e. to regard a word to stand for a sort characterized by a real essence.⁴⁶³ This is the reason why for the abuser the alteration of an idea does not imply a corresponding change of the species denoted by the name. The word 'gold' is left unchanged and is regarded to refer constantly to a species characterized by a real essence, whereby the idea is modified. For the same reason Aristotelians believe to be able to substitute a prevailing definition of 'man' by a "better" one. And a universal proposition is likewise presumed to relate to a species defined by a real essence, since the general term is again conceived to signify the real essence of a species. It is therefore natural for Locke to relate the misconception of species to our understanding of the meaning of names.

⁴⁶² 488, III.ix.21.

⁴⁶³ 501, III.x.19.

d. The Roots of the Fifth Abuse

Locke does not only explain how speakers abuse their words in this way, but also why they do it. As we have seen, Locke contends that the archetypes of our ideas of bodies are real essences. In other words, one intends to depict classes of bodies ideally in accordance to the real essences of one's standards.⁴⁶⁴ On the other hand, we do not know real essences. Now, to remove this imperfection and to achieve one's original intention, one conceives words as standing for real essences of species being signified by one's general terms.⁴⁶⁵ This, of course, does not remove the imperfection, but only adds an abuse of words to our ignorance of real essences. Speakers therefore regard their words as standing for species being characterized by a real essence due to their original intention to depict bodies by their real essences, i. e. to denote species of bodies possessing the same real essence.

But besides this explicitly given explanation, there are two additional aspects present in Locke's comments which elucidate why people abuse words in this way. Crucially, they involve Locke's conception of real essences in terms of the third model. This becomes evident in his discussion of modifying ideas by adding further features where he explains the abuse by the speaker's belief that the members of a sort have the same internal constitution. But, Locke points out, it is rather evident that contrary to the assumption of the abuser members of our everyday species do not have the same internal constitution:

“§20. That which, I think, very much disposes Men to substitute their names for the real Essences of Species, is the supposition before mentioned, that Nature works regularly in the Production of Things, and sets Boundaries to each of those Species, by giving exactly the same real internal Constitution to each individual, which we rank under one general name. Whereas any one who observes their different Qualities can hardly doubt, that many of the Individuals, called by the same name, are, in their internal Constitution, as different one from another, as several of those which are ranked under different specifick Names. *This supposition, however that the same precise internal Constitution goes always with the same specifick name, makes Men forward to take those names for the Representatives of those real Essences, though indeed they signify nothing but the*

⁴⁶⁴ Cp. 1b.

⁴⁶⁵ 500, III.x.18.

complex *Ideas* they have in their Minds when they use them."⁴⁶⁶

According to Locke, our everyday experience of the differences amongst the properties of members of the same species shows us that they do not have the same real internal constitution. In other words, specimens have *prima facie* specific internal constitutions, i. e. their internal constitutions are not necessarily identical. Moreover, Locke apparently expresses the assumption that specimens do have the same internal constitution by qualifying them as precise. Importantly, as the context shows, Locke refers here to real essences, i. e. he uses interchangeably 'real essence' and 'internal constitution'. For the preceding paragraph, to which this argument is explicitly related, concerns real essences with respect to names of bodies, and the last sentence of the quote discusses real essences as well. Locke's explanations would become incoherent, if one read a difference into his use of the two concepts, since 'those real essences' refers directly to 'precise internal constitution'. This means, Locke delineates the real essences of the members of a species as being *prima facie* different to contradict the assumption of the abusers that real essences are precise. No doubt, Locke speaks of real essences as being not precise in the same sense as in the passage on chemists discovering that members of the same sort have different chemical properties, namely that specimens have real essences on which different sets of features depend.⁴⁶⁷ The third model is again at work.

The context moreover demonstrates that Locke could hardly have understood real essences in the light of one of the two prevailing models.⁴⁶⁸ The first model does not apply. For, if the real essences of specimens were microphysical structures corresponding to the sort's nominal essence, it would be impossible that members of the same species could vary in their real essences, as Locke here maintains. And the second model cannot apply either for the following reason. If the real essence of a specimen comprised all its explanatory (i. e. microphysical) properties, specimens would obviously vary as to their real essences since they obviously differ in some of their properties on the macrophysical stage, e. g. specimens vary in size. But a laymen or Aristotelian cannot reasonably

⁴⁶⁶ 501f, III.x.20.

⁴⁶⁷ Cp. 7d.

⁴⁶⁸ Cp. 7c.

contend, or Locke cannot reasonably have taken them to believe, that specimens of the same sort are identical with respect to *all* their explanatory features, e. g. as to the (microphysical) properties corresponding to their macrophysical size.

Crucially, if real essences are understood as *prima facie* specific, Locke contends here that the abuser believes that real essences are precise because of the similarities existing on the macrophysical stage. Thus, Locke explains the wrong assumption of abusers that members of a common sort have the same real essence by a fallacy: one's experience of resemblances on the macrophysical level in the light of which one classifies bodies in species leads to the supposition that bodies of the same species have the same real essence, i. e. that the members of a sort have similarities on the microphysical stage according to which one would sort them if one knew the microphysical features of bodies.

On this backdrop, it is easier to see that the preceding paragraph on the modification of ideas entails another root for the fifth abuse. It will also become plain that the third model is there present as well:

“For by this tacit reference [...] we are fain to substitute the name for the thing.”⁴⁶⁹

Locke points out that ‘gold’ does not have any signification at all if one refers it to an unknown real essence of a species, since one does not have an idea of this real essence. Decisively, Locke adds another condition. Since we do not have an idea of this real essence, ‘gold’ “can signify nothing at all, when the Body it self is away.” If one takes Locke seriously, he implicitly maintains: if a particular body is present, one *is* able to refer to the real essence of a species, namely to the body's real essence as the real essence of a species. What kind of conception of real essence is at work here?

The second model cannot reasonably apply, since Locke speaks of the general term ‘gold’ which is related to the real essence. For, if the real essence comprised all the microphysical features of a particular body, the species being characterized by this real essence would have only one member, namely that body, since all other bodies in the world certainly vary from that particular body, e. g. in size. And Locke does not make use of the first model either for the following reason. If the real essence he speaks of were ascribed to the

⁴⁶⁹ 501, IV.x.19.

particular body as what corresponds to a nominal essence, this would imply that the particular body is member of a sort characterized by a nominal essence. But, if this were so, Locke would effectively claim in the quote that real essences can be ascribed to specimens of a sort, being characterized by a nominal essence, only when they are present. However, such a contention is hardly conceivable in the light of Locke's comments on real essences and species elsewhere in the *Essay*, since he evidently gives there the impression that real essences can be ascribed to members (of a sort depicted by a nominal essence) whether a speaker can refer to them demonstratively or not. A different understanding of real essences must therefore apply here. Given the connection with the subsequent paragraph, Locke should speak of non-precise, i. e. of *prima facie* specific, real essences. Given this result, what does his assertion exactly mean?

Locke argues against the common opinion that the addition of further properties to an idea is a perfection of the idea. He does this by rejecting one's referring to real essences of species. At the end of the paragraph, he justifies this dismissal by our ignorance of real essences, yet conceding that this kind of reference is possible with respect to the real essence of a particular body. He thus maintains that the word 'gold' has a signification if referred to the real essence of a body being present. In other words, Locke speaks of a species called gold which is characterized by a real essence, namely by the real essence of a particular body being present. The punchline of Locke's insistence that a body has to be present seems to be that a speaker has to be able to refer demonstratively to its real essence, since only in this way he can individuate or specify an unknown real essence, namely by referring to it as the real essence of *that* body. Locke therefore acknowledges the possibility to refer to a real essence which characterizes a species while maintaining that one does not have an idea of it. Given Locke's view of the subsequent paragraph that members of the same species do not have the same real essence, it becomes evident that referring demonstratively to a real essence is referring to a *prima facie* specific real essence. Locke thus concedes the possibility to refer demonstratively (with a general term) to a species being characterized by a real essence.

This kind of real essence characterizing a sort should not to be confused with the precise real essences of species which the laymen and Aristotelians presume. Their real essences are real essences being ascribed to common species, i. e. sorts being characterized by an

(everyday) idea or nominal essence. By contrast, the real essence of a species Locke mentions is the real essence of a species which is not characterized by an idea or nominal essence, but solely by the unknown real essence of a particular body. In this case, no everyday species, i. e. sorts being signified by our common terms, are misconceived as being characterized by a real essence.

But why are Locke's sorts, that are characterized by the real essence of a particular body, species which are not denoted by our common names of bodies? From his perspective, the reason is obvious. According to Locke, general terms are introduced for the purpose that one can speak of entities to other people even if they are not acquainted with them.⁴⁷⁰ But if a sort were characterized as to the unknown real essence of a particular body, one could hardly convey such a species to another speaker if the body were away. The introduction of names would be fruitless. This is the reason why our everyday terms do not stand for species being depicted by the real essences of a particular body to which one commonly refers demonstratively.

It now becomes plain that for Locke there is a third root for the fifth abuse: laymen and Aristotelians confuse the two ways in which, according to Locke, one can refer to species. This is indicated when he insists on a difference between "*Gold in name*" and "*a parcel of the Body it self, v. g. a piece of Leaf-Gold laid before us*".⁴⁷¹ For, on the backdrop of the subsequent assertion that an abuser substitutes names for the real essences of species, Locke seems to maintain here: there is a substantial difference between employing the conception of a real essence being specific for a species as to our common species signified by our names and employing this conception as to a particular member of a common species. Given what has been said before, this means: the conception of real essences being specific for *everyday* species is unintelligible whereas the conception of real essences being specific for species being individuated by the real essence of a particular body lying in front of us is intelligible because one can refer demonstratively to the real essence of a particular body.

In turn, this sheds light on the abuse of words in the context of the alleged perfection of

⁴⁷⁰ 409f, III.iii.3.

⁴⁷¹ 501, III.x.19.

ideas. When adding another property to their idea of gold, laymen and Aristotelians refer to the real essence of a particular member of their everyday species gold *as if* that real essence were a real essence specific for that everyday species. That is, abuser refer demonstratively to the real essence of a particular body as to the real essence of a species, but not in the way Locke would allow: the abuser does not refer demonstratively to the real essence of a particular body as the real essence of a species which is individuated by this real essence, but as the real essence which supposingly characterizes the common species of which the particular body is a member, e. g. gold. To rephrase the quote: although it is usually thought to be the same, it is a fundamental difference whether real essences are discussed with reference to our everyday species or to individual members of such a species - even though one commonly treats the real essence of a particular member of a sort to be the (precise) real essence of the species. From Locke's view, laymen and Aristoteleans pick out arbitrarily one specimen and refer to its *prima facie* specific real essence as a real essence being shared by all other members. However, if one contends, as Locke does, that real essences *prima facie* vary, one cannot arbitrarily pick out the real essence of a particular member and treat that specific real essence as a real essence being shared by all specimens.

For instance, the situation is as follows. One has an idea of gold and discovers in a particular piece of gold, i. e. a particular substance having the nominal essence as entailed in one's idea, another property which goes together with the properties of the nominal essence. The speaker then refers (demonstratively) to the real essence of that particular body as if it were a (precise) real essence characterizing the species the subject had represented by his or her idea of gold. This belief justifies the speaker to regard the inclusion of the further property as a perfection, since he or she conceives all these properties to depend on the presumed real essence which is supposingly shared by all members of the species he or she had always called gold. And since all members are assumed to have the same real essence, the speaker may conclude that they also have the new property he or she had discovered to depend on the real essence of that particular specimen. For the speaker, only another property is added to the features of the nominal essence or respectively idea which he or she had before. Thus, to include the newly discovered feature is for the speaker to come closer to an adequate idea of the alleged

species, namely to have an idea comprising more properties depending on the presumed real essence than there were included in the previous idea.

This treatment of the real essence of a particular member as if it were the (precise) real essence of its species is explicitly said to be at work when a speaker believes to make more perfect his ideas. But it seems to me that from Locke's viewpoint this confusion is lurking in the background when names of bodies are abused in other contexts as well. For the confusion lends plausibility to the abuse from the abuser's perspective in the sense that the in fact incomprehensible reference to the alleged real essence of a species is confounded with the intelligible reference to the real essence of a particular member of a sort.

Not unimportantly for the advanced interpretation, the same conception of the relationship between names, species and real essences is entailed at another place in the *Essay* as well. In the chapter on the names of substances Locke criticizes the Aristotelian notion of substantial forms on five grounds. The fourth objection implies our ignorance of Aristotelian real essences and the conclusion that one cannot therefore have classified bodies in the light of their assumed real essences. The fifth objection discusses whether bodies are commonly sorted in species in accordance to the alleged real essences of species on the basis of indirect knowledge of the real essences.⁴⁷² Locke imagines the possibility to know all the properties which (would) depend on the supposed real essence of a species. If it were possible to acquire knowledge of all these properties, one could, theoretically speaking, identify specimens in virtue of their possession of all the features which depend on the presumed real essence of the sort. In this way one could determine a species and its members without knowing their Aristotelian real essence. Locke, however, rejects this scenario due to the impossibility for us to know all properties - which (would) depend on such a real essence -, if one does not know the real essence. For, according to him, one has to know a real essence in the first place to be able to deduce and to know all the features depending on a real essence. Thus there is no chance to classify bodies in species as to their alleged real essences by sorting them by the set of properties depending on these real essences, if one does not know them. And since Locke has already concluded our

⁴⁷² Cp. Yolton (1970), 32.

ignorance of Aristotelian real essences from the first three objections, his fifth argument is intended to shut for ever the door for the Aristotelian attempt to sort bodies as to their real essences.

Now, Locke remarks in the last two sentences of his fifth objection that this argument, exemplified again by 'gold', is only intelligible if 'gold' is understood to refer to a particular body, namely to a particular member of the species gold. This implies, one cannot understand the key notion used in his argument, i. e. 'the real essence of gold', as being particularly Aristotelian. For, if Locke's conception of the real essence of gold were Aristotelian in this context, all members of the species gold would (have to) have the same real essence and Locke's insistence would therefore be superfluous that his argument works only if one relates it to a particular specimen. Given an Aristotelian understanding of species and essences, there would be no need to refer to a particular body. One could refer to many specimens at once, since they would be taken to have the same real essence. Locke's insistence implies that his argument does not operate with an Aristotelian notion of real essence, but with one according to which a real essence is in some sense specific for a body.

The specificity excludes for the same reason also the possibility to interpret Locke's key term in the light of the first model for real essences. For, if the real essence of gold, which here Locke speaks of, corresponded to a nominal essence, his reference to a particular substance would become pointless, since all members of a species would have the same real essence. Moreover, the second model cannot apply either. Locke discusses species being characterized by a real essence and being determined by properties depending on this real essence. If the real essence comprised all the microphysical features a particular body has, Locke would let Aristotelians discuss species having in fact only one member. But since Locke criticizes here the Aristotelian theory of species relating to our everyday concepts, he could not reasonably take Aristotelians to believe that these sorts consist of only one member. Thus, to highlight Locke's fifth objection, one needs an understanding of real essences different from the Aristotelian one and the comprehensions commonly ascribed to him.

Furthermore, in the last sentence Locke explicitly denies that in his argument 'gold' is used in its ordinary meaning, i. e. to signify an idea. Thus, if one takes Locke seriously,

this means that the sort gold he speaks of in this context is not a class of bodies being characterized by a set of properties on the macrophysical stage. One rather has to understand the species gold in a different way, namely in one which affords the reference to a particular body. On this backdrop, his argument then suggests that 'gold' denotes a species conceived of being characterized by a real essence, since he discusses the possibility of determining a species being defined by a real essence. More precisely, gold has to be understood as a species whose members have the same real essence which the particular specimen has to which one has to refer 'gold' to get the argument off the ground according to Locke:

"By the Word *Gold* here, I must be understood to design a particular piece of Matter; *v.g.* the last Guinea that was coin'd. For if it should stand here in its ordinary signification for that complex *Idea*, which I, or any one else calls Gold; *i. e.* for the nominal Essence of Gold, it would be *Jargon*: [...]"⁴⁷³

This line of interpretation fits with the fact that the fifth objection does not make use of any specific features of Aristotelian real essences. Locke does not argue against this conception by pointing out absurdities. He rather assumes the possibility of it being true for the sake of the argument and shows then that our species cannot possibly be based on them - not even indirectly. His argument operates solely on our ignorance of these real essences and with the contention that one has first to know real essences in order to deduce the set of features depending on them. This suggests that Locke makes use only of notions, e. g. 'gold', 'real essence' and 'real essence of gold', which are intelligible to him. This means, Locke insists that his talk of the real essence of a species being called gold and of gold as a species being characterized by a real essence is only comprehensible with reference to the real essence of a particular body. One can intelligibly refer to a species being defined by an unknown real essence only if the species is portrayed by the real essence which a particular body has - because one can then refer (demonstratively) to such a real essence without knowing it.

Locke claims in two passages, I argued, that one can refer to a sort being characterized by an unknown real essence, if the species is defined by the real essence of a particular body.

⁴⁷³ 449, III.vi.19.

In this sense, names of bodies can be used not only to denote our everyday species characterized by the nominal essences of our ideas, but also to signify species which are characterized by the real essence a particular body has. Yet, although this second conception of species and general terms are in line with the role real essences play in substantial parts of Locke's comments, as will be indicated next, it is not systematically developed and presented in his accounts of words. The reason is that, as a matter of fact, the introduction of names for species of the latter kind is pointless. Only if a name signifies an idea, communication about the represented species is effectively possible. This is the reason why our everyday species are sorts of the first type. To distinguish therefore the second use of names from the first one, is rather unusual and difficult to convey, as Locke complains at the end of his fifth objection: "so hard is it, to shew the various meaning and imperfection of Words, when we have nothing else but Words to do it by."⁴⁷⁴

Locke's talk of unknown real essences to which we can refer (demonstratively) is not strange to his position. First of all, the reference to unknown properties that are solely functionally depicted is familiar to Locke's theory since according to him one rightly refers to the unknown substratum of bodies which also is functionally defined, namely as what explains the union of an experienced set of properties.⁴⁷⁵ More important, an intelligible comprehension of unknown real essences of bodies to which speakers can refer is indispensable for Locke's account, since it is presupposed by his theory of the formation of ideas. As argued,⁴⁷⁶ the genesis of an idea of bodies affords a conception of real essences being logically prior to the one of nominal essences. Properties of the macrophysical stage are justified as depending on the real essence of the examined standard before they are united into one idea. If one does not regard a certain feature of the examined body as depending on its real essence, one does not include it in an idea representing the body. This means, if we decide which features of the macrophysical level are to be taken into an idea, we refer to the unknown real essence of the standard that we examine. Locke's sporadic talk of being able to refer demonstratively with one's names to the unknown real

⁴⁷⁴ 449, III.vi.19.

⁴⁷⁵ Cp. 2a.

⁴⁷⁶ Cp. 7a.

essence of a particular body and thus to denote a species depicted by this real essence therefore not only mirrors his conception of real essences being *prima facie* specific, but also that they are involved in the formation process of our ideas.

This nexus to other comments implies that one has to take Locke's core conception of real essences into account, if one asks "Well, which microphysical features does the real essence of *that* substance in front of me comprise?". The body's real essence is, one replies, the set of microphysical properties according to which it would be sorted in an ideal classification scheme - a vague answer, but precise enough for Locke to make his various points.

Moreover, given this line of interpretation, one naturally reads Locke's definition of real essences in the same light. There, Locke points out that we speak of real essences only in relation to particular entities and without using names: "And in this sense, it [scil. 'essentia'] is still used, when we speak of the *Essence* of particular things, without giving them any Name."⁴⁷⁷ On the background what has been said before, Locke apparently contends here that we usually speak of real essences only in relation to particular bodies when we do not employ general terms, i. e. names for species.⁴⁷⁸ But, as the foregoing discussion of the two passages has revealed, Locke maintains as well that one *could* use general terms to denote species defined by the real essence of a particular body.

Summing up, Locke's comments entail three aspects explaining how speakers come to abuse their names of bodies and refer them to real essences of which they have no idea so that the terms become effectively meaningless. Firstly, due to the similarities bodies display on the macrophysical level, one tends to take these classes to be species of bodies which are likewise similar with respect to their explanatory basic properties. That is, one assumes the members of a sort to share a common, but unknown real essence. This real essence is presumably specific for all specimens of a sort and distinguishes the species from all other sorts. Secondly, since we intend to represent bodies ideally in terms of their real essences, speakers tend to assume that they do so, even if truly they do not have ideas of the real essences of bodies. Taking the first and the second belief together, one usually

⁴⁷⁷ 417, III.iii.15.

⁴⁷⁸ Similarly, Locke uses the phrase 'whereby it is *Gold*' to signify the real essence of a particular specimen of gold (379, II.xxxi.6) and explicitly refers to real essences where names are in use (380, II.xxxi.7).

supposes according to Locke that the members of a species, which one signifies by a name, share the same real essence and that therefore one's everyday species classify bodies in accordance to their real essences. As a consequence, one abuses names of bodies by taking them not to stand for one's ideas of bodies, but for species being characterized by the presumed, unknown real essence. One thereby confuses, thirdly, two ways in which one can intelligibly refer to bodies as members of species, namely by grasping a body as the specimen of a sort depicted by an idea and by conceiving a body as the member of a sort characterized by the real essence of that particular body. This is the cocktail of reasons why speakers abuse names of bodies by referring them to unknown real essences.

Once the abuse is established, speakers believe to be able to discuss which set of features is the true real essence of a species, conceive the joining of further properties to an idea as making the ideas more complete or perfect, and interpret universal propositions as ascriptions of properties to species being characterized by presumed real essences, e. g. 'Gold is malleable' is understood to express that bodies possessing the real essence of gold are malleable. Importantly, this conception of names, species and universal propositions leads to abusing words in this way in another context as well. As will be delineated in the next part, on the backdrop of the advanced interpretation the fifth abuse apparently is also present in Locke's analysis of the typical belief that all members of a species have properties in common, which are not included in the nominal essence, but which were found in several specimens.⁴⁷⁹ Given for example that gold is not defined as being malleable, the observation of some specimens being malleable usually makes people to contend that all gold is malleable since they presume that all members of a sort possess the same real essence and thus the same set of properties depending on this alleged real essence.

According to Locke, this is the understanding the layman has of species of bodies, of the signification of their names and of universal propositions conversant about bodies. Aristotelians go even further in their confused conception of species and bodies with their theory of forms and their debates what is the true definition of a sort.⁴⁸⁰ In this

⁴⁷⁹ 582f, IV.vi.8f. Cp. 10a-b.

⁴⁸⁰ 502f, III.x.20ff.

sense, the fifth abuse is the source of a false comprehension of the species and essences of bodies and of fruitless debates which both hinder the progress of knowledge. Locke's language critic thus adds up to a thoroughly dismissal of the Aristotelian conception of what an intelligible science of bodies consists in. It likewise becomes evident in which way a correct comprehension of language advances knowledge. For, if one recognizes that words signify ideas, one needs only to become aware that one's ideas do not include the supposed real essences of species to realize one's abuse and the false knowledge claims connected to it what subsequently opens the path to true knowledge. The following chapter assesses what according to Locke this knowledge as part and parcel of a comprehensible science of bodies consists in.

Part III

KNOWLEDGE OF BODIES

Introduction

The fourth book of the *Essay* on knowledge and probability is the natural climax of the overall argument to “enquire into the Original, Certainty, and Extent of humane Knowledge; together, with the Grounds and Degrees of Belief, Opinion, and Assent”.⁴⁸¹ In the case of bodies, Locke’s assessment is thereby advanced almost entirely in connection with knowledge. The account readily falls into two parts. First, there is the general depiction of knowledge with a definition and subdivision of knowledge in different degrees and realms. Second, on this backdrop, Locke takes stock of contemporary knowledge, evaluating human knowledge and proposing means to enhance it. Locke’s analysis thus attempts to establish an appropriate conception of a contemporary science of bodies. The results are disillusioning, however: human knowledge is “very short and

⁴⁸¹ 43, I.i.2. Cp. 44, I.i.3.

scanty” and we are able to achieve “very little general Knowledge”.⁴⁸²

The root of this predicament is Locke’s conception of knowledge which he conceives as straight forward and hardly controversial. Locke first presents a definition of knowledge and subsequently introduces a variety of subdivisions of knowledge to assess human knowledge. Moreover, when discussing bodies, Locke ingenuously applies the general conception of knowledge to the effect that a conception of an ideal science of bodies manifests in his account of contemporary knowledge and the means to enhance it. This ideal thus forms the backdrop of Locke’s idea of a contemporary science of bodies. And this ideal is likewise Locke’s viewpoint, I will argue, from which he judges contemporary knowledge as little and the prospects of progress as bleak.

On the basis of his notion of knowledge, Locke also refutes the Aristotelian conception of means founding and enhancing human knowledge. Given the interpretation of the preceding part, this analysis completes Locke’s rejection of an Aristotelian idea of a science of bodies. The controversy with the Aristotelians also looms in the background of his own account as to real essences. Importantly, I contend, the developed interpretation of Locke’s discussion of real essences is crucial to understand why this debate is present in the argument on knowledge. In this context, the issue of real essences is what a contemporary science of bodies should consist in: how experimental findings are to be understood and which means are appropriate to advance knowledge. It thus becomes plain why and in which sense Locke puts so much weight on the analysis of language as to his overall account in the context of bodies.⁴⁸³

The first chapter of this part reconstructs Locke’s conception of knowledge, namely his definition of knowledge and its division into three degrees. On the contrary to the orthodox line of interpretation, I will argue that Locke’s definition of knowledge applies uniformly and coherently to all degrees, i. e. not only to intuitive and demonstrative knowledge, but also to sensitive knowledge. There is no obvious flaw in his reasoning, which Locke fails to recognize, and he is not injudicious to apprehend the modern criticism which already figured in his correspondence with Stillingfleet. A careful

⁴⁸² 652, IV.xiv.1; 644, IV.xii.9.

⁴⁸³ *Epistle*, 10 and 13f; 401, II.xxiii.19; 579, IV.vi.1.

reconstruction of Locke's comments on the background of his views on language shows instead what he believes to be conspicuous, namely that the advanced definition fits with his account of sensitive knowledge. A corresponding assessment of Locke's conception of degrees of knowledge will moreover evolve as part and parcel of the debate. The account thus shows how Locke highlights knowledge and its degrees in terms of its certainty.

To understand anew Locke's conception of knowledge, does not however have a genuine impact on the analysis of his argument on contemporary knowledge (chapter ten). As we will see, Locke's account is primarily based on a philosophical analysis of what knowledge and language consist in. Given this type of reasoning, it represents an extremely powerful argument for the favoured conception that also questions the principal legitimacy of the discussed, alternative theories. It will particularly be pointed out that one cannot fully apprehend the analysis, if one does not relate it to Locke's conception of real essences as being *prima-facie* specific and as being not precise as the Aristotelians claim. Picking up the thread of the two foregoing parts, the focus is moreover on Locke's idea of an ideal science of bodies. Crucially, I will argue for a re-interpretation of the nature of Lockean demonstrative knowledge of bodies and thus of his conception of an ideal science of bodies. Contradicting the prevailing view, the interpretation attempts to show that Locke's ideal is not a deductive science which only affords microphysical knowledge of the figure of bodies, but is an axiomatic, empirical theory which rather presupposes a comprehensive grasp of matter. This point is crucial, since it re-positions Locke in the history of philosophy. In rough and ready terms, Locke is farer away from Descartes's rationalism and closer to Hume's empiricism than is usually thought.

9. Knowledge and its Degrees

Locke's characterization of knowledge and its degrees is fundamental for his latter account of the scope and nature of human knowledge. From Locke's perspective, his general portrayal, or notion, of knowledge is innocuous and fits to all degrees of knowledge, namely to intuitive, demonstrative and sensitive knowledge. He does not really argue for his concept of knowledge, but simply asserts it after having pointed out that the mind discourses on entities solely via ideas.⁴⁸⁴ Apparently, Locke assumes everyone will agree with this general definition of what knowledge is, once one becomes aware that entities and their properties have always to be represented in thought to be known. From his standpoint, the prominent and, perhaps, controversial claims are still to come in the subsequent chapters. However, Locke's official definition of knowledge is usually taken to be highly problematic since it is conceived to be tailor-made only for intuitive and demonstrative knowledge, but not to cohere with his account of sensitive knowledge. There is supposedly a gap between the generic conception and the more specific accounts of knowledge what I will call the "orthodox view". Locke however consciously reasserts in the face of such criticism that there really is no deviation from his notion of knowledge in the case of sensitive knowledge.⁴⁸⁵ Given this and the prevailing view that there truly is a contradiction, Locke simply seems not to understand. This is probably one reason why commentators less favorable to Locke enjoy bashing him in this context.⁴⁸⁶

⁴⁸⁴ 525, IV.i.1f.

⁴⁸⁵ *Works* IV, 360. In corresponding to Stillingfleet and his objection that sensitive knowledge does not live up to Locke's official notion of knowledge, Locke insists on his position of the *Essay* declaring that in the case of sensitive knowledge an idea of an entity, which is attained by the senses, (dis-) agrees with the idea of existence. Thus, in this light one has to read similar passages in the *Essay*, namely as consciously elucidating sensitive knowledge as the perception of the (dis-) agreement between an idea shown by the senses and the idea of existence: "The fourth and last sort [of knowledge] is, that of *actual existence* agreeing to any *Idea*" (527; IV.i.7). Yolton, however, takes Locke to talk confusingly in his letter to Stillingfleet and therefore conceives the agreement relationship as holding between an idea and an entity. Yolton, (1970), 110ff. On the face of it, this seems to me not plausible. Given the here developed reading, it is also not necessary to regard Locke as being confused.

⁴⁸⁶ Jenkins (1983), 196f.

Opposing the orthodox view, I will argue that a careful analysis of Locke's definition in connection with his further comments shows what he thought to be conspicuous for everyone, namely that his general notion applies to sensitive knowledge as well. On the contrary to what is usually maintained, it becomes evident in Locke's explanations on truth that his definition naturally evolves from his contentions on ideas and words which form the backdrop of his argument. In addition, further clarification is needed of what the three degrees of knowledge consist in. By assessing what Locke means by "degrees" of knowledge, it will become plain what kind of feature distinguishes the three types of knowledge. This account will further deepen our understanding of Locke's general conception of knowledge in terms of its certainty and why sensitive knowledge does not differ in kind from intuitive and demonstrative knowledge.

A careful reconstruction of Locke's comments shows both that on the face of it the proposed understanding of his definition of 'knowledge' is here manifest and that a decisive flaw of comprehending Locke is the source of the orthodox view. I will therefore develop first a straight forward reading of the relevant passages and subsequently reject the three most prominent lines of interpretation by debating the crucial passages on which the controversy hinges. I will then turn to Locke's account of the three degrees of knowledge. Since both issues are interconnected, the discussion of the second topic effectively provides the interpretation of passages which are the final bits to establish the advanced reading of Locke's concept of knowledge.

a. Locke's Definition of Knowledge and the Orthodox View

According to Locke, knowledge is "nothing but *the perception of the connexion and agreement, or disagreement and repugnancy of any of our Ideas*".⁴⁸⁷ The key to understand aright this assertion is to highlight properly what the (dis-) agreement of ideas consists in. To come to grips with this, one first has to become aware that for Locke the objects of knowledge are states of affairs which obtain, namely facts. This manifests in the exemplifications immediately following the definition which display that the perception

⁴⁸⁷ 525, IV.i.2.

of the agreement or disagreement of ideas implies knowledge of the holding of a state of affairs. Importantly, Locke's examples also indicate that the states of affairs do not concern ideas and whether they agree or disagree, but the entities which are represented by ideas whose agreement or disagreement is perceived:

“For when we know that *White is not Black*, what do we else but perceive, that these two *Ideas* do not agree? When we possess our selves with the utmost security of the Demonstration, that *the three Angles of a Triangle are equal to two right ones*, What do we more but perceive, that Equality to two right ones, does not necessarily agree to, and is inseparable from the three Angles of a Triangle?”⁴⁸⁸

Thus, two ideas evidently serve here to represent a state of affairs which is known when one perceives the (dis-) agreement between the ideas. Ideas are the constituents of thought, i. e. of cognitive content. And ideas are not conceived as the elements of a particular kind of intentional or cognitive state, as Locke's explanations suggest, since there is, for instance, no special reference to sense perceptions. Correspondingly, in this context one should understand 'perception' in a very general sense, namely to denote the awareness or recognition that ideas (dis-) agree. More precisely, for Locke the perception of the (dis-) agreement of two ideas is the correct recognition of a (dis-) agreement which is really there. This becomes plain when Locke insists that knowledge is not merely the supposition, but the perception of the (dis-) agreement of ideas: “Where this Perception is, there is Knowledge, and where it is not, there, though we may fancy, guess or believe, yet we always come short of Knowledge”⁴⁸⁹ This difference is crucial for Locke, since it underlies his distinction between knowledge and probability. Knowledge is the recognition of a fact, probability is only the belief that a state of affairs obtains.⁴⁹⁰ 'Perception' thus is a success concept in the sense that it implies that one truly perceives what one believes to perceive. This makes plain that the objects of knowledge are not just states of affairs, but facts, i. e. states of affairs which truly obtain and which one does not only believe to hold.

On this backdrop, one can fully apprehend Locke's contention that knowledge has to be

⁴⁸⁸ 525, IV.i.2.

⁴⁸⁹ 525, IV.i.2.

⁴⁹⁰ 654, IV.xv.1.

conversant about ideas, since ideas are the only objects about which the mind immediately discourses:

“§1. Since *the Mind*, in all its Thoughts and Reasonings, hath no other immediate Object but its own *Ideas*, which it alone does or can contemplate, it is evident, that our Knowledge is only conversant about them.”⁴⁹¹

On the face of it, Locke reasserts his well-known claim that thought is not directly concerned with entities but only indirectly via representations of them. This is the whole point of ideas as contra distinguished from the entities they represent: if one wants to grasp entities, one has to mentally represent them, i. e. one has to conceive them in terms of ideas.⁴⁹² Thus, given what has been reconstructed so far, Locke’s contention apparently means that knowledge (of facts) is possible only in so far as facts are represented in thought. One should therefore not misunderstand Locke’s remark that one can think of facts only by representing them via ideas as the claim that knowledge has to be about facts concerning ideas.⁴⁹³

Generally speaking, advocates of the orthodox view take this into account and maintain that ideas, whose (dis-) agreement is perceived, represent a fact and that this fact is therefore the object of knowledge. Moreover, they likewise understand Lockean perception as awareness of facts. However, commentators conceive Locke’s definition of knowledge as highlighting the *reasons* in which knowledge is grounded and whose perception leads to knowledge of facts.⁴⁹⁴ Locke’s portrayal of knowledge is reconstructed as delineating a necessary and sufficient condition for knowing facts: one knows a fact if and only if one recognizes conclusive reasons showing that the fact obtains. Knowledge of a fact consists in the recognition of why the state of affairs obtains. In this sense, Locke’s portrayal of knowledge is understood to elucidate knowledge as being grounded in the awareness that the two ideas (dis-) agree which represent the fact. More precisely, ideas are regarded as adding up to concepts and the (dis-) agreement of two ideas as the relationship that one concept does (not) include or, more generally, entail the other. Correspondingly,

⁴⁹¹ 525, IV.i.1.

⁴⁹² Cp. 530f, IV.ii.1, and 720f, IV.xxi.

⁴⁹³ Klemmt mistakes Locke in this way. Cp. Klemmt (1952), 114-17.

⁴⁹⁴ Cp. 9c.

one usually understands Locke to define knowledge as the awareness of the holding of a conceptual (-like) relationship between two ideas.⁴⁹⁵ For instance, to perceive that the idea of gold agrees with the idea of yellow, is to be aware that 'gold' entails 'yellow'. To perceive that the idea of black does not agree with the idea of white, is to recognize that 'black' does not entail 'white'. In linguistic terms, Lockean knowledge is taken to consist in the awareness that the subject term does (not) entail the predicate.

The orthodox line of interpretation thus takes the (dis-) agreement relationship as a "relation between ideas", i. e. as a relationship holding between the two ideas representing the fact which is known.⁴⁹⁶ This however implies obviously that Lockean sensitive knowledge cannot fulfill this definition of knowledge, since perceptual knowledge does not consist in the awareness of conceptual-like relationships. To be precise, one can distinguish between two aspects of the criticism. First, there is the logical problem that *every* account of perceptual knowledge cannot intelligibly claim that such knowledge consists in the recognition of relations between ideas, since it is grounded in sensations and not in conceptual relationships. Second, Locke's own account of sensitive knowledge as being achieved by veridical sensations does not tie in with his official definition of knowledge because of this logical contradiction.⁴⁹⁷ Both aspects make up the orthodox view. On the contrary, I will argue that Locke highlights knowledge of a fact as being nothing else but the genuine recognition of the holding of a state of affairs which is represented in our minds by ideas. This means, the perception of the (dis-) agreement of ideas is the cognition of a fact, namely that the state of affairs holds which is represented by the ideas. We can already see that the difference of the two readings hinges on what for Locke the (dis-) agreement of ideas consists in. Is the (dis-) agreement of ideas, the reason which a fact is grounded in and whose cognition leads to knowledge that the state of affairs truly holds? Or does the (dis-) agreement of ideas mean that the state of affairs obtains, which is mentally represented by the ideas, so that the recognition of the (dis-)

⁴⁹⁵ Cp. Alexander (1985), 282f; Ayers (1991), I, 103 and 126; Jenkins (1983), 196ff; Krüger (1973), 144f; Lowe (1995), 171-74; Osler (1970), 11f; Specht (1989), 121; Woolhouse (1983), 57ff, and (1994) 152f and 154f.

⁴⁹⁶ Cp. Ayers (1991), I, 103 and 126; Jenkins (1983), 196; Krüger (1973), 144f; Lowe (1995), 174; Osler (1970), 11f; Specht (1989), 121; Woolhouse (1983), 57ff, and (1994) 152f and 154f.

⁴⁹⁷ Cp. Gibson (1931), 166f and 176; Mabbott (1973), 90.

agreement of ideas is the cognition of a fact?

b. Knowledge and Truth

The account of Locke's conception of knowledge given so far can be deepened by his account of propositions and their truth. This theory sheds light on both how ideas represent facts and the relationship of two ideas agreeing or disagreeing. As already indicated in chapter six,⁴⁹⁸ words and ideas have both in common to be signs and to refer as such to entities. But whereas ideas refer directly to entities by representing them, words stand only indirectly for these entities by signifying directly only ideas and thus denoting only indirectly the entities which are represented by these ideas. In this sense, words possess, if taken by themselves, no cognitive or semantic content. Locke's passages on the truth of mental and verbal propositions display that there is a corresponding relationship between language and thought as to states of affairs.⁴⁹⁹ Locke calls a proposition the joining or separating of signs, which are either ideas or words. Mental propositions concern ideas, verbal propositions words. For example, the separating of the idea of iron with the idea of green is a mental proposition, whereas 'Peaches are round' is a verbal proposition joining 'peaches' and 'round'. And being in line with his theory of meaning as to linguistic signs like general terms, the content of a verbal proposition is understood as being determined by the content of the mental proposition which corresponds to the former. Thought is again the carrier of content, language can only refer to it. Furthermore, in the light of Locke's examples⁵⁰⁰ and on the background that an abstract idea represents merely a class of entities, the point as to propositions evidently is that they express states of affairs. And since for Locke propositions are the bearers of truth, a true proposition is evidently conceived as expressing a state of affairs which obtains. In connection with his notion of truth, the analogies between words and ideas as well as between verbal and mental propositions will now help to understand how the joining

⁴⁹⁸ Cp. 6a.

⁴⁹⁹ 574-79, IV.v.

⁵⁰⁰ For instance, 'All centaurs are animals'. Cp. 576f, IV.v.6f.

and separating of ideas represent states of affairs.

For Locke a proposition is true only if its signs are joined or separated as the signified entities agree or disagree whereas a proposition is false if the joining or separation of its signs does not correspond to the agreement or disagreement of the signified entities. This becomes plain when Locke defines truth:

“§2. Truth then seems to me, in the proper import of the Word, to signify nothing but the joining or separating of Signs, as the Things signified by them, do agree or disagree one with another. The joining or separating of signs here meant is what by another name, we call Proposition. So that Truth properly belongs only to Propositions: whereof there are two sorts, viz. Mental and Verbal; as there are sorts of Signs commonly made use of, viz. Ideas and Words.”⁵⁰¹

On the face of it, Locke first expounds a general formula which he spells subsequently out in two ways, namely in terms of ideas and in terms of words. This implies, in this context ‘things’ denotes entities in a very general sense: on the one hand, entities being signified by ideas, and, on the other hand, ideas being signified by words.⁵⁰² Accordingly, with respect to ideas, a mental proposition is true only if two ideas are joined or separated as the entities represented by them agree or respectively disagree. And the truth value of verbal propositions, by contrast, involves two levels, namely the relationship of words to ideas and of ideas to the entities they represent. The first level implies that a verbal proposition stands for a corresponding mental proposition, e. g. ‘Iron is not green’ refers to the separating of the idea of iron and the idea of green. The second relationship implies that the mental proposition corresponding to the verbal proposition stands for the state of affairs which is expressed by the joining or separating of the ideas of the mental proposition. Importantly, irrespective of whether propositions are mental or verbal, the analysis of their truth boils down to the claim that the signs constituting them are separated or joined in accordance to the (dis-) agreement of the entities being represented by ideas.

Moreover, the correspondence between the joining or separating of ideas and the joining

⁵⁰¹ 575, IV.v.2.

⁵⁰² This claim to read ‘things’ in this way is not unimportant because Krüger reads the quote differently as implying a correspondence-theoretic notion of truth which relates to ‘things’ in the sense of entities existent in the world. Cp. Krüger (1973), 139f. Below, I will discuss the plausibility of Krüger’s interpretation. Cp. 9c.

or separating of words means that an affirmation refers to the joining of ideas whereas a negation refers to the separating of ideas: “[...] *Verbal Propositions, which are Words the signs of our Ideas put together or separated in affirmative or negative Sentences*”.⁵⁰³ An affirmation therefore is true only if the joining of two ideas, which are signified by the words of the affirmation, corresponds to an agreement of the entities which are represented by these ideas; and a negation is true only if the separation of two ideas, which are signified by the words of the negation, corresponds to a disagreement of the entities which are represented by these ideas. Otherwise, verbal propositions are false.

Crucially, this notion of truth and falsehood implies that the separating and joining of signs express a state of affairs which does not necessarily hold. Whether a represented state of affairs obtains or not, depends on whether the joining and separating corresponds to the disagreement respectively agreement of the represented entities. In this sense, Locke introduces his notion of proposition in his definition of truth: “The *joining or separating* of signs here meant is what by another name, we call Proposition.” A proposition is the joining or separating of signs, and this proposition stands for a state of affairs which can hold, because for Locke propositions can be both true or false.

This account of the truth of propositions is helpful to highlight what Locke means by the joining or separating of ideas. His examples show that his paradigm are simple predications or subject-predicate assertions expressing a state of affairs.⁵⁰⁴ The match between the joining or separating of words and the joining or separating of ideas thus indicates that the latter relationship is comparable to the grammatical relationship of predications which holds between subject term and predicate. This means, two ideas and their relationship of being joined or separated represent a state of affairs analogous to the way a state of affairs is expressed by an affirmation respectively negation.

This is confirmed by the relationship between ideas, being joined or separated, and entities, agreeing or disagreeing. This relationship indicates that the joining or separating of ideas corresponds to two ways in which two entities can be conceived as being interrelated to make up a state of affairs. For example, the relationship of joining the idea

⁵⁰³ 576, IV.v.5.

⁵⁰⁴ 576f, IV.v.6f.

of gold and the idea of yellow represents the relationship between gold and yellow, that holds, *if gold agrees to yellow*, namely *if gold is yellow*. Similarly, the relationship of separating the idea of black and the idea of white represents the relationship between black and white, that holds, *if black disagrees with white*, namely *if black is not white*. That is, the relationships of agreement and disagreement between two entities are represented on the linguistic level by the grammatical relationship between subject term and predicate as it is expressed in a *true* affirmation respectively negation. In turn, one has to understand correspondingly the relationship of two ideas being joined or separated as a “mental predication”, namely to represent two entities as being related to each other in the same way as the predication of an affirmation or negation represents these entities as being interrelated.⁵⁰⁵ Given Locke’s way of ideas, it is natural for him to say that states of affairs are represented in the mind by the joining or separating of ideas.

As we have just seen, two ideas and their relationship of being joined or separated represent a state of affairs analogous to the way a state of affairs is expressed by an affirmation respectively negation. To be more precise, as Locke’s theory of the so-called particles indicates, the joining and separating of two ideas is linguistically expressed by the copula ‘to be’ or respectively by the copula plus the negation sign in the case of simple predications, e. g. ‘Gold is (not) yellow’.⁵⁰⁶ This clearly shows that a mental proposition represents a state of affairs not only by its ideas, but also by the joining or separating of these signs. An idea or word stands solely for an aspect of a state of affairs, namely for an entity. Without being joined or separated, ideas cannot represent a state of affairs. For Locke, only the joining or separating of ideas relate ideas so to each other that they express a state of affairs. In this sense, one has to understand the joining or separating of ideas as a constitutive element of the mental representation of a state of affairs. This becomes obvious by the fact that the joining or separating of two ideas determines which state of affairs is represented by two ideas; for example, whether the idea of horses and the idea of animals express that horses are animals, horses are not animals, animals are horses, or that animals are not horses. Again, to speak of the joining and separating of ideas is a

⁵⁰⁵ Cp. Puster (1999), 95.

⁵⁰⁶ 471, IV.vii.1.

natural and innocuous way for Locke to express in terms of ideas how states of affairs are mentally represented.

On this background, the (dis-) agreement of two ideas becomes evident. As we have seen, the punchline of Locke's formula for truth is that a proposition is true only if the signs making up the propositions are joined or separated in accordance to the agreement or disagreement of the entities to which the signs refer. This means: the joining and separating of signs represent *states of affairs* which *can* hold, and the (dis-) agreement of the signified entities is a state of affairs which *does* obtain, namely a *fact*. Thus, when Locke says that the ideas of a mental proposition (dis-) agree as the entities they represent (dis-) agree, i. e. as the 'things' (dis-) agree, the (dis-) agreement of the ideas manifests a fact. This usage of Locke's notion of the (dis-) agreement of two ideas in the context of truth strongly suggests an analogous use in connection with his definition of knowledge. Locke's conception of knowledge as the perception of the (dis-) agreement of ideas means: knowledge is the cognition of the holding of a fact, namely the holding of a state of affairs which is represented by the joining or separating of ideas.

Crucially, this notion of the (dis-) agreement of ideas is present in Locke's comments on truth at several places. First, as we have seen above, this understanding of the (dis-) agreement of ideas is part and parcel of his general definition of truth at the opening of his discussion: "§2. *Truth* then seems to me, in the proper import of the Word, to signify nothing but *the joining or separating of Signs, as the Things signified by them, do agree or disagree one with another.*"⁵⁰⁷ This means as to verbal propositions: in true affirmations and negations words are joined respectively separated as the 'things' agree respectively disagree which these words signify, i. e. as the ideas agree respectively disagree which are signified by the words. And since *true* mental propositions are here explained as joining or separating two ideas as the 'things' they signify agree or disagree, the *(dis-) agreement of ideas* manifests the *obtaining* of the state of affairs which is represented by the ideas. Therefore, in connection with verbal propositions, the point of saying that ideas (dis-) agree is to assert that the state of affairs *truly holds* which is merely represented by the joining or separating of the ideas. Second, the same depiction of truth is apparently

⁵⁰⁷ 575, IV.v.2.

present in another passage where Locke comes back to his portrayal of truth after a short excursion into a related matter:

“§5. But to return to the consideration of Truth. We must, I say, observe two sorts of Propositions, that we are capable of making.
First, Mental, wherein the Ideas in our Understandings are without the use of Words put together, or separated by the Mind, perceiving, or judging of their Agreement, or Disagreement.
Secondly, Verbal Propositions, which are Words the signs of our Ideas put together or separated in affirmative or negative Sentences”.⁵⁰⁸ By which way of affirming or denying, these Signs, made by Sounds, are as it were put together or separated one from another. So that Proposition consists in joining, or separating Signs, and Truth consists in the putting together, or separating these Signs, according as the Things, which they stand for, agree or disagree.”⁵⁰⁹

Evidently, Locke discusses truth by first distinguishing mental and verbal propositions to advance then a characterization of truth which concerns *both* types of propositions. Accordingly, one has to read ‘Things’ as denoting ideas in the first case and entities being represented by ideas in the second case.⁵¹⁰ Locke therefore re-states his definition of truth given at the beginning of the chapter. This means as to verbal propositions: in true affirmations and negations words are joined respectively separated as the ‘things’ agree respectively disagree which these words signify, i. e. as the ideas agree respectively disagree which are signified by the words. Again, the (dis-) agreement of two ideas manifests a fact.

Third, this conception of the (dis-) agreement of ideas is likewise present when Locke highlights only verbal propositions as being true: “But *Truth of Words* is something more, and that is the affirming or denying of Words one of another, as the *Ideas* they stand for agree or disagree: [...]”.⁵¹¹ That is, in true affirmations and negations words are joined respectively separated as the ideas they signify agree respectively disagree. Or even

⁵⁰⁸ 576, IV.v.5.

⁵⁰⁹ 575f, IV.v.5.

⁵¹⁰ By contrast, Krüger reads again the quote as implying a correspondence-theoretic notion of truth which relates to ‘things’ in the sense of entities existent in the world. This implies, Krüger takes the last sentence of IV.v.5 as relating only to verbal propositions. However, as argued, the sentence refers to both mental and verbal propositions. Cp. Krüger (1973), 140. Below, I will discuss the plausibility of Krüger’s interpretation. Cp. 9c.

⁵¹¹ 576, IV.v.6.

shorter, fourth: “*Truth* is the marking down in Words, the agreement or disagreement of *Ideas* as it is.”⁵¹² This way of putting it is for Locke more handy than the more elaborate version which highlights the truth of verbal propositions in connection with the truth of mental propositions, namely as consisting in: the joining or separating of words which signify ideas that agree or respectively disagree in accordance to the agreement or respectively disagreement of the entities they represent. In turn: defining the truth of verbal propositions simply as the (dis-) agreement of ideas implies that the (dis-) agreement of ideas expresses the holding of the state of affairs which the proposition means.

True, the definition of knowledge relates to mental, not to verbal propositions. But since, as we have just seen, the notion of the (dis-) agreement of ideas is used by Locke to indicate that a state of affairs obtains, it is, conceptually speaking, only a short step for Locke to talk simply of the (dis-) agreement of ideas to express the holding of states of affairs which are represented by mental propositions. To speak of the (dis-) agreements of ideas in this sense just abbreviates again the longer formula which is employed in the definition of truth to express the obtaining of a state of affairs being represented by a mental proposition: in the case of true mental propositions, ideas are joined or separated in correspondence to the agreement or disagreement of the entities which they represent. To sum up, in the light of Locke’s usage of the notion of (dis-) agreement in connection with verbal propositions, it is most natural to understand him likewise as to mental propositions in the context of knowledge.

Having established that, one passage is naturally understood as Locke treating the the (dis-) agreement of ideas as equivalent to the (dis-) agreement of the entities they represent: “When *Ideas* are so put together, or separated in the Mind, as they [scil. as the ideas], or the Things they stand for do agree, or not, that is, as I may call it, *mental Truth*.”⁵¹³ I will come back to this quote, since Lorenz Krüger reads it differently to underpin his interpretation. But given what has been said before, the (dis-) agreement of ideas is here understood to be equivalent with the (dis-) agreement of the signified entities, namely to

⁵¹² 578, IV.v.9.

⁵¹³ 576, IV.v.6.

express that the state of affairs holds (that is represented by the ideas). Thus, in the quote, the truth of a mental proposition is described in two ways: to consist in the joining or separating of ideas in accordance to their (dis-) agreement, or respectively in the joining or separating of ideas in accordance to the (dis-) agreement of the entities represented by the ideas.

To conclude, in the light of Locke's definition of truth and of his usage of the notion of (dis-) agreement in the context of verbal propositions, the agreement or disagreement of ideas means on the face of it that the state of affairs obtains which is represented by the joining or separating of the ideas. The (dis-) agreement of ideas means the holding of a state of affairs that is represented by the joining or separating of ideas. By contrast, the joining or separating of ideas leaves open whether the expressed state of affairs truly obtains or not. Consequently, when Locke maintains that one joins or separates ideas and then judges, perceives, supposes or believes the (dis-) agreement of ideas, he asserts that one judges, perceives, supposes or believes that the state of affairs holds which is represented by the joining or separating of the ideas.⁵¹⁴ It seems to me, Locke's explanations clearly establish that in the context of knowledge the (dis-) agreement of ideas expresses the holding of the state of affairs represented by the ideas.

We can now easily assess what Locke means when asserting that knowledge is the perception of the (dis-) agreement of two ideas. Locke elucidates knowledge as the awareness that ideas are joined or separated as the signified entities agree or disagree. In other words, knowledge is the cognition of the obtaining of a state of affairs which is represented by the joining or separating of two ideas. As we have seen above, one might perceive or only consider the (dis-) agreement of ideas, i. e. one can merely suppose the holding of the state of affairs being represented by the joining or separating of these ideas. The (dis-) agreement of two ideas itself therefore means that the joined or separated ideas represent a fact, but it does not entail that one knows the fact, i. e. that one is aware that the represented state of affairs obtains. Only the perception of the (dis-) agreement is knowledge of the fact. To sum up: in Locke's knowledge formula the (dis-) agreement of ideas expresses the holding of a represented state of affairs, whereas the perception of the

⁵¹⁴ 575f; IV.v.5f.

(dis-) agreement is the cognition of the obtaining of the state of affairs.

If one moreover takes Locke's point into account that knowledge of facts can only be via ideas, Locke assesses knowledge as the awareness that our mental representation of a state of affairs is the mental representation of a fact: one is aware that ideas are truly joined or separated in accordance to the agreement or disagreement of the entities represented by these ideas. If one knows that a state of affairs obtains, one recognizes that one's mental representation of this state of affairs stands for a fact. One cannot grasp a fact without mentally representing it, but one can recognize that one's mental representation of a state of affairs is the representation of a state of affairs that holds.

Having said that, a question naturally emerges. If knowledge is the cognition of a fact, how do we become aware of the fact? That is, how do we come to recognize that in the case of knowledge our representation of a state of affairs is a representation of a fact? I will come back to this issue below in connection with the three degrees of knowledge which will deepen the so far given account of Lockean knowledge. Alternative readings of the (dis-) agreement of ideas will however be discussed first.

c. Rival Interpretations

Setting aside the here developed reading, the common ground of virtually all proposed interpretations of Locke's conception of knowledge is the view that the (dis-) agreement of two ideas is a conceptual, or at least conceptual-like, relationship holding between the ideas. Importantly, to get this reading off the ground, one cannot take Locke's definition of knowledge - as I do - as an explanation that re-states in terms of ideas what it means that one knows a fact. For, given the "conceptual reading" of the (dis-) agreement relationship, namely of concepts (not) entailing one another, Lockean knowledge would be knowledge of conceptual relationships, if the (dis-) agreement of two ideas were conceived as the object of knowledge. And one cannot interpret (dis-) agreements of ideas as the objects of knowledge in this sense because this would openly contradict Locke's exemplifications: Locke does not discuss our knowledge of facts expressed by, for example, "Gold' entails 'yellow'", but facts expressed by sentences like 'Gold is yellow'.

Thus, to spell out the common approach of interpreting Locke coherently, Locke's analysis of knowledge as the perception of the (dis-) agreement of ideas has to be understood as elucidating as in what knowledge is grounded: to know that a state of affairs obtains, is grounded in the perception that the concepts expressing this state of affairs stand in the relationship of entailment.⁵¹⁵ Knowledge of facts, Locke is effectively understood to claim, is based on or involves the recognition of the holding of conceptual (-like) relationships. This condition for knowledge does not directly relate to the fact being the object of knowledge, but to the reasons which one has to be aware of for knowing that the fact obtains.

This reading is usually justified by Locke's understanding of intuitive and demonstrative knowledge where knowledge is depicted as being based on conceptual or conceptual-like relationships, what will be discussed below.⁵¹⁶ This interpretation implies however that perceptual knowledge would obviously not fit with his definition, since it is not grounded in conceptual relationships. Even worse, since Locke's own account of perceptual knowledge clearly suggests that for him perceptual knowledge is achieved by and grounded in veridical sensations, Locke would be hopelessly confused.⁵¹⁷ And since he rejects criticism along these lines, he moreover appears to be stubborn or does simply not understand. I therefore believe that, in the light of the above reconstruction of an alternative interpretation, the orthodox view is simply not tenable. But to see this more clear, it might be helpful to discuss how proponents of the common line of interpretation have reacted to the *prima facie* unpleasant result of their reading that sensitive

⁵¹⁵ This view of Locke's notion of knowledge is not always that explicitly expressed by interpreters, as just reconstructed, but it is entailed in their comments. This becomes often manifest by their ascription of two claims to Locke: knowledge of a fact is defined as the perception of a conceptual (-like) relationship between two ideas; and this knowledge is of the fact being represented by the two ideas. Knowledge of a fact is thus effectively conceived as consisting in the perception of the reasons why a fact holds, namely in the recognition of a conceptual relationship between the ideas which represent the fact. Cp. Alexander (1985), 282f; Ayers (1991), I, 103 and 126; Jenkins (1983), 196ff; Krüger (1973), 144 and 146; Lowe (1995), 171-74; Specht (1989), 121f; Woolhouse (1983), 57ff, and (1994) 152f and 154f.

⁵¹⁶ This view is often expressed by saying that Lockean knowledge is the perception of a relation between two ideas. Cp. Alexander (1985), 282f; Ayers (1991), I, 103 and 126; Jenkins (1983), 196ff; Krüger (1973), 144 and 146; Lowe (1995), 174; Osler (1970), 11f; Specht (1989), 121f; Woolhouse (1983), 57ff, and (1994) 152f and 154f. Cp. also Aaron (1937), 238; Gibson (1931), 166f and 176; Mabbott (1973), 90.

⁵¹⁷ Cp. 9d.

knowledge is in fact no knowledge on Locke's own, official account. Three ways will be discussed in the following.

First. One possible move is to emphasize utterances where, on first thought, Locke appears to raise doubts whether sensitive knowledge should and can be truly called knowledge.⁵¹⁸ Thus, if Locke consciously declined the knowledge status of sensitive knowledge, he could be viewed to exclude doubtful, sensitive knowledge as a true realm of knowledge, since it is not based on the recognition of conceptual relationships but on potentially erroneous sensations. However, if Locke really declined the epistemological status of sensitive knowledge as knowledge in connection with skepticism, he would be deeply confused since he also insists towards Stillingfleet that sensitive knowledge is decent knowledge that lives up to his official notion of knowledge.⁵¹⁹ Generally speaking, I do not go into detail to refute this view since other commentators, e. g. Ayers, have already done so convincingly.⁵²⁰ An outline of the rejection seems therefore appropriate. We will see that Locke does not decline the epistemic status of sensitive knowledge, for which reason there is no basis to read him as confining his general analysis only to knowledge being grounded in the perception of conceptual relationships.

Take for example the most prominent passage.⁵²¹ In his discussion whether so-called sensitive knowledge is knowledge Locke concedes at the beginning that sensitive knowledge does not have the same degree of certainty as intuitive and demonstrative knowledge. But at the end of the *same* sentence Locke restricts his contention as to general truths; and he then moves on to discuss whether there is knowledge of "particular truths" about entities existing in the outer world which can be known by the senses. Decisively, these claims do not contradict for him his subsequent anti-skeptical argument. For he concludes at the end of the argument that there are three realms, namely intuitive, demonstrative and sensitive knowledge. Whether Locke's anti-skeptical reasoning convinces us or not, he unequivocally contends that his refutation of

⁵¹⁸ Cp. Osler (1970), 14.

⁵¹⁹ *Works* IV, 360.

⁵²⁰ Ayers (1991), I, 154-59.

⁵²¹ 536ff, IV.ii.14.

skepticism establishes sensitive knowledge as true knowledge.⁵²² Thus, whatever Locke's theory of the different degrees of knowledge asserts about the difference between sensitive knowledge and intuitive and demonstrative knowledge, he does not believe that it opposes his anti-skeptical analysis of sensitive knowledge and his conclusion that sensitive knowledge really is decent knowledge. And we will see below that the doctrine of the three degrees of knowledge does indeed not imply that Locke is deeply confused as to sensitive knowledge, i. e. not virtually contradicting himself in the very same sentence in connection with skepticism.⁵²³

Second. Most advocats of the orthodox line of interpretation concede that sensitive knowledge is true knowledge for Locke, but insist that sensitive knowledge does not fulfill the official definition. Locke is understood to claim that sensations show the perception of a (conceptual-like) relationship between an idea given in sensation and the idea of existence. Commentators therefore criticize Locke for grounding unintelligibly sensitive knowledge in relations between ideas.⁵²⁴ However, as just pointed out, in the face of such criticism Locke clearly re-asserts to have expounded a coherent view. One should therefore, if possible, attempt to read him differently, namely without ascribing to him persistent injudiciousness.

Third. Having said that, a third variation of the orthodox view becomes attractive, namely one which ascribes to Locke a coherent position while still contending that the account of sensitive knowledge does not fit with his definition of knowledge. According to Lorenz Krüger, Locke has two notions of truth, an idea-theoretic and a correspondence-theoretic one. Given this approach, as will be delineated, the former notion naturally applies to intuitive and demonstrative knowledge and the latter one to sensitive knowledge.⁵²⁵ Thus, in the light of these two notions of truth, one can explain why,

⁵²² This reading is confirmed by other passages where sensitive knowledge is likewise called knowledge in connection with skepticism. Cp. 630-34, IV.xi1-7.

⁵²³ Cp. 9d.

⁵²⁴ Cp. Alexander (1985), 282f; Ayers (1991), I, 103 and 126; Jenkins (1983), 196ff; Lowe (1995), 174; Specht (1989), 129f.

⁵²⁵ Cp. Krüger (1973), 144f. Krüger acknowledges that Locke's definition of knowledge corresponds to the assumed idea-theoretic notion of truth. Mattern, by contrast, accepts Krüger's interpretation of two different notions of truth, but argues on this basis that one has to distinguish between two corresponding notions of the (dis-) agreement of ideas, i. e. between two distinct notions of knowledge. Cp. Mattern (1978).

allegedly, sensitive knowledge does not fit the official notion of knowledge. This line of interpretation is also the most challenging one with respect to the one here proposed, since it is build on a different reading of passages crucial for both reconstructions.

Pace Krüger I do however not understand Locke's explanations to entail two notions of truth, an idea-theoretic and a correspondence-theoretic one. A closer analysis of Krüger's main textual evidence reveals that it does not suggest his interpretation if read in context. Krüger maintains⁵²⁶ that Locke defines truth as a correspondence-theoretic notion when he declares:

“§2. Truth then seems to me, in the proper import of the Word, to signify nothing but the joining or separating of Signs, as the Things signified by them, do agree or disagree one with another.”⁵²⁷

What does Krüger mean by 'correspondence-theoretic'? He does not want to go into detail,⁵²⁸ but for him a naive conception of a correspondence theory of truth includes at least that a proposition somehow corresponds to real, existent entities, i. e. to entities existing in the outer world.⁵²⁹ This implies for his interpretation of Locke's definition that he must read 'things' to refer to entities existing in the outer world when Locke speaks of the things being denoted by signs. And indeed Krüger does so.⁵³⁰ He likewise interprets Locke as asserting a correspondence-theoretic notion of truth in connection with verbal propositions when Locke maintains: “So that Proposition consists in joining, or separating Signs, and Truth consists in the putting together, or separating these Signs, according as the Things, which they stand for, agree or disagree.”⁵³¹ However, I argued above that the context of both passages discloses that 'things' denotes not only entities represented by ideas, but also ideas, since this depiction of truth concerns not only verbal, but also mental propositions.

There is another passage cited by Krüger which seems more promising. Here he

⁵²⁶ Krüger (1973), 139f.

⁵²⁷ 575, IV.v.2.

⁵²⁸ Krüger (1973), 140.

⁵²⁹ Krüger (1973), 141-45.

⁵³⁰ Krüger (1973), 140f.

⁵³¹ 576, IV.v.5. Cp. Krüger (1973), 140.

understands again ‘things’ to denote entities existing in the outer world, and consequently reads this passage in the sense of Locke asserting two notions of truth: “When *Ideas* are so put together, or separated in the Mind, as they, or the Things they stand for do agree, or not, that is, as I may call it, *mental Truth*.”⁵³² According to Krüger,⁵³³ Locke maintains: two ideas agree or disagree either if they agree or disagree (as in the case of intuitive and demonstrative knowledge) or if the signified existent entities agree or disagree (as in the case of sensitive knowledge). This means, ‘things’ and ‘ideas’ are understood to stand for two alternative ways to conceive the (dis-) agreement of ideas. More precisely, for Krüger, the correspondence-theoretic conception of truth asserts that the truth of (some) propositions is grounded in the outer world, namely when ideas (dis-) agree in accordance to existent entities; whereas the idea-theoretic notion depicts the truth of (other) propositions as being grounded in relations holding amongst ideas, namely when ideas (dis-) agree with respect to themselves.⁵³⁴ As Krüger rightly sees, one import of this reading is that Locke first officially introduces a general, correspondence-theoretic notion of truth and then smuggles in a second, idea-theoretic one.⁵³⁵

Krüger therefore follows the usual path in the sense that he highlights Locke’s explanations as specifying the reasons in which truth (and knowledge) is grounded.⁵³⁶ If this approach is presumed, Krüger’s interpretation of the last quotation is not unreasonable, since Locke often uses ‘things’ to denote entities existing in the world. And, if this second step is granted, he correctly concludes that Locke has two notions of truth: some propositions are grounded in the world, whereas the other ones are grounded in relations between ideas.⁵³⁷

Two objections. First, in the light of the suggested interpretation of Locke’s foregoing definitions of truth, one naturally understands this passage as has been explained above: the (dis-) agreement of ideas is here conceived as being equivalent to the (dis-) agreement of the signified entities, namely to express that the state of affairs holds (that is

⁵³² 576, IV.v.6.

⁵³³ Krüger (1973), 143.

⁵³⁴ Krüger (1973), 144.

⁵³⁵ Krüger (1973), 143f.

⁵³⁶ Krüger (1973), 146.

⁵³⁷ Krüger (1973), 144.

represented by the ideas). That is, in the quote, the truth of a mental proposition is described in two ways: to consist in the joining or separating of ideas in accordance with their (dis-) agreement, or respectively to consist in the joining or separating of ideas in accordance with the (dis-) agreement of the entities represented by the ideas. The (dis-) agreement of two ideas is taken to express the (dis-) agreement of the entities they signify. Second, Locke uses 'things' also to refer to entities which *can* exist in the world, e. g. triangles. According to him, triangles exist in the world only if they are perfectly instantiated. And since he does not believe that this is actually possible, he refers to triangles as 'things' which *can* exist.⁵³⁸ In this sense, Locke also refers to the members of sorts as 'things' irrespective of whether they actually exist or not, e. g. of circles.⁵³⁹ In fact, this is a very natural way of speaking of entities and their properties. Triangles are entities which have certain features irrespective of whether they truly exist. Similarly, to say that a proposition about triangles (not) possessing the property X is true only if the two ideas are joined or separated as the things they stand for (dis-) agree, simply means that the proposition is true only if triangles have (not) the feature X. That is, one naturally talks of triangles as being entities having properties, even if one is convinced that, strictly speaking, there are no triangles instantiated in the world. In short, Locke's usage of 'things' establishes neither reading, since it sometimes denotes existing entities and sometimes entities which can exist. But in the light of the above interpretation 'things' should be understood to refer to entities for which it is semantically possible to exist.⁵⁴⁰ Moreover, it seems to me that the wider context of the quoted passages supports the here developed interpretation as well.⁵⁴¹ To see this, one has to recognize that, on Krüger's reading, Lockean sensitive knowledge naturally fits to the correspondence-theoretic

⁵³⁸ 565, IV.iv.6.

⁵³⁹ 416, III.iii.14.

⁵⁴⁰ As has been delineated in the chapter on archetypes, except for contradictory ideas, e. g. ideas of bodies being uniformly yellow and blue, only ideas of substances can be fantastical, e. g. ideas of centaurs. Cp. 1b. But even fictional beings like centaurs are considered as being capable of existing in nature, since they are said to be animals. Cp. 577, IV.v.7. In other words, unicorns are animals in a full blooded sense.

⁵⁴¹ This objection could however be rebutted by a reading similar to Krüger's interpretation. Mattern accepts Krüger's interpretation of two different notions of truth, but argues on this basis that one has to distinguish between two corresponding notions of the (dis-) agreement of ideas, i. e. between two distinct notions of knowledge. Cp. Mattern (1978).

notion whereas intuitive and demonstrative knowledge is tailor-made for an idea-theoretic conception because it is about existent entities. The correspondence-theoretic notion applies to sensitive knowledge because sensitive knowledge is grounded in the world. Likewise, the idea-theoretic notion relates to intuitive and demonstrative knowledge, since they are grounded in relations between ideas. Given Krüger's approach, one is almost forced to accept these correlations. But these correlations show that, if Krüger were right, Locke would discuss truth in a way very untypical for his approach elsewhere in the *Essay*. If Locke introduced the *general* topic of truth with a correspondence-theoretic notion, that were *specific* for propositions being grounded in sensitive knowledge, as Krüger maintains, Locke would have in mind propositions of only a finite number of entities that exist in the outer world, e. g. 'This piece of gold is yellow', since perceptual knowledge concerns for Locke only a finite number of entities.⁵⁴² However, when discussing truth, Locke's paradigms are not propositions about particulars, but intuitively or demonstratively known universal propositions, e. g. 'White is not black' or 'All men are animals'. This indicates that Locke does not introduce a general definition of truth which effectively applies only to truths known by the senses. Furthermore, since Locke consciously distinguishes between intuitively and demonstratively known *universal* propositions and perceptually known propositions about particulars existing in the world, it would be unusual for him if he opened the discussion with the latter propositions and then moved on to the former ones without losing a word.⁵⁴³

Furthermore, if Krüger were right, Locke would present a deeply incoherent account. As Krüger concedes, the idea-theoretic notion is present in Locke's definition of knowledge.⁵⁴⁴ But since Locke insists that this definition also pertains to sensitive knowledge of existence, Locke's fundamental conception that known propositions are true would imply that his definition of knowledge entails an idea-theoretic notion of truth also for propositions being knowable by sensations. This sort of implication holds correspondingly for Locke's alleged official correspondence-theoretic conception of truth

⁵⁴² 536f, IV.ii.14.

⁵⁴³ 536f, IV.ii.14.

⁵⁴⁴ Krüger (1973), 144.

as well. That is, Locke's supposedly official definition of truth implies a correspondence-theoretic notion of knowledge as to intuitive and demonstrative knowledge. Thus, if Krüger's reading were correct, Locke would give two official portrayals of knowledge and truth which oppose each other. In the chapter on truth, Locke would introduce a notion of truth (and knowledge) that contradicts and competes with the previously advanced notion of knowledge (and truth) in the chapter on knowledge. The official notion of truth would not work with universal knowledge, whereas the official notion of knowledge would not work with sensitive knowledge. This however contradicts Locke's obvious intention to propose (official) notions of truth and knowledge that apply to all kinds of propositions. Locke did not believe to operate with two different and divergent notions of knowledge and truth.

By comparison, according to the here developed interpretation, in the last quoted sentence Locke does not maintain two different ways in which the (dis-) agreement of ideas has to be highlighted. Rather, he re-asserts his formula in two different ways, one time in terms of the (dis-) agreement of ideas and the other time in terms of the (dis-) agreement of the entities which are represented by ideas: "When *Ideas* are so put together, or separated in the Mind, as they, or the Things they stand for do agree, or not, that is, as I may call it, *mental Truth*."⁵⁴⁵ In my words: a mental proposition is true only if ideas are joined or separated in accordance with these ideas, i. e. in accordance with the (dis-) agreement of the entities being represented by these ideas. Like in Locke's general definition of truth, 'things' is here read as denoting entities which could, but need not exist. Locke's example immediately preceding the citation illustrates this well:

"When a Man has in his Mind the *Idea* of two Lines, *viz.* the *Side* and *Diagonal* of a Square, whereof the *Diagonal* is an Inch long, he may have the *Idea* also of the division of that Line, into certain number of equal parts, *v.g.* into Five, Ten, an Hundred, a Thousand, or any other Number, and may have the *Idea* of that Inch Line, being divisible or not divisible, into such equal parts, as a certain number of them will be equal to the *Side-line*. Now whenever he perceives, believes, or supposes such a kind of Divisibility to agree or disagree to his *Idea* of that Line, he, as it were, *joins* or *separates* those two *Ideas*, *viz.* the *Idea* of that Line, and the *Idea* of that kind of Divisibility, and so makes a mental Proposition, which is true or false, according as such a kind of Divisibility, a Divisibility into such *aliquot* parts,

⁵⁴⁵ 576, IV.v.6.

does really agree to that Line, or no.”⁵⁴⁶

The (dis-) agreement of two ideas corresponds to a fact that is represented by the (joining or separating of) ideas, e. g. certain mathematical objects (do not) have a certain mathematical feature. Thus, for Locke there is no need to have two notions of truth, since his notion does neither apply exclusively to ideas nor exclusively to existing things. His notion relates only to states of affairs represented by ideas which are joined or separated. It is left open whether these states of affairs are manifest in the world, i. e. relate to existing entities, or not. For instance, a true proposition about triangles relates to all possibly existing triangles. This is the reason why for Locke the question arises whether truth and knowledge is about reality.⁵⁴⁷ His conception of knowledge and truth alone does not guarantee that knowledge and truth are about real entities existing in the outer world. Locke’s way of speaking that the truth of a mental proposition consists in the (dis-) agreement of ideas or respectively in the (dis-) agreement of entities simply means that the state of affairs holds which is expressed by the joining or separating of the ideas making up the proposition.

d. The Three Degrees of Knowledge

I will now turn to Locke’s theory of the three degrees of knowledge which will deepen the so far developed reading. By distinguishing different “degrees of knowledge”, Locke classifies knowledge in three types, namely in intuitive, demonstrative and sensitive knowledge. I will first shed light on these types of knowledge and subsequently come back to what Locke means by different “degrees”, i. e. as to which feature the three sorts of knowledge vary.

Locke’s defining characterizations of intuitive and demonstrative knowledge are interconnected. Demonstrative knowledge is the perception of the (dis-) agreement of two ideas by intervening ideas.⁵⁴⁸ As Locke puts it in other passages, in the case of

⁵⁴⁶ 576, IV.v.6.

⁵⁴⁷ 577f, IV.v.7f. Cp. 10b.

⁵⁴⁸ 531-4, IV.2.2-7.

demonstrative knowledge, there is a connection or dependence between the two ideas whose (dis-) agreement is perceived.⁵⁴⁹ This nexus of two ideas is also depicted as a chain of ideas. The recognition of the holding of a chain of ideas leads to demonstrative knowledge, namely to the perception that the two ideas (dis-) agree which are connected by this chain. In this sense, the perception of the (dis-) agreement of two ideas is understood to be achieved by the cognition of a chain of ideas that shows the (dis-) agreement of the two ideas:

“Those intervening *Ideas*, which serve to shew their Agreement of anytwo others, are called *Proofs*; and where the Agreement or Disagreement is by this means plainly and clearly perceived, it is called *Demonstration*, it being *shewn* to the Understanding, and the Mind made see that it is so.”⁵⁵⁰

Locke exemplifies a demonstration by the chain of ideas that makes up a proof in Euclidean mathematics, e. g. a succession of comparisons of angles and lines of geometrical figures.⁵⁵¹ Moreover, the perception or recognition of this chain of ideas consists in a series of immediate perceptions of which each represents a link. Each immediate perception is of the (dis-) agreement of two neighbouring ideas making up the chain. Immediate perceptions of the (dis-) agreement of two ideas therefore serve as the basic or elementary components of a demonstration. And since intuitive knowledge consists in the immediate perception of the (dis-) agreement of two ideas, a demonstration, i. e. the grasp of a chain of ideas, is a series of steps which are intuitively known.⁵⁵²

Importantly, Locke differentiates, as just quoted, between the perception of the (dis-) agreement of two ideas and the perception of a chain of ideas leading to the former perception. A proof is said to show the (dis-) agreement of two ideas. Similarly, a proof makes the mind “to perceive the Agreement or Repugnancy between two *Ideas* that need Proofs and the Use of Reason to shew it”.⁵⁵³ “Perception” is depicted as to be “produced by

⁵⁴⁹ 546, IV.iii.14; 582ff, IV.vi.5-10.

⁵⁵⁰ 532, IV.ii.3.

⁵⁵¹ 531f, IV.ii.2.

⁵⁵² 533, IV.ii.7.

⁵⁵³ 532, IV.ii.4.

Demonstration".⁵⁵⁴ Crucially, this means, a demonstration is depicted as a truth yielding, cognitive process. For Locke, the recognition of the holding of a connection, or chain, between two ideas leads to the perception of their (dis-) agreement, i. e. to demonstrative knowledge. He does not identify the perception of the (dis-) agreement of ideas which represents demonstrative knowledge with the demonstration itself, i. e. with the succession of immediate perceptions. This implies, intuitive and demonstrative knowledge are distinguished by the kind of cognitive process by which one achieves these types of knowledge. Intuitive knowledge is *immediate* perception, demonstrative knowledge is *mediated* perception. The difference lies in the way of attaining knowledge, i. e. of obtaining perceptions of the (dis-) agreement of ideas.

Having said that, the question arises what an immediate and what an mediated perception is. As we have seen, demonstrative knowledge is highlighted in terms of intuitive knowledge. Demonstrative knowledge is achieved by the perception of a chain of ideas, namely by a series of immediate perceptions of the (dis-) agreement between ideas of a chain. Inquiring into mediated perceptions passes on the question as to immediate perceptions.

Locke's characterization of mediated perceptions implies moreover for intuitive knowledge that an immediate perception of the (dis-) agreement of two ideas does not involve the perception of the (dis-) agreement of these ideas in relation to other ideas. An immediate perception concerns only the two ideas whose (dis-) agreement is perceived. This manifests in Locke's depiction of intuitive knowledge as knowledge not affording proofs.⁵⁵⁵ There are no further perceptions of (dis-) agreements of ideas needed. And since the (dis-) agreement of two ideas stands for a fact, immediate perception does not involve the recognition of other facts (besides the one which is immediately perceived.) Thus, given our previous interpretation of Locke's notion of knowledge, intuitive knowledge is the cognition of the holding of a state of affairs that does not require to become aware of other facts. In turn, mediated perception of the (dis-) agreement of two ideas is mediated by the recognition of other facts, namely facts which correspond to each step of the

⁵⁵⁴ 533, IV.ii.6.

⁵⁵⁵ 533f, IV.ii.7.

demonstration.

The question is however still unanswered what an immediate perception of a fact consists in. Locke's position can be highlighted by the types of propositions which can intuitively be known, and by his explanations why one can intuitively know them. By and large, Locke distinguishes intuitively known propositions into propositions which relate: to the identity of two ideas, to the diversity of two ideas, and to the inclusion of two ideas. For instance, 'Black is not white' corresponds to the diversity of the idea of black and the idea of white, 'Red is red' corresponds to the identity of the idea of red, and 'Gold is yellow' or 'Horses are animals' correspond to the inclusion of the idea of yellow by the idea of gold or respectively to the inclusion of the idea of horses by the idea of animals. But why do we know these kinds of propositions immediately? Locke advances an answer in connection with his argument on maxims, for instance, as to propositions on identity:

"§4. For, *First*, the immediate perception of the agreement or disagreement of *Identity*, being founded in the Mind's having distinct *Ideas*, this affords us as many *self-evident* Propositions, as we have distinct *Ideas*. Every one that has any Knowledge at all, has, as the Foundation of it, various and distinct *Ideas*: And it is the first act of the Mind, (without which it can never be capable of any Knowledge,) to know every one of its *Ideas* by it self, and distinguish it from others. Every one finds in himself, that he knows the *Ideas* he has; And that when more than one are there, he knows them distinctly and unconfusedly one from another. Which always being so, (it being impossible but that he should perceive what he perceives,) he can never be in doubt when any *Idea* is in his Mind, that it is there, and is that *Idea* it is; and that two distinct *Ideas*, when they are in his Mind, are there, and are not one and the same *Idea*."⁵⁵⁶

Locke's issue is that "the immediate perception of the agreement or disagreement of *Identity* [is] founded in the Mind's having distinct *Ideas*". Part of his explanation is that a necessary condition for knowledge is one's grasp of the content of ideas and to distinguish ideas as being different ideas.⁵⁵⁷ The backdrop is of course that propositions are the objects of knowledge and that ideas are their constituents. In this context, the insistence on ideas being distinct simply means that they have a definite or determined content. Locke justifies this claim by referring to common experience: "Every one finds in himself, that

⁵⁵⁶ 592, IV.viii.4.

⁵⁵⁷ Cp. 597, IV.vii.10.

he knows the *Ideas* he has; And that when more than one are there, he knows them distinctly and unconfusedly one from another.” Having established the claim, he then concludes that one therefore cannot doubt which ideas one has and what their content is. Importantly, Locke does not assert that one is always aware of the ideas one has. He rather says that one fully grasps one’s ideas, *if* one indeed *fully* recognizes them. This is indicated by his remark that “it being impossible but that he should perceive what he perceives” and, as quoted below, by his reference to propositions being considered by the mind with *attention*. Thus, Locke’s fundamental contention is that thought is perspicuous in principle, namely when one is appropriately aware of the content of one’s consciousness. This means, as the cited passage continues, in the case of intuitive knowledge to *understand* a proposition entails or leads to the immediate awareness of the holding of the state of affairs that is represented by (the joining or separating of) the ideas:

“So that all such Affirmations, and Negations, are made without any possibility of doubt, uncertainty, or hesitation, and must necessarily assented to, as soon as understood; that is, as soon we have, in our Minds, determined *Ideas*, which the Terms in the Proposition stand for. And therefore where-ever the mind with attention considers any proposition, so as to perceive the two *Ideas*, signified by the terms and affirmed or denied one of the other, to be the same or different; it is presently and infallibly certain of the truth of such a proposition [...]”.⁵⁵⁸

Locke proposes the same account also in connection with other types of intuitively known propositions, e. g. relating to the diversity of two ideas. To know intuitively that blue is not red, is to become aware that blue is not red in the light of our understanding of both the idea of blue and the idea of red.⁵⁵⁹ To be more precisely, since two ideas have to be joined or separated to represent a state of affairs: the considering or conceiving of black not being white leads in the light of our comprehension of black and white to our recognition that the separating of the two ideas represents a fact, i. e. that the represented state of affairs obtains. And, obviously, this analysis applies to the inclusion of ideas as well.

Summing up, to know intuitively the holding of a state of affairs, is to become aware that

⁵⁵⁸ 592, IV.viii.4. Cp. 56-59, I.ii.17-21.

⁵⁵⁹ 594, IV.viii.4. Cp. 597, IV.vii.10.

the state of affairs holds simply by grasping or comprehending the state of affairs. That is, the truth of a maxim, or of any other intuitively knowledgable proposition, is known when one understands it. This is the reason for Locke why one immediately perceives the (dis-) agreement of two ideas in the case of intuitive knowledge. In the case of intuitive knowledge, one *immediately* perceives the holding of a state of affairs because it is *one* cognitive act to grasp what the state of affairs consists in and that it holds, and because this grasp is “the first act of the Mind”,⁵⁶⁰ i. e. no other cognitive act is prerequisite to perform one’s grasping.

Locke’s reference to the identity, diversity and inclusion of ideas can easily be misunderstood in two different ways as portraying intuitive knowledge as consisting in the grasp of conceptual (-like) relationships. First, as has already been pointed out above, one should not confuse intuitive knowledge of ‘Gold is yellow’ with knowledge of “Gold entails ‘yellow’”. Locke has the former states of affairs in mind, not the latter ones. Intuitive knowledge is not knowledge of conceptual relationships. Second and more important, to elucidate intuitive knowledge of a fact as consisting in a grasp of a conceptual-like relationship holding between two ideas, would exclude intuitive knowledge of facts which are not represented by ideas between which a conceptual-like relationship holds. For example, according to Locke the immediate recognition of one’s own existence does not consist in the perception that ‘I includes ‘exist’; what would indeed be a very daring claim. Instead, one is simply aware of one’s own existence. This self-awareness is entailed or accompanied by (our consciousness of) mental states: “In every Act of Sensation, Reasoning, or Thinking, we are conscious to our selves of our Being; and, in this Matter, come not short of the highest degree of *Certainty*.”⁵⁶¹

The point about intuitive knowledge therefore is that one immediately perceives a fact when considering or conceiving a state of affairs. And one should consequently read Locke’s explanations about the identity, diversity or inclusion of ideas as highlighting why intuitive knowledge of certain kinds of facts is possible, namely of the identity or diversity of entities, of the ascription of properties, or of kind membership: if facts are

⁵⁶⁰ 592, IV.viii.4.

⁵⁶¹ 619, IV.ix.3.

represented by propositions that join or separate two ideas which are identical, diverse or partly identical, one comes to know the facts simply by comprehending them. In the same light, one has to interpret Locke's justification of why one intuitively knows one's own existence. He highlights the reason why one perceives this fact immediately, i. e. why one recognizes this fact solely by considering this state of affairs and without referring to other facts: the "omnipresence" of the self-awareness of our own existence is the reason why one immediately knows that one exists when envisaging it.

As we have seen, no further consideration is needed for intuitive knowledge besides understanding (the content of) a proposition. Accordingly, Locke proposes an analogous understanding of demonstrative knowledge. Demonstrative knowledge is achieved by a proof, i. e. by a succession of cognitions of facts that makes perspicuous the holding of the state of affairs in question. In other words, a demonstration establishes the truth of a proposition by providing a list of propositions whose truth are known by understanding them and which show, when considered all together, that the state of affairs holds being expressed by the proposition in question. Correspondingly, demonstrative knowledge is not the cognition of a conceptual-like relationship as explained above. First, demonstrative knowledge is concerned with sentences like 'The angles of triangles are equal to two right angles', but not with "Angles of triangle' entails 'being equal to two right angles". Second, demonstrative knowledge is also not (necessarily) achieved by insights in the holding of conceptual-like relationships, since Locke's demonstration of the existence of God involves the claim that oneself exists. Thus, in general, a demonstration is not a proof consisting of various premisses which correspond to conceptual-like relationships obtaining between two ideas making up the chain. By contrast, when Locke refers to the (dis-) agreement of ideas as being grounded or as corresponding to conceptual-like relationships, he speaks of "relations" holding between ideas. And this is the reason why knowledge of existence is opposed to other realms of knowledge relating to relations between ideas.⁵⁶² (One should not however conflate this distinction with the opposition between sensitive knowledge and non-sensitive knowledge. For knowledge of existence comprises intuitive knowledge of one's own

⁵⁶² 527, IV.i.7.

existence and demonstrative knowledge of God's existence as well.) But many commentators highlight the definition of knowledge as perception of the (not) obtaining of a relation between two ideas; that is, the (dis-) agreement relationship is understood as a relation between two ideas.⁵⁶³ Locke, however, clearly distinguishes between knowledge of relations between ideas and knowledge of existence!

In the light of the deep connections between intuitive and demonstrative knowledge, sensitive knowledge seems a little bit out of place - at first sight. Sensitive knowledge is said to be the perception of the (dis-) agreement of ideas which is achieved by the senses. Sensitive knowledge therefore is neither an immediate perception nor a perception being the outcome of a mathematical-type demonstration. Moreover, sensitive knowledge is not about general propositions, but about particular truths concerning the existence of entities in the world (which are neither oneself nor God). Of course, sensations yield for Locke not only knowledge that entities exist, but also that they have properties, e. g. that my golden ring is malleable.

The aim of Locke's reasoning on sensitive knowledge is to establish that one can indeed attain it. This becomes manifest in the chapters on the degrees of knowledge and on knowledge of the existence of entities (which are neither oneself nor God), namely in his argument that one has knowledge of existence when one receives an idea by the senses. In the latter chapter, he concedes that, if taken by itself, an idea does not entail that the represented entities truly exist. The reason is that ideas can be generated in a way which does not warrant the existence of the depicted entities, e. g. when representations are memories or part of a dream. Locke however insists that one does have knowledge of existence when ideas are delivered by the senses. According to Locke, one is aware in sensation that the object of the sensation is the true cause of the sensation, namely that an entity existing in the outer world causes the sensation.⁵⁶⁴ For Locke, this awareness is not established by reason, but is naturally given in sensation if we appropriately become aware of our perceptions and can thus exclude that they are not, for instance, part of a dream. Locke does concede that philosophical skepticism is coherent and possible as to the

⁵⁶³ Cp. Alexander (1985), 282f; Ayers (1991), I, 103 and 126; Jenkins (1983), 196ff; Lowe (1995), 171-74; Osler (1970), 11f; Specht (1989), 121; Woolhouse (1983), 57ff, and (1994) 152f and 154f.

⁵⁶⁴ Cp. Ayers (1991), I, 155-60.

outer world. One can doubt whether sensations, which we commonly regard to acquire in ideal circumstances, really yield the truth of their content. But Locke contends that one can become aware in proper perceptions that one indeed is in causal interaction with the object of sensation. This awareness of the causal interaction guarantees for him the truth of sensations. And since he maintains a causal theory of perception, namely that in proper sensations the object of perception is its cause.

In addition, Locke mentions four “concurrent reasons” which in the case of proper sensations can show as well that we do have proper sensations yielding truth and that they are not part of a dream.⁵⁶⁵ They all aim at demonstrating that, when we are awake, dreams are for us distinguishable from decent sensations so that we know that we are not dreaming when we are not dreaming. The icing of the account is Locke’s claim that to doubt the epistemic status of proper sensations is to undermine our notion or understanding of knowledge on which basis one can query only in the first place what knowledge is.⁵⁶⁶ The reason is that for Locke proper sensations are the paradigm for knowledge and the successful exhibition of our faculty of knowledge; this can be seen from the fact that intuitive knowledge is compared to visual perception in best, i. e. truth conveying, circumstances.⁵⁶⁷ Thus, according to him, to question whether sensations under ideal conditions are cases of knowledge is to dissolve what we mean by knowledge. Yet, for him, these further considerations seem to serve only to hammer additional nails in the skeptic’s coffin. The core argument is his analysis of proper sensations as entailing our awareness that they really are decent sensations.

On this complex backdrop, Locke refutes the skeptic who raises doubts whether one has sensitive knowledge by the appeal to the possibility that all our ideas are part of a dream. One does know that sensations are not part of a dream, Locke rejoins, since an idea of an entity that is given in sensation is distinguishable from an idea of the entity that is part of a dream. And since Locke regards the skeptic to challenge sensitive knowledge only in this way, he concludes that sensitive knowledge is decent knowledge despite the noise of

⁵⁶⁵ 632ff, IV.xi.4-7.

⁵⁶⁶ Cp. Ayers (1991), I, 155-59.

⁵⁶⁷ 531, IV.ii.1.

the skeptic.⁵⁶⁸ Thus, for him, sensations show the (dis-) agreement of two ideas, i. e. the holding of a state of affairs which is represented by two ideas being joined or separated. For instance, under ideal conditions the sensation of a tree proves that there is a tree, namely that the idea of that tree agrees to the idea of existence.

In the light of Locke's conception of intuitive, demonstrative and sensitive knowledge, one can assess which feature distinguishes them in three degrees of knowledge. Locke speaks of different degrees in various ways, namely as to: the evidence of knowledge, the clearness of knowledge and the certainty of knowledge.⁵⁶⁹ Locke apparently intends to raise the same, or at least roughly equivalent, claim(s) when using these different expressions. But what do they mean?

The answer lies in Locke's explanations on the three sorts of knowledge which are couched in similar terms. For Locke, the evidence of demonstrative knowledge is less bright and clear than the one of intuitive knowledge because one does not immediately perceive the (dis-) agreement of ideas, i. e. the obtaining of a fact. As we have seen, the reason for the perception being non-instantly is that one first has to comprehend a proof, namely to grasp a chain of ideas. Moreover, the comprehension of a proof requires skill according to Locke, since, for instance, long deductions can easily cause mistakes.⁵⁷⁰ On this background, I read Locke's assertions that in demonstrative knowledge evidence is not that bright and clear and that the truth of propositions is doubtful before one has comprehended a proof:⁵⁷¹ in demonstrative knowledge it is rather difficult to grasp facts which support a fact and to achieve thus certainty that the fact holds. In Locke's own words:

“§4. *This Knowledge by intervening Proofs*, though it be certain, yet the evidence of it is *not* altogether *so clear* and bright, nor the assent so ready, *as* in *intuitive Knowledge*. For though in *Demonstration*, the Mind does at last perceive the Agreement or Disagreement of the *Ideas* it considers; yet 'tis not without pains and attention: There must be more than one transient view to find it. A steady application and pursuit is required to this Discovery: And there must be a Progression by steps and degrees, before the Mind can in this arrive at Certainty,

⁵⁶⁸ 537f, IV.ii.14. Cp. 631-34, IV.xi.3-7.

⁵⁶⁹ 530, IV.ii.1, and 538, IV.ii.14.

⁵⁷⁰ 534, IV.ii.7. Cp. 551, IV.iii.19.

⁵⁷¹ 532f, IV.ii.4f.

and come to perceive the Agreement or Repugnancy between two *Ideas* that need Proofs and the Use of Reason to shew it.

§5. *Another difference between intuitive and demonstrative Knowledge, is, that though in the latter all doubt be removed, when by the Intervention of the intermediate Ideas, the Agreement or Disagreement is perceived; Yet before the Demonstration there was a doubt, [...]*"⁵⁷²

Correspondingly, I interpret Locke's contention that in intuitive knowledge the assent to propositions is irresistible and that there are no doubts as to the truth of such propositions:⁵⁷³ in the case of intuitive knowledge one cannot do but recognize with certainty the truth of propositions, since one instantly grasps the (dis-) agreement of ideas when one considers the proposition because one's understanding of the proposition entails knowledge of its truth. Similarly, the uncertainty or doubtfulness of sensitive knowledge relates to the difficulty to identify sensations as being proper perceptions:⁵⁷⁴ the refutation of the skeptic leads to the recognition or, perhaps better, to the self-assurance that one's sensations truly convey sensitive knowledge.

In short, knowledge differs in degree as to the difficulty of grasping the evidence showing that a state of affairs holds⁵⁷⁵ and not, for instance, as to the "degrees of assurance with which a knowledge claim is made".⁵⁷⁶ These distinctions in difficulty are due to differences in the type of cognitive process producing knowledge. As Locke puts it: "The different clearness of our Knowledge seems to me to lie in the different way of Perception, the Mind has of the Agreement, or Disagreement of any of its *Ideas*."⁵⁷⁷ And, similarly, Locke says: "in each of which [scil. in each of the three degrees], there are different degrees and ways of Evidence and Certainty."⁵⁷⁸ Our difficulty to grasp the evidence conveying knowledge implies a corresponding difficulty to attain knowledge since the grasp of the

⁵⁷² 532f, IV.ii.4f.

⁵⁷³ 531, IV.ii.1; 532f, IV.ii.4f.

⁵⁷⁴ 537, IV.ii.14.

⁵⁷⁵ Specht highlights Lockean degrees of knowledge in this sense as well. Cp. Specht (1989), 123f. But since, he maintains the orthodox view of Locke's definition of knowledge, Specht's account does not connect Locke's definition with his conception of the three degrees in the way proposed here.

⁵⁷⁶ Jenkins (1983), 201. Jenkins differentiates between knowledge and knowledge claims. Thus, for him, Locke's notion of the degrees of knowledge does not apply to knowledge of propositions, but to knowledge claims which might be true or not.

⁵⁷⁷ 530, IV.ii.1.

⁵⁷⁸ 538, IV.ii.14.

evidence leads to the recognition of facts. There is no obstacle to grasp a proposition which can be known intuitively: intuitive knowledge is the brightest, clearest, and undoubtful as well as irresistible.⁵⁷⁹ There are some difficulties to understand a proof showing the (dis-) agreement of ideas: demonstrative knowledge is less clear and certain, and is doubtful.⁵⁸⁰ To become aware that one's sensation is a decent sensation is even a higher hurdle, since one might have to remove the philosophical doubt whether a given mental representation is truly attained by the senses and is not part of a dream: sensitive knowledge is the most doubtful one, its evidence is less clear and certain.⁵⁸¹ The three degrees of knowledge can be expressed in two or respectively four ways: as degrees of the certainty or doubtfulness of knowledge in the sense of the questionability of whether the proposition is true before one has knowledge of its truth; and as the degree of the clearness or evidence of knowledge in the sense of the difficulty to grasp the evidence conveying knowledge. Obviously, the certainty, or doubtfulness, of whether a proposition is true and the evidence, or clearness, of the facts grounding a truth correspond each other.⁵⁸²

It thus becomes plain that Locke uses two different notions of certainty. When contrasting knowledge and probability, knowledge is unequivocally called certain whereas probability is not.⁵⁸³ This is a clear-cut, all-or-nothing distinction. By comparison, in the context of the three sorts of knowledge certainty is a question of degree, spanning from intuitive to sensitive knowledge. Yet, in both contexts, certainty relates to one's grasp of reasons conveying the cognition of a fact. To have simply a probable opinion, is not to have certainty *that* the presumed fact truly obtains, since one has not grasped reasons

⁵⁷⁹ 531, IV.ii.1; 532f, IV.ii.4f.

⁵⁸⁰ 532f, IV.ii.4f.

⁵⁸¹ 537, IV.ii.14.

⁵⁸² Ayers elucidates the three degrees of knowledge in terms of its certainty as well. His interpretation differs from the here expounded one, but both explications obviously imply one another. According to Ayers, knowledge differs as to the possibility to be mistaken to know facts, i. e. to raise false knowledge claims. Cp. Ayers (1991), I, 95.

⁵⁸³ 654ff, IV.xv.1-4. Cp. 652f, IV.xiv.1-4, and 44, I.i.3. In his correspondence to Stillingfleet, Locke's identification of knowledge with certainty is obvious: "[...] With me, to know to be certain, is the same thing; what I know, that I am certain of; and what I am certain of, that I know. What reaches to knowledge, I think may be called certainty; and what comes short of certainty, I think cannot be called knowledge." Cp. *Works*, IV, 145.

conveying knowledge; whereas to have knowledge, is to have certainty *that* the fact truly obtains. And the attainment of this certainty differs in degrees as to its difficulty, since the difficulty varies of grasping reasons conveying knowledge.

One should therefore not mistake Locke's use of 'certainty' and 'degrees' and conclude that there is a range of knowledge and probability for him which spans from intuitive knowledge to mere, unfounded conjectures. For even though Locke speaks of "degrees", he does not mean that some knowledge is more genuine knowledge than other knowledge. This is indicated when he calls the three degrees also three sorts of knowledge.⁵⁸⁴

e. Knowledge and its Degrees

The account of the three degrees of knowledge thus deepens our understanding of Locke's general conception of knowledge. As argued before, knowledge is the cognition of the holding of a state of affairs that is mentally represented by ideas being joined or separated. 'Perception', is here understood as a success concept. To perceive the (dis-) agreement of ideas is the awareness of a state of affairs that truly obtains. We have now seen in addition that this perception is conceived as the outcome of a truth yielding cognitive process. Knowledge, the perception of the (dis-) agreement of two ideas, is achieved by either intuition, or demonstration, or sensation. Locke actually delineates this innocuously when maintaining:

"[...] That we can have no *Knowledge* farther, than we can have Perception of that Agreement, or Disagreement: Which Perception being, 1. Either by *Intuition*, or the immediate comparing any two *Ideas*; or, 2. By *Reason*, examining the Agreement, or Disagreement of two *Ideas*, by the Intervention of some others: Or, 3. By *Sensation*, perceiving the Existence of particular Things."⁵⁸⁵

In addition, this reconstruction coheres with Locke's account of habitual knowledge. Contrary to so-called actual knowledge, which we have discussed so far only, habitual

⁵⁸⁴ 537f, IV.ii14.

⁵⁸⁵ 539, IV.iii.2.

knowledge does not consist in the actual perception of the (dis-) agreement of two ideas.⁵⁸⁶ Habitual knowledge is rather the result of becoming aware of reasons which show that once one recognized reasons which showed the (dis-) agreement of ideas, i. e. the holding of a fact. In this sense, habitual knowledge is knowledge being grounded in reasons which only indirectly show that ideas (dis-) agree. Roughly speaking, for example, if one (truly) remembers that in the past one knew the proof for a particular proposition, one habitually knows the proposition.⁵⁸⁷ In this case, veridical remembering is the truth yielding process which leads to knowledge. In fact, veridical remembrance is involved in demonstrations as well, since one can know only one step at a time and thus has to consider all steps at once at the end of a proof, as Locke indicates.⁵⁸⁸ Similarly, Locke concedes, one likewise speaks of propositions which *can* be intuitively known as being habitually known. To know habitually in this sense, is to have the disposition of immediate actual knowledge, namely to perceive immediately the (dis-) agreement of ideas as soon as one considers or reflects on the proposition.⁵⁸⁹

Locke justifies this comprehension of knowledge as comprising habitual knowledge by pointing out that otherwise an absurd or uncommon understanding of knowledge would be the consequence. A person would know at most only one fact, since subjects can actually perceive only *one* (dis-) agreement of ideas at the same time.⁵⁹⁰ The account of habitual knowledge thus confirms that Locke's conception of knowledge distinguishes between the perception of the reasons showing that a fact obtains and the perception of the holding of the fact. Locke however focuses on actual knowledge, on intuitive, demonstrative, sensitive knowledge.

One should finally note that according to Locke knowledge of a fact does not include or entail knowledge that one truly knows the fact. This is manifest in his claim that we can mistakingly believe to have grasped a proof and to have achieved demonstrative knowledge.⁵⁹¹ For, if one can mistake an alleged proof for a correct one, Locke can hardly

⁵⁸⁶ 527f, IV.i.8.

⁵⁸⁷ 528ff, IV.i.9.

⁵⁸⁸ 534, IV.ii.7.

⁵⁸⁹ 528, IV.i.9.

⁵⁹⁰ 528, IV.i.8.

⁵⁹¹ 534, IV.ii.7.

maintain as well that one knows to have knowledge, if one has knowledge. The reason is simple. If one could somehow distinguish between knowing and mistakingly knowing, one would not wrongly believe anymore to know something, since one could easily check whether one *really* knows it. But if one cannot distinguish between genuinely and allegedly knowing, one cannot know in the case of knowledge that one really knows something. Given Locke's contention that one can be mistaken, he can hardly believe that in the case of knowledge one knows unmistakingly that one knows a fact. This makes plain, Locke claims only that knowledge of a fact implies grasping of reasons showing the holding of the fact. Given Locke's way of ideas, his definition of knowledge turns rather out to be as innocuous as Locke thinks it is: knowledge consists in the recognition that a state of affairs obtains; and this recognition is the outcome of a cognitive process which is either an intuition, or demonstration, or sensation that consists in the awareness of reasons showing the holding of that state of affairs.

10. Scope and Advancement of Knowledge

After having assessed contemporary knowledge of bodies, Locke sums up his results as to its extent by declaring that our knowledge is “very short and scanty”, namely that we have “very little general Knowledge”.⁵⁹² Locke’s rather general programmatic statements in the introductory part of the *Essay* also relate to the knowledge of bodies where insight in the nature of contemporary knowledge is said to make plain which inquiries are intelligible and worth to be investigated and which are not.⁵⁹³ This means, Locke takes his disenchanting results of his analysis to pave the way for an intelligible conception of a science of bodies.

I will examine in which sense for Locke contemporary knowledge of bodies is “very short and scanty” and how this pertains to the advancement of knowledge. As will be delineated, Locke specifies knowledge in two ways, namely quantitatively and qualitatively. He thus effectively assesses and judges contemporary knowledge of bodies in the perspective of an ideally scientific account, indirectly developing a conception of an ideal science of bodies. I want to emphasize that not only virtually all bits of the account relate to an ideal theory of bodies, but more importantly, that his final judgement does so as well, namely that knowledge is “very short and scanty”. The upshot is that one does not know much of importance compared to what one ideally should know and that which one knows is in fact trivial. In the same perspective one has to read Locke’s proposal of so-called remedies, i. e. general means, to enhance knowledge. The aim of Locke’s assessment thus turns out to establish first that from an ideal epistemological perspective contemporary knowledge of bodies has limited value to develop then an appropriate conception of a contemporary science of bodies to enlarge human knowledge. Moreover, as will be contended, Locke’s claim that the real essences of bodies are *prima facie* specific form the backdrop of why his chief issues are problematic for him. One has to take into account his views on real essences to understand comprehensively why for

⁵⁹² 652, IV.xiv.1; 644, IV.xii.9.

⁵⁹³ 47, I.i.7.

him contemporary knowledge of bodies has scarcely any epistemic value and why this insight paves the way for an appropriate conception to enhance knowledge. But most importantly, an unorthodox reading of the nature of Locke's ideal science of bodies will be advanced. Locke does not hold on to a Cartesian or rationalistic idea that conceives an ideal science as an *a priori* account which, roughly speaking, deduces properties from the microphysical figure of bodies, but rather develops a genuine empiristic conception.

The first two sections discuss Locke's assessment of the scope of human knowledge of bodies. The first one reconstructs the extent of knowledge which quantitatively determines the extent of contemporary knowledge. The second one determines Locke's account with respect to his other issues where he qualitatively assesses human knowledge, namely to which degree it is "real" and "instructive". Not unimportantly with respect to Locke's own view on remedies, in this context he rejects the Aristotelian conception of maxims, i. e. propositions conceived as being essential for the advancement of knowledge. Subsequently, the nature of Locke's conception of an ideal science of bodies will be reconstructed on the background of the foregoing accounts. This will then be contrasted with Locke's proposal of remedies which amounts to a conception of a contemporary science of bodies. Finally, Locke's view on the prospects of such a science of bodies will be highlighted. This outlook is not advanced in a separate chapter or discussion, but is present in many contexts. A sharp contrast will emerge between what Locke takes as an ideal comprehension of bodies and the kind of knowledge he believes humans can ever attain - if God is not so kind as to reveal it to us one day.

a. The Extent of Human Knowledge of Bodies

Locke discusses the extent of knowledge in terms of his distinction of knowledge in four realms: identity and diversity, coexistence of properties, relations, and real existence.⁵⁹⁴ With respect to bodies, the analysis focuses on coexistence and we will therefore discuss this realm first.

The coexistence of properties pertains exclusively to bodies since coexisting properties are

⁵⁹⁴ 543-53, IV.iii.8-21.

understood to be physical features of bodies which go constantly together with the features included in the idea of a species. For example, given that gold is defined as the kind of substances being yellow and soluble in *aqua regia*, the proposition 'Gold is fixed' expresses that the feature of fixedness coexists with the defining properties of gold. Everything what is gold, is fixed. Locke maintains that we have knowledge of coexisting properties, namely scanty intuitive knowledge. One can distinguish between two kinds of knowledge. First, there is knowledge of the *coexistence* of *primary* qualities. Locke mentions few instances, for instance: to have figure entails the possession of extension, to pass on or receive motion by impulse supposes solidity, and to be both solid and in space implies the filling of space.⁵⁹⁵ Second, we have intuitive knowledge of the *repugnancy* of *secondary* qualities: secondary qualities being determined features of the same determinable properties do not coexist, since the possession of one of them excludes the possession of the others. Take, for example, colours. If gold is defined by being yellow, one (intuitively) knows that gold does not have another colour in addition.

Thus, for Locke there is hardly any intuitive knowledge of the repugnancy or coexistence of primary and secondary qualities. Locke is certainly right with this judgement, given the small number of propositions in comparison to what one should ideally know. On the other hand, the mentioned knowledge of coexisting primary qualities amounts to not less than knowledge of fundamental laws: to have figure entails the possession of extension, being capable of passing on or receiving motion by impulse supposes to be solid, and being both solid and in space implies the filling of space.⁵⁹⁶

Yet, even though we have only scanty intuitive knowledge of coexisting properties, maybe we have demonstrative knowledge? According to Locke, however, there is no demonstrative knowledge of coexistent qualities. This is in effect not surprising, since intuitively known propositions are the basis for demonstrations. But Locke further specifies the reasons for our ignorance.

Locke's paradigm for demonstrative knowledge of coexisting properties is knowledge of the coexistence of a secondary quality, i. e. the ascription of a feature to specimens of a sort

⁵⁹⁵ 546, IV.iii.14; 123, II.iv.2. Cp. the chapter on solidity where Locke likewise contends that "[u]pon the Solidity of Bodies also depends their mutual Impulse, Resistance, and Protrusion". Cp. 126, II.iv.5.

⁵⁹⁶ Cp. Ayers (1991), II, 149f.

which is not defined by this secondary quality. This becomes plain when Locke illustrates our ignorance:

“Thus though we see the yellow Colour, ad upon trial find the Weight, Malleableness, Fusibility, and Fixedness, that are united in a piece of Gold; yet because no one of these Ideas has any evident dependence, or necessary connexion with the other, we cannot certainly know, that where any four of these are, the fifth will be there also [...].”⁵⁹⁷

Given Locke’s general conception of demonstrative knowledge, our lack of it means that one does not perceive a necessary connection holding between the respective properties. The reason for our general ignorance of the coexistence of secondary qualities consists in our ignorance of a necessary connection holding between the set of properties defining the sort and the secondary quality in question. Thus, the question arises what kind of necessary connection is preeminent for demonstrative knowledge of the coexistence of secondary qualities.

Knowledge of such a necessary connection, Locke contends, comprises of two parts. First, one has to grasp the defining features of the sort in terms of microphysical primary qualities, i. e. one has to know the properties which on the explanatory stage correspond to the defining features of the macrophysical stage.⁵⁹⁸ This is a necessary condition, Locke argues. For, since secondary qualities depend on microphysical primary qualities, one has to understand the defining properties in terms of microphysical primary qualities in order to conceive that a secondary quality depends on this set of defining features. Thus, if one does not know the defining features in terms of microphysical primary qualities, one cannot know whether a secondary quality depends on, or respectively is determined by, the defining set. This means in turn, knowledge of a necessary connection between a (secondary) quality and the defining features entails knowledge of the defining properties in terms of primary qualities.

Second, one has to comprehend the necessary connection between a secondary quality and the microphysical primary qualities on which it depends.⁵⁹⁹ Locke conceives this

⁵⁹⁷ 546, IV.iii.14.

⁵⁹⁸ 544f, IV.iii.11.

⁵⁹⁹ 545, IV.iii.12.

necessary connection to be the causal relationship holding between the microphysical primary qualities, which correspond to a secondary quality, and the idea of the secondary quality. This manifests in his claim that one has “to discover [a] *connexion* betwixt these [microphysical] primary qualities of Bodies, and the sensations that are produced in us by them [to] be able to establish certain and undoubted Rules of the Consequence or *Co-existence* of any secondary Qualities”.⁶⁰⁰ This likewise becomes plain when Locke admits that in this context he presumes the corpuscularian hypothesis to highlight the matter.⁶⁰¹ This means, to know that a secondary quality depends on its corresponding microphysical primary qualities is to grasp that the latter causes an idea of the former. The backdrop of this claim is Locke’s definition of qualities. Secondary qualities are understood as the properties causing a specific idea (of a reducible, non-real quality), i. e. a secondary quality is grasped in virtue of the idea that it causes. The idea apparently is: to know that a secondary quality truly depends on a certain set of microphysical primary qualities, one has to grasp that the idea of the secondary quality is genuinely caused by this set of features.

Locke’s understanding of demonstrative knowledge of the coexistence of secondary qualities thus comprises two parts: the comprehension of the defining features of a sort and of the secondary quality in terms of microphysical primary qualities, and the grasp of the causal relationship holding between the secondary quality (conceived in microphysical terms). The point is of course that the second part shows which microphysical properties cause one’s idea of a secondary quality, i. e. which microphysical features are to be identified as the secondary quality, whereas the first part imparts that these microphysical properties are features of the microphysical structure that is identical with the defining properties of the species. Evidently, knowledge of these two parts is sufficient for Locke to attain demonstrative knowledge of coexisting properties. To be precise, the so far advanced reconstruction applies only when species are defined in microphysical terms. If a sort is defined by secondary qualities, one has to grasp the causal relationships between these features and their ideas as well in order to know with which

⁶⁰⁰ 545, IV.iii.13.

⁶⁰¹ 547, IV.iii.16.

microphysical primary qualities one has to identify the secondary qualities. Moreover, strictly speaking, this depiction works only for sensible qualities, and has to be supplemented by an analogous condition for non-sensible secondary qualities. For instance, knowledge of the coexistence of the defining properties of wax with the secondary quality of being able to be melted by the sun presupposes knowledge of the causal relationship between the sun's capacity to melt wax and the wax's quality to be melted by the sun, since the wax's secondary quality to be melted by the sun is defined in relation to the sun's power to melt wax. That is, there is a third aspect, namely the grasp of the causal relationship in explanatory terms which holds between a secondary quality and the feature of another body in terms of which the secondary quality is understood. On first thought, however, Locke does not seem to acknowledge this consequence for knowledge of coexisting non-sensible secondary qualities:

*"§16. But as to the Powers of Substances to change the sensible Qualities of other Bodies, which make a great part of our Enquiries about them, and is no inconsiderable branch of our Knowledge; I doubt, as to these, whether our Knowledge reaches much farther than our Experience; or whether we can come to the discovery of most of these Powers, and be certain that they are in any Subject by the connexion with any of those Ideas, which to us makes its Essence. Because the Active and Passive Powers of Bodies, and their ways of operating, consisting in a texture and motion of Parts, which we cannot by any means come to discover: 'Tis but in very few Cases, we can be able to perceive their dependence on, or repugnance to any of those Ideas, which make our complex one of that sort of Things."*⁶⁰²

The point is that Locke does not explain the difficulty and bleak prospects of discovering coexisting non-sensible secondary qualities by the difficulty to acquire a causal understanding of sense perception, as he does in the case of sensible qualities.⁶⁰³ He rather points to the hurdle of grasping microphysical properties and processes. And he likewise maintains the possibility of attaining knowledge of non-sensible dispositional properties if one knows the internal constitutions of bodies.⁶⁰⁴ This implies, according to Locke, one can have knowledge of coexisting non-sensible qualities even though one does not grasp

⁶⁰² 547, IV.iii.16.

⁶⁰³ Cp. 545, IV.iii.13; 557, IV.iii.26; 558f, IV.iii.28.

⁶⁰⁴ 556, IV.iii.25.

microphysical processes. Below, I will come back to this claim when further clarifying the nature of necessary connections.⁶⁰⁵ The important bit is that Locke can maintain these contentions only if he conceives here non-sensible dispositions from a microphysical perspective. If pressed, he has to concede that knowledge of coexisting non-sensible secondary qualities involves necessary connections partly relating to sense perceptions, if the properties are grasped by the change of sensible qualities in bodies.

In this perspective, one has also to read the last sentence of the quote where Locke asserts that we have knowledge of the coexistence or repugnance of non-sensible dispositions.⁶⁰⁶ Given that Locke can hardly claim that reflection on our everyday ideas reveals the coexistence of this kind of properties, he must mean the repugnance of features. For instance, the defining power of gold to be soluble in *aqua regia* implies knowledge that gold is not non-soluble in *aqua regia*. Epistemologically speaking, this kind of knowledge is of course not much worth and it is not very much compared to the countless unknown, coexisting secondary qualities whose high number Locke emphasizes.⁶⁰⁷ To make sense of Locke, one has to understand in this way his contention that there are a few cases of knowing the coexistence or repugnance of non-sensible dispositions.

Implicitly, the discussion of non-sensible secondary qualities has already depicted Locke's model of necessary connections as to coexisting microphysical primary qualities. For him, demonstrative knowledge of the operations of bodies in microphysical terms involves a necessary connection solely holding between microphysical primary qualities. In this passage, Locke's position is again manifest that he conceives the attainment of this kind of knowledge as more probable than the comprehending of sense perception and of the coexistence of sensible qualities:

“§13. That the size, figure, and motion of one Body should cause a change in the size, figure, and motion of another Body, is not beyond our Conception; the separation of the Parts of one Body, upon the intrusion of another; and the change

⁶⁰⁵ Cp. 10c.

⁶⁰⁶ As Goodin has recently pointed out, the topic of non-sensible qualities is usually neglected. Cp. Goodin (1992), 60. But even her very detailed account of the issue, with which I agree, overlooks this, at first sight, highly interesting claim of Locke that we possess knowledge of the coexistence or repugnance of this kind of properties.

⁶⁰⁷ 381. II.xxxi.8.

from rest to motion, upon impulse; these, and the like, seem to us have some connexion one with another. And if we knew these primary Qualities of Bodies, we might have reason to hope, we might be able to know a great deal more of these Operations of them upon another: But our Minds not being able to discover any *connexion* betwixt these primary qualities of Bodies, and the sensations that are produced in us by them, we can never be able to establish certain and undoubted Rules of the Consequence or *Co-existence* of any secondary Qualities, though we could discover the size, figure, or motion of those invisible Parts, which immediately produce them."⁶⁰⁸

It becomes plain that in the case of bodies necessary connections are conceived as causal relationships. Given Locke's view of what demonstrative knowledge of coexisting properties consists in and his analysis of the scope of human knowledge as to these causal relationships, the argument on demonstrative knowledge of coexisting properties runs straight forward. This lack of demonstrative knowledge is expressed by Locke's assessment of contemporary knowledge of bodies as not being a science.⁶⁰⁹ Below, we will see that two models has been proposed how to understand these causal relationships and the necessity of the necessary connections. I will argue for a different reading.

Aristotelians, as Locke conceives them, would present an alternative analysis, however. According to them, the possession of Aristotelian real essences justifies conclusions about the coexistence of properties. Aristotelians would contend that the real essence of a species of bodies, which is presumed to be common to all members, determines a set of features being shared by all specimens and not being (usually) contained in one's idea of the sort. Aristotelian real essences are thus conceived to justify the inclusion of properties (in one's idea of a sort) which one has discovered in a few specimens and thereby regard the idea to be a more complete depiction of the species.⁶¹⁰ As we have seen in connection with the fifth abuse of words,⁶¹¹ Locke's response is to insist that the real essences of bodies are not precise, but *prima facie* specific, i. e. the specimens of a sort do not (necessarily) possess the same real essence.

Of course, from Locke's standpoint, he could refute the Aristotelian position also by

⁶⁰⁸ 545, IV.iii.13.

⁶⁰⁹ 560, IV.iii.29.

⁶¹⁰ Cp. 8c.

⁶¹¹ Cp. 8d.

pointing out his conception of knowledge and claiming that a correct analysis of what knowledge of the coexistence of properties consists in reveals that the Aristotelian reasoning for the coexistence of properties is flawed and does not lead to the perception of the agreement of ideas. But this line of argument would seriously be undermined if Aristotelians could substantiate their view on real essences, since they could then call into question Locke's analysis of what knowledge of coexisting properties consists in. The reason is: Aristotelians believe that similarities on the explanatory level correspond to known similarities on the macrophysical stage, and they take this presumed correspondence to warrant the conclusion that all members of a sort possess a certain property even though one has experienced only some specimens to have the feature. Thus, according to the Aristotelians, one can know coexisting properties without knowledge of causal relationships and features in explanatory terms. As has been indicated, Locke objects against this view that microphysical resemblances need not, and in many cases do not, reflect macrophysical similarities.⁶¹² Locke's account of real essences therefore paves the way for the claim that knowledge of coexisting properties affords knowledge of properties and causal relationships in terms of microphysical primary qualities.

The dispute over real essences is likewise the backdrop of Locke's extensive and separate discussion of our knowledge of coexisting properties in terms of the certainty and truth of universal propositions.⁶¹³ Locke alludes here to his analysis that, at his time, a name of bodies does not denote a species defined by an unknown (Aristotelian) real essence, but by a known nominal essence or respectively by the abstract idea signified by the term.⁶¹⁴ If words signified species characterized by unknown real essences, he argues, one would not only be ignorant of coexistent properties, but even of features defining a species. For one could not identify members of the sort, if kinship were defined by an unknown real essence. That is, if Aristotelians were right, one would not know any property which specimens have. This refutation of the Aristotelian conception of species and real essences secures on the one hand both that we can identify specimens and that we have

⁶¹² Cp. 8d.

⁶¹³ 580ff, IV.vi.4ff.

⁶¹⁴ Cp. 6a-b.

knowledge of features, namely of the properties which define sorts. On the other hand, however, the argument also establishes that we have hardly any knowledge of coexisting properties since one cannot conclude that all members of a sort have a certain property if the feature is discovered in some specimens.

The topic of real essences in this context is evidently manifest when Locke refutes the Aristotelian conception of species. But it is likewise present, even though less obviously, when he moves then on to insist lengthily for the rest of the chapter that knowledge of coexisting properties affords knowledge of necessary connections.⁶¹⁵ For the controversy on real essences makes plain: why in this context Locke repeatedly rejects the view that a feature can be known to be a coexistent property if it has been displayed by some specimens; and why he insists that knowledge of a feature truly going together constantly with the defining properties of a species affords knowledge that there really is a necessary connection. The backdrop of Locke's argument that only the perception of necessary connections yields knowledge of the coexistence of a property is again his contention that specimens can have and probably do have different real essences. For if the Aristotelian assumption of precise real essences were true, claims on coexistent properties could instead be justified even if one is ignorant of real essences, microphysical primary qualities and causal relationships.

In this context, the issue of real essences manifest in another way as well. Locke regards an explicit discussion of universal propositions (of coexistence) as necessary because people often raise knowledge claims in the course of their mistaking the meaning of universal propositions. The root of the misconception is that they do not understand names of bodies to stand for ideas, but for Aristotelian real essences.⁶¹⁶ Locke apparently alludes here to his analysis of the fifth abuse where he delineates different types of false knowledge claims and puts forward an account of why speakers are mistaken about the signification of their names of bodies.⁶¹⁷ Summing up, to grasp adequately Locke's argument on coexistence, one has to see its connections to his contention on real essences being not precise.

⁶¹⁵ 582-91, IV.vi.7-16.

⁶¹⁶ 579, IV.vi.1.

⁶¹⁷ Cp. 8.2.

To return to the other three realms of knowledge, propositions of the first realm concerns the identity or diversity of entities, e. g. 'Gold is gold' and 'White is not black'. Below, I will come back to our knowledge of these statements which effectively are set aside by Locke in his analysis of the extent of knowledge.⁶¹⁸ The third realm of relations does however not pertain to bodies. Strictly speaking, as Locke himself concedes, relations comprise not only what Locke explicitly calls relations, but also identity, diversity and coexisting properties, since they all are states of affairs which are represented by, or correspond to, relations holding amongst ideas. Returning to the specific sense of relations which applies only to the third realm, Locke's paradigms for relations are triangles and their properties. Relations in this sense are simply defined as being relations in the general sense which are neither identities, nor diversities and nor coexistences of properties. And for Locke bodies do not possess any relations of this latter kind, but only relations in the sense of identities, diversities, and coexistences, since bodies *qua* bodies are understood as entities possessing only physical properties.

Finally, knowledge of real existence. In the chapter on the extent of knowledge, Locke is not very much concerned with knowledge of existence, e. g. 'There is a tree'. But in the later chapter on knowledge of existant entities (except for oneself and God) Locke highlights knowledge of the existence of bodies in terms of sensitive knowledge. Present sensations yield sensitive knowledge of existing natural substances,⁶¹⁹ and (reliable) memories of past sensations establish knowledge that the depicted bodies had existed beforehand.⁶²⁰ Thus, what Locke calls "experimental knowledge" in connection with bodies in contrast to "universal knowledge", is knowledge of the (past) existence of particulars and of their qualities, e. g. 'This piece of gold is fixed', which largely comprises remembered sensitive knowledge that depends on the individual and "collective" memory of a subject respectively of society.⁶²¹ Moreover, since sensitive knowledge is about particular specimens, one has knowledge of the possession of properties solely with respect to particular specimens, for instance, that this piece of gold in front of me is

⁶¹⁸ Cp. 10b.

⁶¹⁹ 631-35, IV.xi.3-9.

⁶²⁰ 636f, IV.xi.11.

⁶²¹ 582, IV.vi.7. Cp. 560, IV.iii.29.

soluble in *aqua regia*. This means, other specimens might not possess this feature as well, e. g. one discovers another lump of gold to be not soluble in *aqua regia*.

This reasoning would of course be undermined again, if one assumes an Aristotelian conception of real essences, since it justifies the Aristotelians to conclude that all specimens have a certain feature if it was discovered in some members of a sort. Locke's argument on real essences and them being, in my words, *prima facie* specific thus purports correspondingly to his analysis of experimental and sensitive knowledge.

As we have seen, Locke maintains, there is only scanty intuitive and no demonstrative knowledge of coexisting properties. That is, we have hardly any universal knowledge of the possession of properties which are not defining a species. But we have sensitive knowledge of the existence of bodies and of their possession of properties not defining their species. That is, we do have plenty of knowledge, but it relates only to particular specimens. Due to our ignorance of real essences and causal relationships, one knows the possession of properties solely by the senses and only of particular specimens. As Locke puts it, we have no scientific, but only experimental knowledge of bodies.⁶²²

In addition to the assessment of knowledge as to the four realms, Locke also determines its extent as to kinds of bodies and properties which contemporary knowledge is about. First, in his account of the so-called 'causes of ignorance' he points to the limits of our sensual capacities to acquire ideas of properties, namely of secondary qualities.⁶²³ Appealing to the existence of other spirits like angels having - of course - better discerning faculties than we have, Locke argues that one is ignorant of many sorts of properties which bodies possess. This ignorance is of a principle kind, since it is impossible for us to have ideas of features which do not affect our senses. Our sensual apparatus simply restrains the reception of ideas of secondary qualities. Thus, our knowledge of secondary qualities is fundamentally restricted because it reaches only as far as we can have ideas of qualities.

Second, in his account of the inadequacy of ideas, Locke makes plain that there is an incomprehensible high number of secondary qualities all of which we do not even come

⁶²² 582, IV.vi.7.

⁶²³ 553f, IV.iii.23.

close to know.⁶²⁴ Third, Locke also emphasizes that we do not know the bodies existing somewhere in the universe.⁶²⁵ Finally and most importantly, he points out the ignorance of microphysical bodies and properties.⁶²⁶ This latter lack of knowledge is of course manifest in his analysis of the extent of knowledge, since it shows that the condition for demonstrative knowledge is not fulfilled.

Locke's accounts of the extent of knowledge as to the four realms and as to different types of bodies and properties clearly makes plain the limitation of knowledge as to its quantity. On this backdrop, Locke then assesses its "epistemic value", namely to which extent it is real, instructive knowledge.

b. Real, Instructive Knowledge

It becomes manifest in various chapters that Locke is primarily, or even exclusively, interested in real, instructive knowledge.⁶²⁷ In fact, as will now be delineated, Locke's verdict of contemporary knowledge being "very short and scanty" refers to this kind of knowledge. Why is this so? and what is real, instructive knowledge?

The issue of the reality of knowledge is for Locke rather a pseudo problem. If knowledge is the perception of the (dis-) agreement of ideas, as Locke rhetorically questions his own depiction of knowledge, how do we know that it is real?⁶²⁸ If knowledge is based on ideas and their connections, how can knowledge appropriately be about reality and does not concern only fantastical entities, e. g. that centaurs are not a harpy?⁶²⁹ The point to note here is, as will be highlighted in what follows, that the reality of knowledge is understood in contrast to knowledge relating to fantastical ideas. The debate relates to knowledge about all kinds of entities, but as a matter of fact it focuses on substances, or respectively on bodies, since only ideas of them can genuinely be fantastical.⁶³⁰ This apparently is the

⁶²⁴ 381, II.xxxi.8.

⁶²⁵ 554f, IV.iii.24.

⁶²⁶ 555f, IV.iii.25

⁶²⁷ Cp. IV.iv, IV.v, IV.viii, and 602, IV.vii.11.

⁶²⁸ 562, IV.iv.1.

⁶²⁹ 563, IV.iv.1

⁶³⁰ 372ff, II.xxx.

reason why Locke introduces the issue with respect to ideas of substances.

According to Locke's account, knowledge is real, only if the ideas are real which make up a (mental) proposition.⁶³¹ This means for Locke, I maintain: knowledge is real, only if the ideas depict entities having the kind of relationship to reality that one intends the ideas to have when forming them. This is indicated by Locke's comparison of knowledge about fantastical entities with clear, sensation-like perceptions of entities as we have in dreams: in both cases our knowledge claims do not refer to entities in the appropriate way in order to be real knowledge.⁶³² I will not at length argue for this general understanding of Lockean real knowledge, but it applies in any case to bodies, since Locke clearly maintains that our knowledge of bodies is real only if our ideas of bodies are real, namely that they are copies of bodies existing in nature.⁶³³ As Locke emphasizes, real knowledge of bodies is about a type of entities which once existed in the past and possibly exist again now or will in the future.⁶³⁴ This means, we do have real knowledge of bodies, e. g. that gold is a metal and that gold is yellow, given that gold is defined as being yellow and by properties by which metal is defined as well.

At this point, Locke's distinction between trifling and instructive knowledge comes into play. The just mentioned kind of knowledge is trifling, since we know the respective propositions to be true simply in virtue of the fact that one idea includes the other one, e. g. the idea of gold contains the idea of yellow. One knows a trifling verbal proposition to be true solely by understanding the subject term and the predicate and realizing that the former includes the latter. By contrast, Locke calls knowledge instructive if, by and large, it is not trifling. More precisely, instructive knowledge is neither trifling nor about identities or diversities, nor about existence. On the face of it, Locke does not regard, for instance, knowledge of the following facts as instructive: that gold is gold, that gold is not silver, and that this piece of gold is fixed. This comprehension of instructive knowledge corresponds to Locke's contention that one hardly has any instructive knowledge of

⁶³¹ 565, IV.iv.6: "[...] because real Things are no farther concerned, nor intended to be meant by any such Propositions, than as Things really agree to those *Archetypes* in his Mind."; 565, IV.iv.8: "[...] and to make our Knowledge *real*, it is requisite, that the *Ideas* answer their *Archetypes*."; 568, IV.iv.11.

⁶³² 563, IV.iv.1f.

⁶³³ 568, IV.iv.12.

⁶³⁴ 568, IV.iv.12, and 578, IV.v.8.

bodies, a claim which otherwise would evidently be contradicted by one's (intuitive) knowledge of identities and diversities. As his examples indicate, instructive knowledge rather comprises (universal) knowledge of coexisting properties and relations.

Given Locke's assessment of contemporary knowledge as to bodies, it becomes plain that the judgement of it being "very short and scanty" relates only to real, instructive knowledge. For one's universal knowledge of bodies virtually consists only in propositions which are already entailed by one's ideas of bodies. For example, if gold is defined as a yellow metal one knows that: gold is yellow, gold is a metal, gold is gold, gold is not silver, gold is not water etc. Evidently, this kind of knowledge is hardly worth mentioning it since it does not represent an advancement of knowledge which has any epistemic value. This is the reason why Locke virtually disregards it in his assessment of the extent of knowledge.⁶³⁵ Thus, Locke's principal contention that contemporary knowledge of bodies is very short and scanty does not mean that there is hardly any kind of knowledge, but that there is hardly any knowledge of coexistence which is real and instructive. On the other hand, the kind of knowledge we do have according to him is not neglectable despite his strong rhetoric. After all, fundamental physical laws are deduced in connection with Locke's ordinary notion of body: to have figure entails the possession of extension, to pass on or receive motion by impulse supposes solidity, and to be both solid and in space implies the filling of space.⁶³⁶

In the light of what has been argued above, Locke's analysis of the extent of real, instructive knowledge of bodies depends heavily on his argument on real essences. For, if the Aristotelians were right, experimental knowledge could establish real, instructive knowledge of bodies. For instance, one's experience of pieces of gold being fixed would show that in general all gold is fixed. Without having established his views on real essences, Locke's reasoning would be exposed to Aristotelian attacks questioning his conception of instructive knowledge by insisting on a different account of what real essences are.

⁶³⁵ 543f, IV.iii.8.

⁶³⁶ 546, IV.iii.14; 123, II.iv.2. Cp. the chapter on solidity where Locke likewise contends that "[u]pon the Solidity of Bodies also depends their mutual Impulse, Resistance, and Protrusion". Cp. 126, II.iv.5.

c. The Axiomatic Character of an Ideal Science of Bodies

Given the line of interpretation developed in previous chapters,⁶³⁷ Locke's comments clearly imply that in an ideal science bodies are defined and understood in terms of real essences. Importantly, this depiction of real essences is manifest in two ways in Locke's account of knowledge as well. First, Locke justifies the possibility of attaining demonstrative knowledge in ethics⁶³⁸ and explains our inability to achieve demonstrative knowledge of bodies⁶³⁹ by the fact that in ethics the nominal essences of entities are also their real essences, respectively, that the nominal essences of bodies are not their real essences. Thus, there is a close nexus between the defining of species in terms of their real essences and achieving demonstrative knowledge.⁶⁴⁰ On this backdrop, one naturally reads other passages, that depict the grasp of bodies in terms of real essences, as asserting an ideal for comprehending bodies in a scientific account,⁶⁴¹ namely that real essences comprise the microphysical properties of bodies in terms of which an ideal science classifies and depicts them.

⁶³⁷ Cp. 1b and 7.

⁶³⁸ 643, IV.xii.7f: "This, I think, I may say, that if other *Ideas*, that are the real, as well as nominal Essences of their Species, were pursued in the way familiar to Mathematicians, they would carry our Thoughts farther, and with greater evidence and clearness, than possibly we are apt to imagine."

§8. This gave me the confidence to advance that Conjecture, which I suggest, *Chp. 3. viz. That Morality is capable of Demonstration*, as well as Mathematics. For the *Ideas* that Ethicks are conversant about, being all real Essences, and such as, I imagine, have a discoverable connexion and agreement one with another; [...]" Cp. 560, IV.iii.30; 565, IV.iv.7. Locke links here demonstrative knowledge to adequate ideas, i. e. to ideas portraying entities by their real essences.

⁶³⁹ 644, IV.xii.9: "[...] We advance not here [scil. in our knowledge of substances, or of bodies respectively], as in the other (where our abstract *Ideas* are real as well as nominal Essences) by contemplating our *Ideas*, [...] Here we are to take a quite contrary Course, the want of *Ideas* of their real *Essences* sends us from own Thoughts, to the Things themselves, as they exist." Cp. 588, IV.vi.12.

⁶⁴⁰ Woolhouse draws the conclusion from these passages that knowledge of real essences is prerequisite for *a priori* knowledge. Cp. Woolhouse (1981), 144. In fact, he is of course referring to demonstrative knowledge, since according to Locke we have plenty of trifling *a priori* knowledge and few instructive *a priori* knowledge of bodies. But this claim seems to me too strong, since it is possible on Locke's position that we have demonstrative knowledge even if one is ignorant of real essences. Imagine, we discover that the idea of extension entails another idea. One could then demonstrate that figure entails this further property (of which this other idea is), given Locke's contention that figure presupposes extension.

⁶⁴¹ In two passages, Locke links the possibility of having a science of bodies and scientific demonstrations with grasping bodies in terms of real essences. Cp. 644ff, IV.xii.9ff; 647, IV.xii.12.

Second, Locke conceives scientific research of coexistent properties as terminating in the attainment of adequate ideas, i. e. of ideas representing bodies by their real essences.⁶⁴² In other words, in an ideal classification or science, bodies are grouped together in species each of which is characterized by a real essence that is specific for the sort. Again, real essences comprise the properties in virtue of which a body is ideally grasped from a scientific viewpoint. And since ideas depict bodies by patterns having regularly been experienced, a real essence is understood to comprise features by which a body is ideally classified with respect to its similarities that it shares with other bodies on the explanatory stage. To be precise, in the light of Locke's comprehension of real essences in terms of primary qualities, the real essence of a body comprises the kind of explanatory features in terms of which one understands the body from a perception-neutral perspective.⁶⁴³ Locke's account of knowledge therefore re-establishes what has been extensively argued in the context of archetypes, species, and essences.

Other commentators have also maintained that bodies are depicted and sorted by their real essences in an ideal account.⁶⁴⁴ However, these interpreters neither draw the consequences for Locke's notion of real essences nor have they recognized the contradiction between this depiction of real essences and the concept of real essences which they ascribe to Locke as his official conception of real essences.

Importantly, an ideal account depicts bodies not only by their real essences, but enables to demonstrate, or respectively to deduct, the possession of properties. As delineated above, demonstrative knowledge is highlighted as the grasp of causal relationships holding between the defining properties of a species and an idea of a secondary quality, or alternatively, between the defining features and a microphysical property. This means, if bodies are defined by real essences, necessary connections between real essences and (the ideas of) properties of the micro- and macrophysical stage consist for Locke in causal relationships between real essences and (the ideas of) the features. That is, if one comes to

⁶⁴² 648, IV.xii.14. In another passage, there is a nexus between scientific knowledge and adequate or respectively perfect ideas. Cp. 556f, IV.iii.26.

⁶⁴³ Cp. 3c and 5b.

⁶⁴⁴ Cp. Ayers (1970), 39; Mackie (1975), 100. Yolton concedes that Locke's views entail that, in my words, an ideal science of bodies depicts them by real essences, but insists that Locke himself is not able to see this. Cp. Yolton (1970), 33.

know of these causal relationships one has demonstrative knowledge of the coexistence of qualities with real essences. As delineated in the context of real essences,⁶⁴⁵ these necessary connections correspond to the depend-on relationships holding between the real essences of bodies and their other features. Both relationships manifest the possession of coexisting properties. Given Locke's focus on knowledge of secondary qualities, an ideal science especially displays via demonstrations that the secondary qualities of bodies depend on, coexist or respectively are connected with their real essences in terms of which they are classified in species. This science of bodies would therefore be a deductive theory of bodies.

The question however is what is the precise nature of necessary connections as well as of their causal and deductive character. The dominant view is that, in some contexts, Locke operates with a quasi-geometrical model of necessary connections.⁶⁴⁶ Locke is taken to believe that microphysical knowledge of real essences enables us, in principle, to deduce properties in the same way as one can in mathematics. To be precise, as Ayers contends, the difference between geometry and physics is that in physics the defining property of body to push other bodies out of its way is added to its geometrical figure.⁶⁴⁷ This means, Locke claims that knowledge of real essences leads to quasi-geometrical, *a priori* knowledge. In this sense, Locke is called to be a 'pure mechanist'.⁶⁴⁸

Commentators usually agree that this model applies at least to certain physical properties and their necessary connections to real essences, and most of them accept this model for all properties.⁶⁴⁹ By comparison, Wilson agrees that this is Locke's official position, but insists that Locke's comments on superaddition reveal that in important cases causal relationships are also conceived as "God-forged", e. g. in the case of gravitational forces and the interaction between mind and body. According to her, Locke contradicts himself

⁶⁴⁵ Cp. 7a.

⁶⁴⁶ Cp. Ayers (1991), I, 102; Ayers (1991), II, 147; Krüger (1973), 243-46; Mackie (1975), 100-103; Wilson (1979), 143 and 147; Wilson (1982), 249; Woolhouse (1971), 19, 25, and 136.

⁶⁴⁷ Ayers (1991), II, 147.

⁶⁴⁸ Cp. Ayers (1991), II, 147 and 153; Mackie (1975), 102.

⁶⁴⁹ Cp. Ayers (1991), I, 102; Ayers (1991), II, 147; Krüger (1973), 243-46; Mackie (1975), 100-103; Woolhouse (1971), 19, 25, and 136.

by maintaining two different models with respect to these physical relationships.⁶⁵⁰ McCann, by contrast, agrees with Wilson on Lockean superaddition, but disagrees with her and Ayers that their textual evidence establishes that the quasi-geometrical model is also in place for gravitational forces and the causal relationship between mind and body.⁶⁵¹ He thus joins Wilson that in this latter context necessary connections add up to God-forged correlations between real essences and their dispositions to cause gravitation and thought.⁶⁵² For instance, the necessary connections between real essences and secondary qualities are God-forged causal relationships between real essences and ideas of secondary qualities which God has simply ordained by law and which do not consist in an ordinary physical relationship involving physical processes. There is nothing more to say than that the causal relationship holds due to a divine act of correlating mind and body.⁶⁵³ McCann attempts to reconcile this view with Locke's notion of knowledge by conceiving these God-forged correlations as necessary connections which one can grasp with the help of God, namely when God informs us that this and that correlation holds by an act of divine revelation.⁶⁵⁴

Below, I will discuss the issue of superaddition. In particular, McCann's own textual evidence will be re-interpreted where he sees Locke to distinguish between physical and mathematical demonstrations in a way that allows him to understand Locke as coherently maintaining two distinct models, namely that the former are God-forged connections and the latter conceptual ones.⁶⁵⁵ Since I will join and reinforce Ayers's and Yolton's criticism against his and Wilson's approach of understanding Lockean superaddition, their reading of physical relationships as God-forged connections will not further be discussed here. So let us turn to the disputed passages which are quoted by Ayers and Wilson as displaying that Locke holds on to the quasi-geometrical model with

⁶⁵⁰ Wilson (1982), 248f.

⁶⁵¹ McCann (1985), 256ff.

⁶⁵² McCann (1994), 71-75. McCann however disagrees with Wilson that Locke takes the cohesion of corpuscles to be God-forged as well. Cp. McCann (1994), 68f; Wilson (1982), 248.

⁶⁵³ McCann (1985), 254f. Cp. Wilson's denial that she wants to ascribe occasionalism to Locke. Cp. Wilson (1982), 249.

⁶⁵⁴ McCann (1985), 259; McCann (1994), 72.

⁶⁵⁵ I refer here to 559, IV.iii.29. Cp. McCann (1985), 258. Cp. 10e.

respect to secondary qualities. This line of interpretation is indeed tempting, but I will argue that this model is just the special case of a more general one.

To come to grips, one has first to emphasize that Locke conceives necessary connections to be physical, causal relationships. We have seen this above in the context of the extent of knowledge, but in this sense Locke also speaks of necessary connections when drawing analogies between mathematical and physical knowledge. A deduction of properties is said to afford ideas of “how those [sensible] Qualities flowed from [real Constitutions]”⁶⁵⁶ and the internal constitution, or real essence, of a body is depicted as “the cause”⁶⁵⁷ of the secondary qualities by which the body is defined as the member of a species. If necessary connections between physical properties were therefore understood to be on par with necessary connections between mathematical properties, namely to be conceptual-like relationships, Locke would maintain that the discovery of causal relationships is done by discerning conceptual relationships. As just indicated, according to Ayers, quasi-geometrical physical relationships are obtained by adding the defining property of body to push other bodies out of its way to its geometrical figure.⁶⁵⁸ That is, reflection on the figure of bodies in conjunction with their specific capacity to push other bodies out of their way is supposed to lead to insights into their causal interactions.

By comparison, I contend, Locke believes that insight into causal interactions leads to a conceptual understanding of bodies, their constitutions and interactions which subsequently enables one to find proofs and to attain thus demonstrative knowledge of coexisting properties. That is, an acquired empirical comprehension of bodies leads to a conceptual understanding that allows in a second step to deduce properties in a mathematical style. And a thorough grasp of bodies, their microphysical properties and causal operations is the basis for a comprehensive axiomatic theory of bodies. As we will see, for Locke a partial understanding of the causal powers of bodies allows already some deductions. In this sense, I contend, an ideal science of bodies is for Locke an empirical, comprehensive, true axiomatic account. Thus, contradicting the orthodox view, a grasp of only the real essences of bodies, but not of their causal interaction as well, does not enable

⁶⁵⁶ 585, IV.vi.11.

⁶⁵⁷ 379, II.xxxi.6.

⁶⁵⁸ Ayers (1991), II, 147. Cp. also Ayers (1991), I, 102.

one to discover conceptual-like relationships of (all) their properties.

I will first discuss the controversial passages and come then back to the view I ascribe to Locke. The point I first want to make is that the less important passages rather support the here proposed view than the prevailing one. Take, for instance, the following reasoning:

“But such a complex *Idea* [scil. an everyday nominal essence] cannot be the real Essence of any Substance: for then the Properties we discover in that Body, would depend on that complex *Idea* and be deducible from it, and their necessary connexion with it be known; as all Properties of a Triangle depend on, and as far as they are discoverable, are deducible from the complex *Idea* of three Lines, including a Space.”⁶⁵⁹

Locke’s argument against the claim that our common nominal essences are real essences implies only the contention that the deduction of properties from a real essence implies knowledge of necessary connections. The passage does not entail that the comparison between the deduction of physical properties and the deduction of mathematical properties implies that the physical features are deduced by discerning conceptual-like relationships only on the basis of knowledge of the real essences of bodies. Instead, Locke’s comments on the conditions for demonstrative knowledge of coexisting non-sensible secondary qualities apparently support the here advanced interpretation:

“§11. Had we such Ideas of Substances, as to know what real Constitutions produce those sensible Qualities we find in them, and how those Qualities flowed from thence, we could, by the specifick Ideas of their real Essences in our Minds, more certainly find out their Properties, and discover what Qualities they had, or had not, than we know by our Senses: and to know the Properties of Gold, it would be no more necessary, that Gold should exist, and that we should make Experiments upon it, than it is necessary for the knowing the Properties of a Triangle, that a Triangle should exist in Matter, the Idea in our Minds would serve for the one as well as the other.”⁶⁶⁰

The punchline is: when Locke insists that a deduction of properties is said to afford ideas of “how those [sensible] Qualities flowed from [real Constitutions]”,⁶⁶¹ he already presupposes our attainment of knowledge of sense perception, namely of “how those

⁶⁵⁹ 379f, II.xxxi.6.

⁶⁶⁰ 585, IV.vi.11.

⁶⁶¹ 585, IV.vi.11.

[sensible] Qualities flowed from [real Constitutions]” or respectively of how bodies operate on our senses. This lends credibility to the here proposed reading: in general, demonstrative knowledge of necessary connections affords, is based on, and consists in microphysical knowledge of bodies and their causal interaction. Consider, moreover, the next passage:

“§16. But *as to the Powers of Substances* to change the sensible Qualities of other Bodies, which make a great part of our Enquiries about them, and is no inconsiderable branch of our Knowledge; I doubt, as to these, whether *our Knowledge reaches* much farther than our Experience; or whether we can come to the discovery of most of these Powers, and be certain that they are in any Subject by the connexion with any of those *Ideas*, which to us makes its Essence. Because the Active and Passive Powers of Bodies, and their ways of operating, consisting in a texture and motion of Parts, which we cannot by any means come to discover: ‘Tis but in very few Cases, we can be able to perceive their dependence on, or repugnance to any of those *Ideas*, which make our complex one of that sort of Things.”⁶⁶²

Here Locke links the attainment of demonstrative knowledge of coexisting qualities with the discovery of “the Active and Passive Powers of Bodies, and their ways of operating” in terms of the “texture and motion of Parts, which we cannot by any means come to discover.” In other words, Locke speaks of the necessity to come to know of physical facts, but not of conceptual relationships holding between ideas. And, decisively, these facts do not concern only real essences, but their causal interaction as well. On the other hand, turning now to the most important passage on this issue, there seems to be strong support for the quasi-geometrical model when Locke declares:

“I doubt not but if we could discover the Figure, Size, Texture, and Motion of the minute Constituent parts of any two Bodies, we should know without Trial several of their Operations one upon another, as we do now the Properties of a Square, or a Triangle. Did we know the Mechanical affections of the Particles of *Rhubarb*, *Hemlock*, *Opium*, and a *Man*, as a Watchmaker does those of a Watch, whereby it performs its Operations, and of a File which by rubbing on them will alter the Figure of any of the Wheels, we should be able to tell before Hand, that *Rhubarb* will purge, *Hemlock* kill, and *Opium* make a Man sleep; as well as a Watch-maker can, that a little piece of Paper laid on the Balance, will keep the Watch from going, till it be removed; or that some small part of it, being rubb’d by a File, the Machin

⁶⁶² 547, IV.iii.16.

would quite lose its Motion, and the Watch go no more. The dissolving of Silver in *aqua fortis*, and Gold in *aqua Regia*, and not *vice versa*, would be then, perhaps, no more difficult to know, than it is to a Smith to understand, why the turning of one Key will open a Lock, and not the turning of another."⁶⁶³

Given that Locke does not mean God-forged connections, the operations Locke speaks here of are physical processes and causal relationships in the ordinary sense. This means, Locke's necessary connections between the properties of bodies are again conceived as consisting in physical processes or causal relationships respectively. Now, the crucial question of interpretation relates to Locke's two comparisons, namely between knowledge of coexistent secondary qualities, on the one hand, and on the other hand, knowledge which a watch-maker or a smith has and respectively knowledge in mathematics. Locke seems to assert that knowledge of the microphysical configuration of bodies is sufficient to discover how bodies interact and thus which properties coexist with their real essences, just as we are able to deduce mathematical properties from the real essence of a triangle or just as we know that a key turns a lock if one knows that the shape of the key fits the lock. To come to grips with the passage, one has first to distinguish between two important claims Locke raises here. First, knowledge of the internal constitutions of two bodies entails knowledge of how they interact. Second, deduction of the latter kind of knowledge is like the knowledge a smith or watch-maker has. The key to understand aright both contentions lies in Locke's assertion that knowledge of the internal constitution of two bodies enables one to deduce *several* of their operations one upon another. That is, Locke does not contend that knowledge of real essences is the basis for deducing all features coexisting with the real essences. Moreover, in this sense one naturally reads Locke also as to our macrophysical knowledge of the causal powers of bodies. For instance, to say that a key has the capacity to turn a lock, implies that the key is turned with enough force to move the corresponding part of the lock if the key is turned. Thus, to know in advance for each degree of force, or impulse respectively, whether the key will turn, one has to understand how impulse works. In other words, knowledge of causal interaction always involves an understanding of impulse whether on the micro. or macrophysical stage. Even if a key is turned with enough force, it passes on impulse to the corresponding parts

⁶⁶³ 648, IV.xii.13.

of the lock. Similarly, how can a watch-maker know for every stone beforehand whether the stone will stop or be crumbled by the famous clock of Strasbourg if it is placed between the wheels of its mechanical set-up? To know that, one would have to understand not only impulse, but the coherence of matter as well. But Locke points out that we are ignorant of both. We do not even have a conception of how impulse operates and what coherence consists in. These considerations rather make one doubt how Locke can maintain in the first place that a watch-maker and a smith have *knowledge* of this kind of macrophysical capacities of bodies. Yet, Locke clearly asserts this.

First of all, it seems to me, Locke is not aware of the predicament for otherwise he would have said more and would not have simply drawn the analogy. He apparently believes and appeals to the intuition that one can have this kind of *a priori* macrophysical knowledge. And this intuition can be squared with his official notion of knowledge, I will now argue. The point is to understand the macrophysical knowledge claims appropriately. Take, for instance, a mill stone. Our conception of a mill stone may be that it is part of a certain mechanism and that it thus has the power to grind corn. If this is so, one *a priori* knows that mill stones grind corn. It is a conceptual truth. Crucially, Locke's comments show that something similar applies to our concept of body, impulse, and the coherence of bodies:

“§13. That the size, figure, and motion of one Body should cause a change in the size, figure, and motion of another Body, is not beyond our Conception; the separation of the Parts of one Body, upon the intrusion of another; and the change from rest to motion, upon impulse; these, and the like, seem to us have some connexion one with another. And if we knew these primary Qualities of Bodies, we might have reason to hope, we might be able to know a great deal more of these Operations of them upon another: But our Minds not being able to discover any *connexion* betwixt these primary qualities of Bodies, and the sensations that are produced in us by them, we can never be able to establish certain and undoubted Rules of the Consequence or *Co-existence* of any secondary Qualities, though we could discover the size, figure, or motion of those invisible Parts, which immediately produce them.”⁶⁶⁴

Locke contends that we conceive *some* connections between the relevant properties in causal interaction. That is, we have some understanding of causal processes, namely of

⁶⁶⁴ 545, IV.iii.13.

“the separation of the Parts of one Body, upon the intrusion of another”, of “the change from rest to motion, upon impulse” and that “the size, figure, and motion of one Body should cause a change in the size, figure, and motion of another Body”. In short, according to Locke one has a deficient, but notwithstanding basic grasp of mechanical interaction.

Of course, this elementary understanding is for Locke acquired by experience. And only further experience of microphysical properties can enhance this comprehension of the causal relationships. Importantly, this claim differs from Locke’s contentions that figure entails extension, that receiving or passing on of motion by impulse supposes solidity, and that being solid and in space implies the filling of space.⁶⁶⁵ In the light of Locke’s notion of knowledge, he clearly takes these propositions for conceptual truths. The reason is that our experience of causality which is entailed in our concepts implies these conceptual truths. But this is not the case regarding the details of mechanical interactions. Accordingly, we cannot deduce coexisting properties from the defining features of body or of our species of bodies.

Moreover, this limited, but fundamental comprehension of causality has somehow to be cashed out. I thus interpret Locke to maintain that our everyday grasp of the mechanical, causal capacities of bodies is derived from our everyday experience of these interactions. If this is so, there must be some conceptual truths regarding bodies and their interactions, e. g. that a key with an appropriate shape and being turned with an adequate force opens a lock. This kind of knowledge of the causal powers of bodies has to be part of our understanding of them, otherwise we would not know what it means that, for instance, they can push each other out of their way under appropriate circumstances! This comprehension of impulse, coherence, intrusion, and the like is rather sketchy. But it entails knowledge of the behaviour of bodies in the easy cases. Correspondingly, knowledge of internal constitutions leads to *a priori* knowledge of *several* of the operations of bodies.

According to this reading, in the context of bodies Locke’s necessary connections are causal

⁶⁶⁵ 546, IV.iii.14; 123, II.iv.2. In the chapter on solidity, Locke likewise contends that “[u]pon the Solidity of Bodies also depends their mutual Impulse, Resistance, and Protrusion”. Cp. 126, II.iv.5.

connections. And the kind of necessity of the connection is causal or physical necessity, i. e. the necessity of natural law. Consequently, one acquires knowledge of these necessary connections by attaining knowledge of causal relationships.

An ideal science of bodies thus is an axiomatic, empirical account of bodies, their properties, and causal interactions. This axiomatic theory has to be true and comprehensive since it is depicted as enabling us to find proofs regarding all coexisting properties. In other words, such an axiomatic, empirical theory is an ideal scientific account of bodies. This axiomatic character is manifest when Locke contends that knowledge of the real essences of bodies and of their operations would make experiments superfluous since one then could deduce properties as in mathematics.⁶⁶⁶

“§11. Had we such Ideas of Substances, as to know what real Constitutions produce those sensible Qualities we find in them, and how those Qualities flowed from thence, we could, by the specifick Ideas of their real Essences in our Minds, more certainly find out their Properties, and discover what Qualities they had, or had not, than we know by our Senses: and to know the Properties of Gold, it would be no more necessary, that Gold should exist, and that we should make Experiments upon it, than it is necessary for the knowing the Properties of a Triangle, that a Triangle should exist in Matter, the Idea in our Minds would serve for the one as well as the other.”⁶⁶⁷

Furthermore, Locke also points out that a full grasp of secondary qualities and of all the circumstances conditioning the possession of them amounts to nothing less than a comprehensive understanding of matter, namely of “all the Effects of Matter, under its divers modifications of Bulk, Figure, Cohesion of Parts, Motion, and Rest”.⁶⁶⁸ And since necessary connections *qua* causal interactions involve impulse and, in some cases at least, the coherence of corpuscles, Locke contends in a similar passage that a thorough grasp of the coexistence of features affords knowledge of “the coherence and continuity of the parts of Matter” and “the original Rules and Communication of Motion”.⁶⁶⁹ It seems to me, Locke is clearly aware of the implications of his conception of knowledge regarding bodies.

⁶⁶⁶ 585, IV.vi.11.

⁶⁶⁷ 585, IV.vi.11.

⁶⁶⁸ 589, IV.vi.14.

⁶⁶⁹ 559f, IV.iii.29.

But we are far from having such an ideal understanding because we know neither the microphysical properties of macrophysical bodies nor the microphysical properties of microphysical bodies, e. g. of minute bodies that are part of the causal interaction between our senses and macrophysical bodies and the causal relationships between bodies.⁶⁷⁰ In other words, due to our lack of microphysical knowledge, i. e. knowledge of minute bodies transmitting motion from body to body, of the coherence of corpuscles, and of secondary qualities in terms of microphysical primary qualities, we are ignorant of coexisting properties since we do not conceive the necessary connections holding between a feature and the defining properties of a species.

On this backdrop, Locke is apparently aware of the cardinal problem which the axiomatic character imposes on a science of bodies, namely the question of its material adequacy. In fact, this is the issue of Locke's discussion of the reality of knowledge. As has been delineated above,⁶⁷¹ knowledge of bodies is real, if our ideas are copies of bodies existing in the world. Real knowledge of bodies is only about entities which once existed and for which it is therefore possible to exist (again) in nature. Given this conception of real knowledge, it naturally applies to all aspects which a theory of bodies comprises, e. g. causal relationships. In this sense, Locke's account of the reality of knowledge addresses the question of the material adequacy of an ideal, axiomatic theory of bodies.

However, Locke is not fully aware of the significant problem in virtue of which criteria one knows that a theory truly is materially adequate. As I will indicate at the end of the chapter, I believe the root of this is Locke's pessimistic outlook on achieving significant progress of knowledge. Let it be as it may, Locke has a rather naive view on how we can recognize that we truly have ideal ideas of microphysical properties and of causal interactions. He apparently comprehends our acquisition of ideal ideas in terms of ideas being conveyed by microscopes and thereby conceives microscopes simply as a "technical extension" of our natural epistemic faculties, i. e. of our senses, since he speaks of "microscopical eyes" perceiving microphysical structures.⁶⁷² And given furthermore that

⁶⁷⁰ 558-60, IV.iii.28f. Cp. 554-57, IV.iii.24ff.

⁶⁷¹ Cp. 10b.

⁶⁷² 303, II.xxiii.12.

sensations under ideal conditions serve for him as the paradigm for knowledge,⁶⁷³ knowledge of microphysical features and of causal interactions appears to be undramatic, namely as being achieved by technically enhanced sensations under appropriate conditions of perceptions. Locke therefore substantially underestimates the problem when we know that our grasp of bodies is comprehensive, e. g., in modern terms, which elementary particles are really the most basic ones. To put it in another perspective, Locke does not really tell us when experimental research comes to an end and when the development of an axiomatic ideal account of our results and the search for demonstrations begin.

This kind of naivety ties in with Locke's conception of simple ideas. As Krüger has pointed out,⁶⁷⁴ one fundamental problem of simple ideas is that Locke conceives them as the elementary compounds of cognitive content which one cannot further differentiate. This, however, is simply not true. One can always go on to distinguish between two colours. At least in the case of our everyday range of colours, one can always draw finer distinctions. Locke apparently attempts to solve this problem by introducing the so-called simple modes, e. g. shades of colours, but unsuccessfully.

The upshot is a partial re-positioning of Locke's place in the history of philosophy. In rough and ready terms, Locke's conception of an ideal account of bodies is substantially farer away from Descartes's rationalism and closer to Hume's empiricism than is usually thought. The problem with Locke's conception is not that it has a Cartesian, mathematical-like *a priori* character, but that Locke is rather naive on the question of its material adequacy.

A final remark as to the scope of such an ideal account of bodies. As we have seen, ideas of bodies genuinely serve the epistemic purpose to sort and depict bodies by similarities being regularly displayed in nature. This means for Locke, of course, that classification concerns, in principle, all the (secondary) qualities which bodies possess.⁶⁷⁵ And it likewise naturally relates to all bodies irrespective of where they exist, on Earth or elsewhere in the universe, and irrespective of whether they are of a macro- or

⁶⁷³ Cp. 9d.

⁶⁷⁴ Krüger, (1973), 36-39.

⁶⁷⁵ This is manifest in his account of ideas of bodies being inadequate. Cp. 381, II.xxxi.8.

microphysical size.⁶⁷⁶

d. Remedies to Advance Contemporary Knowledge of Bodies

On the backdrop of Locke's view of an ideal science of bodies, his analysis as to the extent of contemporary real, instructive knowledge becomes even more disillusioning. One does not only have hardly any instructive, real knowledge, but one is also miles away from an ideal science of bodies, since one is ignorant of microphysical properties, namely of real essences, matter, and causal connections. Not surprisingly therefore, Locke proposes remedies to advance contemporary knowledge which adds up to a conception of a contemporary science of bodies that takes into account prevailing ignorance.

Given the attested ignorance of microphysical properties, Locke develops, consequently, a conception of a contemporary science in the light of his general claim that: ideas of bodies stand in the perspective of the epistemic project to depict bodies by their similarities on the macrophysical level as a substitution for a portrayal by their microphysical resemblances. More specifically, Locke concludes in the chapter on the improvement of knowledge that one has to conduct experiments to discover similarities and gather their results systematically. The scientific community, so to speak, should compile their observations in a so-called natural history of bodies.⁶⁷⁷ This process is likewise depicted as making our ideas of bodies more perfect, complete or adequate, i. e. one forms ideas which include larger sets of properties.⁶⁷⁸ For example, if experiments reveal that various parcels of gold share further properties being not contained in the idea of gold, one would have to generate an idea which also includes the new, found features. In this sense, the former idea is enlarged and it depicts its specimens more adequately or perfect, namely by more properties they share. And if some parcels of gold display a quality which other ones do not, one would have to differentiate the old idea into two ideas portraying two similar, but different sorts of substances. For instance, one idea represents gold that is fixed,

⁶⁷⁶ Cp. 555, IV.iii.24.

⁶⁷⁷ 647, IV.xii.12. Cp. 520ff, III.xi.24f.

⁶⁷⁸ 648, IV.xii.14.

whereas another one depicts gold that is not fixed. Progress of knowledge therefore consists in the genesis of ideas portraying classes of bodies by as many features as possible, which they recurrently share. This leads to the specification of ideas and differentiation of species.

Locke also suggests the development of a nomenclature, i. e. a well defined and generally used set of names of species. In other words, Locke appeals here to his ideal for communication and demands that scientists use their words with the same, uniform, and generally known signification. This becomes plain in his account of the imperfections of words where this use is proposed as a measurement to achieve an unequivocal vocabular in natural philosophy to avoid confusion that arises because speakers signify different ideas with the same name.⁶⁷⁹ Locke is thereby aware of the fact that one can hardly install a well defined and generally used vocabulary at the conference table. Yet, he insists, this ideal remains to be realized as far as possible by scientists and in their communication. Summing up, Locke suggests the development of a nomenclature classifying bodies in species as specific as experiments reveal.

What about other means to enhance knowledge?⁶⁸⁰ In discussing, mathematics and a future science of ethics, Locke proposes to advance knowledge by finding new demonstrations, i. e. chains of intermediate ideas linking two ideas making up a proposition.⁶⁸¹ This “method of demonstration”, however, is not recommended for bodies. The reason becomes obvious in the light of Locke’s account of the prospects of enhancing human knowledge of bodies, as delineated below:⁶⁸² According to him, there is virtually no hope to achieve demonstrative knowledge. Given these bleak prospects, there is no place for methods to gain knowledge by discovering demonstrations. The method of demonstration thus applies only to an ideal or nearly ideal science of bodies

⁶⁷⁹ 509-12, III.xi.1-7. Cp. 8b.

⁶⁸⁰ Locke also discusses syllogisms, but criticizes them as not genuinely enhancing knowledge. The reason is simple: one has first to understand a proof in terms of a chain of ideas in order to arrange it in form of a series of syllogisms. For Locke, a chain of ideas represents the “natural order” of grasping facts showing another fact by a demonstration. Consequently, a proof consisting of syllogisms has to be re-arranged into a chain of ideas, if one wants to understand the proof. Cp. 672ff, IV.xvii.4.

⁶⁸¹ 649, IV.xii.15.

⁶⁸² Cp. 10e.

which is out of reach on Locke's account.

However, besides his two official ways to advance human knowledge, namely natural history and demonstrations, there are also hints that the use of hypotheses can serve as a third method. Laurens Laudan has opened a debate with his claim that Locke, allegedly, recognizes the importance of employing hypotheses in discovering new truths.⁶⁸³ Laudan is right that in some passages Locke does claim that hypotheses can enlarge our understanding. For instance, Locke does maintain that hypotheses "are at least great helps to the memory and often direct us to new discoveries".⁶⁸⁴ But if one reads the quote in context, its message is less ambitious as it first seems:

"§13. Not that we may not, to explain any *Phænomena* of Nature, make use of any probable *Hypothesis* whatsoever: *Hypotheses*, if they are well made, are at least great helps to the memory and often direct us to new discoveries. But my Meaning is, that we should *not take up any one too hastily*, (which the Mind, that would always penetrate into the Causes of Things, and have Principles to rest on, is very apt to do,) till we have very well examined Particulars, and made several Experiments, in that thing which we would explain by our Hypothesis, and see whether it will agree to them all; [...] And at least, we take care, that the Name of *Principles* deceive us not, nor impose on us, by making us receive that for an unquestionable Truth, which is really, at best, but a very doubtful conjecture, such as are most (I had almost said all) of the *Hypotheses* in natural Philosophy."⁶⁸⁵

What is Locke's position? First, since Locke speaks of the human mind as "[penetrating] into the Causes of Things", he really refers to explanatory theories and not merely to empirical generalizations, e. g. gold is fixed. Second, Locke clearly distinguishes here between useful hypotheses and mere conjectures. Third, according to him, there are only very few useful hypotheses. Since Locke is explicitly favourable only to Boyle's corpuscularian theory and Newton's principle of gravitation,⁶⁸⁶ he probably had these in

⁶⁸³ Laudan (1967), 216f. Laudan argues specifically against Yost and his denial that Locke uses corpuscularian theory as a means for scientific discovery. Cp. Yost (1951).

⁶⁸⁴ Similarly, Locke maintains with respect to the probability of hypotheses on bodies which are constructed (and justified) by analogies: "This sort of probability, which is the best conduct of rational experiments, and the rise of hypothesis has also its use and influence; and a wary reasoning from analogy leads us often into the discovery of truths and useful productions, which would otherwise be concealed." 666f, IV.xvi.12.

⁶⁸⁵ 648, IV.xii.13.

⁶⁸⁶ Cp. 547f, IV.iii.16. Cp. Locke's *Elements of Natural Philosophy*: "It appears, as far as human observation reaches, to be a settled law of nature, that all bodies have a tendency, attraction, or gravitation towards one

mind.⁶⁸⁷ Fourth and importantly, this whole passage is a concession, since in the preceding paragraphs he criticizes people for raising false knowledge claims as to spirits claims on the basis of not well founded hypotheses. And, more important, in the subsequent paragraph Locke then mentions “*ways to enlarge our Knowledge*” in natural philosophy which do not include the use of hypotheses.⁶⁸⁸ Thus, Locke does concede that hypotheses can enlarge knowledge, (if they are well founded on careful observation and experiment,) but apparently neither very much and nor in a systematic way. In the light of Locke’s account, there seems to be no ground for assuming that for him the use of hypotheses is a genuine tool for discovery. I therefore believe, hypotheses can be useful for Locke only in the sense that they give a general, though hypothetical, understanding of bodies at hand, which promotes experiments and thus discoveries. Not more, but not less either. This corresponds to Locke’s praise of Newton’s principle in the *Conduct* as “the basis of natural philosophy”.⁶⁸⁹

What about induction? As we have seen, Locke’s natural history is based on systematically collected results of carefully conducted experiments. The reconstruction of Locke’s doctrine of real essences showed however that he emphasizes the gap between knowledge and probability, natural history and hypothetical generalizations.⁶⁹⁰ The goal of natural history is to compile experimental findings to make one’s ideas as adequate as possible, i. e. to expound a nomenclature depicting species of bodies as precisely as possible. We thus advance our knowledge by enlarging our conceptual understanding by forming concepts which depict classes of bodies by as many properties as possible. And Locke contrasts this kind of knowledge with alleged knowledge claims about coexisting properties which are only warranted by experience. For instance, given that gold is not defined by being soluble in *aqua regia* and given further that we do not have any proof demonstrating the coexisting of this property with the defining features of gold: one would still not know whether gold is soluble in *aqua regia*, even if experiments show that

another.” Cp. *Works*, III, 304.

⁶⁸⁷ Farr has pointed out that, according to Locke, hypotheses can also be useful in paractical terms. In particular, medical hypotheses can be useful as a rule of thumb to guide the physician. Cp. Farr (1987), 64.

⁶⁸⁸ 648, IV.xii.14.

⁶⁸⁹ *Works* III, 282.

⁶⁹⁰ Cp. 10e. Cp. 582-85, IV.vi.8ff.

all known parcels of gold are soluble in *aqua regia*. Locke can justify this position in two ways. First, one knows coexistence only if one perceives the agreement of the respective ideas; experiments cannot produce knowledge in the required sense. Second, the (nominal) essences of our ordinary species are made by men, not by nature for which reason it is epistemically possible that there is a parcel of gold not possessing a certain property which is not soluble in *aqua regia*.⁶⁹¹

To sum up. *pace* other commentators, who rather downplay Locke's remarks on hypotheses, I therefore count natural history and, to some degree, the use of hypotheses as Lockean methods of discovery.⁶⁹² They are, so to speak, his "positive" means to enhance knowledge. Other comments entail moreover a "negative" measurement, namely the abandonment of the abuse of language.

In his chapter on maxims, Locke denounces the belief that maxims are steps to improve knowledge. As previously delineated,⁶⁹³ maxims are very general, intuitively known propositions having been regarded as principles to prove other propositions. Locke concedes that our grasp of maxims is proper knowledge since they can be known intuitively. Yet, he points out, maxims do not help to advance knowledge, since the kind of propositions which they are supposed to prove are grasped independently of maxims. The reason simply is that the propositions in question can likewise be known intuitively. Quite the contrary, the belief in maxims rather confuses and leads to alleged knowledge claims hindering the progress of knowledge. In this context, Locke discloses the Cartesian conception of body as being based on an abuse of language and thus refuses the basis for a Cartesian science of body.⁶⁹⁴

Not less importantly, throughout the *Essay*, Locke denounces repeatedly the Aristotelian use of language and corresponding theories of bodies as the hindrances of the progress of knowledge.⁶⁹⁵ Locke regards this abuse of language, I argued, as the source of a fundamental misconception of what real essences and our common species of bodies

⁶⁹¹ Cp. 7d.

⁶⁹² Cp. Yolton (1970), 64-72, and 103, and Ayers (1991), I, 113-118.

⁶⁹³ Cp. 8b.

⁶⁹⁴ Cp. 8b.

⁶⁹⁵ *Epistle*, 10. 380, II.xxxi.6. 390f, II.xxxii.18. 404, III.ii.6. 417f, III.iii.17. 448f, III.vi.14-20. 493ff, III.x.6-10. 502f, III.x.20f. 506, III.x.30. 509f, III.xi.3ff. 573, IV.vi.16ff. 580ff, IV.vi.4f.

are.⁶⁹⁶ According to him, one assumes members of an everyday sort to share a common, but unknown real essence which comprises all microphysical resemblances that are classificatorily relevant. This real essence is specific for all specimens of a sort and distinguishes them from all other species. As a consequence, one abuses language by taking names of bodies not to stand for the ideas one has, but for unknown real essences. One thus believes to be able to discuss which set of features is the true real essence of a sort, e. g. what the genuine real essence of human beings is. These speakers moreover conceive the joining of further properties to an idea as making one's ideas more complete or perfect, i. e. as representing the alleged real-essence species by a larger set of properties. In general, laymen have this understanding. But Aristotelians share this comprehension too and go even further by developing a more specific, but unintelligible conception of species and real essences, namely their theory of forms. To abandon the Aristotelian abuse of language would therefore advance knowledge in the sense that it "[removes] some of the Rubbish, that lies in the way to Knowledge".⁶⁹⁷

Hence, to abandon the use of maxims and the abuses of language advances knowledge because it leads to the abandonment of Aristotelian and Cartesian misconceptions of a science of bodies.⁶⁹⁸ Correspondingly, Locke's account of remedies is effectively the suggestion of an alternative, corpuscularian conception of a science of bodies. Maxims are replaced by experiments and observation, whose results are systematically compiled, as means to enhance knowledge. A corpuscularian understanding of real essences, species, and classification is substituted for an Aristotelian one. Locke's analysis therefore adds up to an assessment of which scientific programme current at his time is the appropriate one. (Besides the Cartesian, Aristotelian, and Boylean accounts of bodies the alchemists proposed another one; but Locke hardly ever referred to them,⁶⁹⁹ maybe because he thought Boyle had already successfully dealt with them.) And we have seen, one substantial issue underlying the debate is what a correct conception of real essences consists in. For, if the Aristotelian idea that real essences are precise were true, not only

⁶⁹⁶ Cp. 8.2.

⁶⁹⁷ *Epistle*, 10.

⁶⁹⁸ Cp. 8b.

⁶⁹⁹ 548, IV.iii.16.

Locke's theory of species and classification would seriously be undermined, but also his major contention on experimental knowledge that findings of new properties as to some specimens do not justify the conclusion that all specimens possess the features.⁷⁰⁰

e. Prospects of Advancing Knowledge

The delineated scientific programme of course pertains only to the advancement of contemporary knowledge. If one had microphysical knowledge of matter, real essences, and causal interactions, one could enhance knowledge only by discovering demonstrations establishing, for example, coexistent properties. But what are the prospects of acquiring one day such an ideal comprehension of bodies? Locke is extremely pessimistic. For besides his disillusioning stock-taking he moreover raises principal concerns over achieving a comprehensive understanding of bodies and their properties. This concerns five aspects of what needs to be known for an ideal science which differ in the difficulty of discovering them: real essences, matter, causal interactions amongst bodies, all the circumstances causally determining a property, and the relationship between bodies and the human mind.

First, Locke is pessimistic about our discovery of real essences since, apparently, it seems to him too difficult to construct instruments equivalent to "microscopical eyes",⁷⁰¹ i. e. microscopes of a far higher resolution.⁷⁰² But, according to him, we do have at least a general corpuscularian conception of what real essences are, namely of real essences being microphysical structures consisting of cohering corpuscles. Yet, even on the presumption of the corpuscularian model for real essences, one does not have a comprehension of how to highlight in principle a particular quality in terms of a specific "combination" of microphysical primary qualities.⁷⁰³ That is, corpuscularian theory is not specific enough to determine the corresponding microphysical features for a given quality.

Second, in the case of the substratum of bodies, we even lack an adequate conception. As

⁷⁰⁰ Cp. 8c.

⁷⁰¹ 303, II.xxiii.12.

⁷⁰² 587f, IV.vi.12.

⁷⁰³ 588f, IV.vi.14.

has been indicated in the second chapter,⁷⁰⁴ Locke rejects all contemporary approaches to explain the cohesion of corpuscles and the transmission of impulse. For him, one does not have an idea of how to explain these mechanisms. Similarly, according to Locke one does not have any idea of how to explain the phenomenon of gravitation.⁷⁰⁵ On the other hand, this account implies that one does have a partial, though inadequate, conception of matter, namely as a stuff consisting of cohering, solid, and mobile corpuscles whose coherence, mobility and gravitational forces cannot be understood. As Locke puts it, “we have no *Idea* of what it is, but only a confused obscure one of what it does”.⁷⁰⁶

Third, this latter ignorance is effectively paired with the former one as to how bodies operate upon each other, since causal interaction amongst bodies involves impulse, if not cohesion as well, and microphysical features which pass on and receive motion. Perhaps not surprisingly, Locke maintains that it probably needs divine revelation to understand this kind of causal relationships or respectively the powers of bodies to act upon each other.⁷⁰⁷

Fourth, this ignorance is part and parcel of a deeper one. As Locke insists, a comprehensive grasp of a property is virtually impossible because it includes knowledge of all the relevant circumstances causally determining the possession of a property.⁷⁰⁸ Usually, Locke points out, one conceives a body and its properties as being isolated and solely as to its own constitution; one does not take into account that other bodies determine a body’s properties as well. But to conceive thoroughly the feature of being alive, he insists, one has to understand not only the internal constitution, i. e. the microphysical mechanism, of animals and plants but also causal factors or properties of other bodies. For example, the sun has a great influence on life, since too much or not enough sunlight destroys life on earth. Who knows, Locke asks, whether a distant star does not condition life on earth? (This example relies of course on his assertion that one is ignorant of distant bodies and their causal interactions to bodies with our planet, but

⁷⁰⁴ Cp. 2b.

⁷⁰⁵ *Works*, IV, 467f. Cp. Rogers (1978), 225f.

⁷⁰⁶ 175, II.xiii.19.

⁷⁰⁷ 588f, IV.vi.14.

⁷⁰⁸ 585ff, IV.vi.11.

the argument is generally related to the vastness of causal interactions among bodies and our ignorance of them.) Thus, for Locke it is virtually impossible to achieve a comprehensive understanding of properties, e. g. to be a living body, due to the complexity of causal interactions.

Finally, the discovery of the causal relationship between bodies and mind, e. g. sense perception, is for Locke even more doubtful, since we do not have *any* conception of the kind of relationship being involved. Since, as already pointed out, for Locke both materialism and dualism is possible,⁷⁰⁹ it is reasonable to assume that for Locke one only knows *that* there are correlations between bodies affecting our senses and the appearance of sensations, but we are completely ignorant of *what* this causal relationship consists in. However, several passages in which he expresses his pessimism about discovering the answer to the mind-body problem have recently stirred up an intensive debate. Margaret Wilson has opened the discussion by ascribing especially two claims to Locke.⁷¹⁰ First, thought cannot be explained by matter. Second, thought is rather superadded to operations by God. Wilson does not highlight the latter assertion, but vigorously denies that she meant occasionalism.⁷¹¹ At any rate, according to her, Locke holds that “mechanistic principles, or primary qualities, have limited explanatory power in Locke’s considered view: the purposive action of an eternal thinking being is also required to account for phenomena”.⁷¹² Thus, in some way or other, God has to play a role in explaining the relationship between thought and matter. Edwin McCann argues for the same position, except that, in contrast to Wilson, he attempts to reconcile the thesis on superaddition with Locke’s mechanism.⁷¹³ McCann speaks of “God-forged connections” between matter and thought, arbitrary laws ordained by God, which “salvage mechanism”.⁷¹⁴ In my eyes, Ayers and Yolton have convincingly shown the defects of this approach to understand Locke.⁷¹⁵ McCann has recently re-stated his position,

⁷⁰⁹ Cp. 2a-b.

⁷¹⁰ Wilson (1979), 144; Wilson (1982), 248f.

⁷¹¹ Wilson (1982), 248ff. Wilson rejects here Ayers’s interpretation of her earlier article. Cp. Ayers (1981), 219.

⁷¹² Wilson (1982), 251.

⁷¹³ McCann (1985), 243.

⁷¹⁴ McCann (1994), 71 and 74f.

⁷¹⁵ Ayers (1991), II, 144-53, 170, and 179-82; Yolton (1983), 14-28 and 198ff.

however.⁷¹⁶ It seems therefore to me appropriate to reconstruct carefully Locke's account by discussing the latest version of this line of interpretation. For instance, Locke argues:

“'Tis evident that the bulk, figure, and motion of several Bodies about us, produce in us several Sensations, as of Colours, Sounds, Tastes, Smells, Pleasure and Pain, *etc.* These mechanical Affections of Bodies, having no affinity at all with those *Ideas*, they produce in us, (there being no conceivable connexion between any impulse of any sort of Body, and any perception of a Colour, or Smell, which we find in our Minds) we can have no distinct knowledge of such Operations beyond our Experience; and can reason no otherwise about them, than as effects produced by the appointment of an infinitely Wise Agent, which perfectly surpass our Comprehensions. As the *Ideas* of sensible secondary Qualities, which we have in our Minds, can, by us, be no way deduced from bodily Causes, nor any correspondence or connexion be found between them and those primary Qualities which (Experience shews us) produce them in us; so on the other side, the Operation of our Minds upon our Bodies is as unconceivable. How any thought should produce a motion in Body is as remote from the nature of our *Ideas*, as how any Body should produce any Thought in the Mind. That it is so, if Experience did not convince us, the Consideration of the Things themselves would never be able, in the last, to discover to us. These, and the like, though they have a constant and regular connexion, in the ordinary course of Things: yet that connexion to nothing else, but the arbitrary Determination of that All-wise Agent, who has made them to be, and to operate as they do, in a way wholly above our weak Understandings to conceive.”⁷¹⁷

Let us start with the less controversial statements. First, Locke depicts the relationship between states of bodies and states of minds as a regular and even causal one, since according to him experience shows us that they “operate” upon, or respectively “produce”, each other. Second, the way of how consciousness and body operate on each other is “unconceivable” for us. Third, this inconceivability is explained by (the content of) the ideas one has. This latter point becomes plain in another passage which clearly includes all three statements:

“What certainty of Knowledge can any one have that some perceptions, such as *v.g.* pleasure and pain, should not be in some bodies themselves, after a certain manner modified and moved, as well as that they should be in an immaterial Substance, upon the Motion of the parts of Body: Body as far as we can conceive being able only to strike and affect body; and Motion, according to the utmost reach of our

⁷¹⁶ McCann (1994).

⁷¹⁷ 558f, IV.iii.28.

Ideas, being able to produce nothing but Motion, so that when we allow it to produce pleasure and pain, or the *Idea* of a Colour or Sound, we are fain to quit our Reason, go beyond our *Ideas*, and attribute it wholly to the good Pleasure of our Maker. For since we must allow he has annexed Effects to Motion, which we can no way conceive Motion able to produce, what reason have we to conclude, that he could not order them as well to be produced in a Subject we cannot conceive the motion of Matter can any way operate upon?"⁷¹⁸

Here, Locke justifies the possibility of both materialism and dualism by our lack of comprehending interaction between body and thought. More importantly, this ignorance is explained by our ideas, namely that according to our understanding of body and motion we cannot conceive how bodies interact on minds by motion. McCann, however, does not conclude from the passage that it is incomprehensible for us *how* they causally interact, but *that* they causally interact.⁷¹⁹ But this stronger interpretation is clearly not warranted by what Locke says. Quite the contrary, pointing out the inconceivability, does not mean for Locke that there is no causal connection between thought and body, since he insists instead that "we must allow he [scil. God] has annexed Effects to Motion, which we can no way conceive Motion able to produce". He thus simply re-asserts his previous claim that we know this connection from experience. This is manifest in another passage as well:

"We are so far from knowing what figure, size, or motion of parts produce a yellow Colour, a sweet Taste, or a sharp Sound, that we can by no means conceive how any *size, figure, or motion* of any Particles, can possibly produce in us the *Idea* of any *Colour, Taste, or Sound* whatsoever; there is no conceivable *connexion* betwixt the one and the other."⁷²⁰

Given Locke's assertion in the other quoted comments that there is a causal connection, he does not claim here that there is no connection because it is inconceivable, as McCann reads this passage again, but that the connection is inconceivable.⁷²¹ In the light of our experience and ideas, Locke maintains, we do know *that* there is causal interaction, but *not what* it consists in. Consequently, we have to understand Locke on this backdrop when he speaks of "superaddition":

⁷¹⁸ 541, IV.iii.6.

⁷¹⁹ McCann (1994), 69.

⁷²⁰ 545, IV.iii.13.

⁷²¹ McCann (1994), 70.

“We have the *Ideas* of *Matter* and *Thinking*, but possibly shall never be able to know, whether any mere material Being thinks, or no; it being impossible for us, by the contemplation of our own *Ideas*, without revelation, to discover, whether Omnipotency has not given to some Systems of Matter fitly disposed, a power to perceive and think, or else joined and fixed to Matter so disposed, a thinking immaterial Substance: It being, in respect of our Notions, not much more remote from our Comprehension to conceive, that GOD can, if he pleases, superadd to Matter a Faculty of Thinking, than that he should superadd to it another Substance, with a Faculty of Thinking; since we know not wherein Thinking consists, nor to what sort of Substances the Almighty has been pleased to give that Power, which cannot be in any created Being, but merely by the good pleasure and Bounty of the Creator.”⁷²²

Given what has been reconstructed so far, one should not read into Locke’s talk of superaddition a mysterious or magic conception of (causal) relationship between body and thought and thus introduce incoherences into his account. As Ayers has already pointed out, Locke speaks of superaddition in other, definitely harmless contexts as well.⁷²³ For example, mechanical properties of bodies are said to be superadded to matter by God.⁷²⁴ It is therefore natural to conclude, as Ayers does, that Locke does not raise any stronger ontological claims than that God has the power to create the world in the way he pleases, thus determining whether dualism or materialism is true.⁷²⁵ In all the so far quoted passages, Locke refers to God only as the being who establishes an unknown, for us inconceivable causal relationship. Consequently, the whole point of Locke’s argument is an epistemological one: given our narrow understanding of the causal relationship between thought and body, both materialism and dualism is epistemically conceivable for us.

On this backdrop, one can naturally read Locke’s reference to God, e. g.: “yet that connexion to nothing else, but the arbitrary Determination of that All-wise Agent, who has made them to be, and to operate as they do, in a way wholly above our weak Understandings to conceive.”⁷²⁶ That is: even though we do not understand how mind

⁷²² 540f, IV.iii.6.

⁷²³ Ayers (1991b), 148.

⁷²⁴ *Works* IV, 460f.

⁷²⁵ Ayers (1991), II, 153.

⁷²⁶ 558f, IV.iii.28.

and body are causally interrelated, yet, one thing is for sure, the relationship is the one which God wanted it to be. Yet, as McCann rightly insists, if Locke really discusses only an epistemological issue, why does he refer to God in the first place?⁷²⁷ It seems to me the deeper reason for Locke's referring in this context to God's power to create the world as he likes it, is that the matter at issue is a physical one. For, by contrast, God could not have ordained that the three angles of a triangle sum up to three right ones, since this would be a contradiction in terms. But our notions of matter and consciousness genuinely denote entities in the world whose constitution therefore depend on God's will.

This consideration appears to be manifest in another comment on our subject matter. Here Locke contrasts the inconceivability of triangles having not angles adding up to two right angles with our inconceivability of how body and thought interact. The mathematical state of affairs is inconceivable because one cannot conceive that the holding of the connection (between the idea of triangles and the idea of possessing angles being equal to two right ones) "depend[s] on any arbitrary Power, which of choice made it thus, or could make it otherwise."⁷²⁸ In other words, since not even God can establish a connection, the possibility that it holds is inconceivable. But the physical fact of how body and thought causally interact is inconceivable for us because "we cannot but ascribe [how they interact] to the arbitrary Will and good Pleasure of the Wise Architect."⁷²⁹ That is, since God has chosen to create the world as he wanted, it is inconceivable for us (with our ignorance of the subject matter) to determine the relationship without any further knowledge.

But given the incomprehensibility of the causal relationship, it becomes virtually impossible for Locke, in practical terms, to achieve knowledge of coexistent secondary qualities, since it consists of knowledge of the causal relationship holding between the microphysical primary qualities of bodies and our ideas of secondary qualities. We afford divine revelation.

To some up, besides the disenchanting stock-taking of the extent of contemporary knowledge of bodies, the outlook for advancement is gloomy. Locke seems to concede

⁷²⁷ McCann (1983), 247.

⁷²⁸ 559, IV.iii.29.

⁷²⁹ 560, IV.iii.29.

that a classification of bodies in accordance to their real essences might be possible one day, but the attainment of real, instructive knowledge - not to speak of an axiomatic theory - is out of reach due to the incomprehensibility of causal relationships. In the light of these serious doubts about mankind developing an axiomatic theory, natural history appears not only to be a provisional conception for a science of bodies, but also to be an ever lasting one. On the other hand, since Locke expresses only reservations but neither presents nor hints at an argument why one should not be able to attain ideas of matter and real essences, or microphysical primary qualities respectively, he apparently does not maintain that we are necessarily ignorant.

Moreover, as already alluded to,⁷³⁰ there are for Locke further practical limitations to compile an adequate natural history. Besides the difficulty of establishing a uniform nomenclature,⁷³¹ the scope of discovery is restricted. First, he contends that the number of secondary qualities exceeds our cognitive capacity to know them all, since we cannot experience all the various dispositions a body has to interact with other bodies. Second, we do not achieve comprehensive knowledge even of those properties of which, in principle, we are capable to attain ideas as to our senses, since bodies and their features might be out of reach for our faculties, e. g. bodies and their properties somewhere in the universe. Thus, for Locke, any natural history will remain significantly incomplete even in respect of classifying bodies as to their properties on the observable level, not to speak of the microphysical stage.

This pessimistic outlook on the progress of knowledge in the perspective of an ideal account of bodies might be one reason why Locke's analysis does not discuss criteria determining which ideas depict real essences and causal relationships in terms of primary qualities. As argued above,⁷³² Locke apparently has a rather naive view on how we can recognize that we truly have ideal ideas of microphysical properties and of causal

⁷³⁰ Cp. 10a.

⁷³¹ Cp. 8b.

⁷³² Cp. 10c.

interactions.

Conclusion

In the preceding chapters, we have assessed Locke's account of bodies. Before picking up the overarching theme of this work how the general programme of the *Essay* "to enquire into the Original, Certainty, and Extent of humane Knowledge; together, with the Grounds and Degrees of Belief, Opinion, and Assent"⁷³³ is spelled out with respect to bodies, Locke's train of thought will first be reconstructed as a whole on the basis of the foregoing results.

We have seen, Locke motivates his account of ideas on the backdrop of his criticism of knowledge based on innate ideas or propositions. The second book of the *Essay* thus serves Locke to determine the content of ideas in the light of an alternative theory of their genesis. This means in the case of bodies that the assessment adds up to an analysis of one's conceptual understanding of bodies. One part of this account comprises the explanations of archetypes according to which ideas of bodies are made in the perspective of a specific epistemic project. One intends to classify bodies in accordance to their similarities which they possess on the explanatory, microphysical stage: ideas ideally depict bodies by their real essences. Since, however, contemporary ideas do not portray bodies by these resemblances, one generates ideas which instead sort bodies by their similarities on the macrophysical level. But even though the account applies to all contemporary ideas, whether they are made by laymen, philosophers, or scientists, this classificatory ideal genuinely pertains only to the scientific context. Locke therefore conceives an ideal scientific account of bodies as including a classification of bodies. In Lockean terms, an ideal theory depicts bodies by real, abstract ideas classifying bodies by their real essences into species.

To depict similarities means for Locke that an idea is made in the light of the recurrent experience of the same set of properties which is possessed by various bodies. Ideas of bodies thus serve as copies to portray and sort bodies existing in nature because they

⁷³³ 43, I.i.2. Cp. 44, I.i.3.

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reflect experience and can therefore guarantee that the depicted entities really exist or at least can exist. Correspondingly, Locke rejects throughout the *Essay* alleged ideas of bodies which are not acquired by experience, namely the Cartesian notion of body and the Aristotelian conception of species.

Locke's theory of substratum likewise manifests this "empiristic" conception. Locke conceives bodies as substances, or respectively, as possessing a substratum. A substratum is what explains the "union of the properties" being included in an idea. This grasp of bodies *qua* substances, i. e. the supposition that bodies have a substratum, is for Locke a response of the mind to the regular experience of bodies possessing the same set of properties. That the substratum, as has been argued, is what explains how properties are interrelated which are contained in an idea. And due to Locke's corpuscularian comprehension of body, the substratum is identified with a stuff which bodies consist of. In this sense, the confused idea of substratum, that is included in one's ideas of bodies, is for Locke the theory-neutral placeholder for the kind of stuff bodies are made of. This means, an ideal grasp of bodies does not only depict them by their real essences, but by their substratum as well. In Lockean terms, an ideal account sorts and portrays bodies by adequate ideas, namely by ideas representing bodies by their real essences and substratum. One can illustrate this in terms of Locke's corpuscularian model for bodies. Bodies are conceived as consisting of corpuscles, atoms, which are solid, cohere, and are capable to move and interact by impulse. Explanatory features are thus identified with microphysical properties, real essences with microphysical structures, and the substratum of bodies with matter. And since the substratum highlights how the properties of bodies are interrelated, a thorough comprehension of substratum adds up to a characterization of matter that elucidates how corpuscles cohere, how impulse works, and how these features relate to the solidity of corpuscles. Our confused idea of substratum therefore corresponds to our impoverished understanding of body.

This account of the contemporary comprehension of bodies by comparison to an ideal scientific one is decisively specified in the comments on resemblance and qualities. The analysis of Locke's notion of resemblance and his argument on qualities revealed that ideal ideas portray bodies from a specific epistemological viewpoint. From this ideal scientific perspective, bodies and their properties are described in terms of which they are

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conceived independently from the way they are mentally represented. They are grasped in terms in which one depicts bodies and their properties as causes of our mental representations. As we have seen in connection with Boyle's rejection of real qualities, Locke calls the kind of properties, which are ascribed to bodies from this standpoint, as being "real" and as "being in the things themselves".

The comments on qualities and resemblance thus determine to which degree contemporary ideas depict bodies from this epistemological perspective. Locke presents a complex argument to establish that only few properties are real by which one grasps bodies. On the one hand, a general mechanical conception of bodies is claimed to be the only conceivable account of their properties and causal interaction with the result that in the course of this reasoning Boyle's corpuscularian set of physical features are identified with the mechanical features being real qualities. On the other hand, an Aristotelian theory of sense perception and of the explanatory properties of bodies is rendered implausible by empirical evidence. Locke thus attempts to show that contemporary ideas portray bodies largely by non-real qualities and only partially by corpuscularian, real qualities.

Importantly, due to Locke's proximity to the corpuscularian hypothesis, he expounds this argument in terms of the quality distinction and thus identifies real qualities with primary qualities and non-real qualities with secondary qualities. Accordingly, a characterization of bodies in terms of their microphysical primary qualities is conceived as a description from the perception-neutral viewpoint. Thus, since real essences and substratum are understood in relation to primary qualities, in an ideal theory bodies are depicted in perception-neutral terms. Since ideas portraying bodies from this perspective are called resemblances, this means in other words that an ideal theory represents bodies by "adequate resemblances".

In the light of this epistemological standpoint, one can also determine in which sense properties are regarded here as explanatory. In general, these primary or real qualities are explanatory in the sense in which properties are explanatory in a true and comprehensive physical account of bodies, their features and causal interactions. Yet, given Locke's perception-neutral viewpoint, explanatory properties are additionally grasped as the kind of features in terms of which one depicts bodies and their properties when they are

conceived independently from the way they are mentally represented, namely when they are understood as causing ideas in sensation.

On this backdrop, Locke moves on to assess names of bodies in the third book. The core of the argument is his general analysis that names of species denote a sort which is represented by an abstract idea that is signified by a general term. Locke can thus identify the nominal essence of a species with the set of properties being included in the abstract idea signified by the name of the sort. In other words, it is the known abstract idea which determines the boundary of a sort, not an unknown real essence as the Aristotelians claim. In the case of bodies, Locke underscores this point by arguing that nominal essences cannot be said in any intelligible sense that they somehow depend on unknown real essences which exist in nature. There is no ontologically based division of bodies that can exist independently of the classification scheme entailed by our own names and ideas. As Locke puts it, it is man, not nature, who sorts bodies in the light of their experience of similarities existing amongst bodies and their features.

I have argued, the overarching issue of this account is not to refute the Aristotelian theory of species, but to demonstrate that contemporary concepts do not amount to an ideal classification scheme. Names sort bodies neither in virtue of their real essences, nor in a way that is equivalent to a classification in terms of real essences. Rather, experience shows us that contemporary classifications differ from an ideal scientific scheme. This view was confirmed by the interpretation of Locke's notion of real essence. The real essence of a body comprises the similarities in virtue of which a body *qua* member of a species is ideally sorted. Locke thus picks up an idea of classification that is already present in Boyle's attempt to adequately sort bodies as to their similarities. Bodies, he says, "deserve" a certain classification.⁷³⁴ Locke calls the set of features of a body, in virtue of which it deserves to be sorted, the real essence of the body.

Locke's semantic contentions are likewise the starting point of his account of the imperfection and abuses of words. In the case of bodies, both one's ignorance of real essences and the classificatory purpose of our ideas come into play again. Since the real essences of bodies are unknown, speakers are legitimated to generate ideas which can

⁷³⁴ Boyle (1772), III, 34f.

include any regularly experienced collection of properties as a substitute for adequate ideas. Hence, there is no common standard for speakers to establish a uniform meaning for their names of bodies. And Locke regards the resulting ambiguity of general terms as the source of fruitless scientific debates really concerning the signification of names only: “[t]he greatest part of the Questions and Controversies that perplex Mankind [depend] on the doubtful and uncertain use of Words”.⁷³⁵

But whereas for Locke this so-called imperfection of words is an unavoidable consequence of our ignorance of real essences, speakers often carelessly abuse words in addition. According to Locke, abuses lead to misconceptions of what species, real essences, and bodies are. Aristotelian ideas stand here in the centre of his critic. Locke reconstructs the Aristotelian comprehension of species, universal propositions, and essences as the consequence of an abuse of words which takes names of bodies to refer to species being defined, not by known nominal essences, but by unknown real essences. As the analysis of Locke’s notion of real essences displayed, Aristotelian real essences are conceived as being precise, i. e. as being specific for a species and its members. Locke explains this abuse by two factors. First, one has the tendency to remove the imperfection of names by supposing that one’s ideas represent a species that is characterized by a real essence. Second, resemblances obviously existing on the macrophysical level lead to the assumption that there are corresponding similarities on the explanatory stage. This second presumption justifies in the eye of the abuse to use names as if they denoted sorts each one being defined by a real essence, even though this real essence is unknown. Allegedly, known resemblances on the macrophysical level stand for unknown, classificatorily fundamental similarities on the explanatory stage. This is the basis for their understanding of species and essences and, as a consequence, of general terms and universal propositions. Aristotelian theory and knowledge claims of bodies are rooted in confusion.

Moreover, in the context of maxims, the Cartesian notion of body is disclosed as being the result of an abuse of ‘body’ which conflates one’s ordinary notion with an artificial one. According to Locke, Cartesians take their peculiar idea of bodies to be the one which is

⁷³⁵ Epistle, 13.

usually named by 'body' to the effect that they understand their idea to refer to existing entities, namely to bodies known from experience. However, Locke points out, our ordinary idea of body is not the Cartesian one, but the one he has specified. Locke thus undermines the foundation of a Cartesian science of bodies.

Both Aristotelian and Cartesian ideas of a science of bodies are disclosed as being rooted in an unintelligible use of language. That is, Locke refutes these alternative conceptions of a science of bodies on purely semantic grounds: "deep Learning, and height of Speculation" consists in the "frivolous use of uncouth, affected, or unintelligible Terms" and in "[v]ague and insignificant Forms of Speech, and Abuse of Language".⁷³⁶ In this sense, Locke attempts "[to remove] some of the Rubbish, that lies in the way to Knowledge".⁷³⁷

This argument is furthermore complemented by Locke's recommendation of how to use words properly in order to serve knowledge. Scientists should use their words unequivocally and as standing for species defined by nominal essences. This is not only a practical consideration, but has also a direct bearing on the content and purpose of a science of bodies, since it relates to developing a natural history, namely to the gathering of experimental results. The recommended use of words thus amounts to the core conception of a contemporary science of bodies, i. e. to a dictionary that compiles experimental findings in terms of a nomenclature. In the light of these results, it becomes plain why Locke attaches so much importance to his account of words. For his language critic paves the way for his idea of a science of bodies.

In the fourth book, Locke explicitly turns on knowledge. He first advances a general definition which, if correctly understood, is a rather innocuous depiction. Knowledge is the awareness of facts that is achieved by a truth yielding cognitive process. Locke thereby distinguishes between three types of cognitive process that differ in the difficulty of grasping the reasons conveying knowledge of a fact. In Lockean words, there are three different degrees of knowledge which vary in their degree of certainty or evidence respectively. In this sense, knowledge is said to be the perception of the (dis-) agreement of

⁷³⁶ Epistle, 10.

⁷³⁷ Epistle, 10.

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two ideas which is produced by either intuition, or demonstration, or sensation. One immediate consequence of Locke's understanding of these three types of knowledge is that general knowledge is either intuitive or demonstrative whereas sensitive, or empirical, knowledge is only about a finite number of entities. There only are opinion and probability as to empirical universal propositions.

In this conception of knowledge, facts are the objects of knowledge. Ideas thereby serve as constituents of mental representations of the states of affairs that hold, since these states of affairs are represented by the joining or separating of two ideas. An ideal scientific grasp of bodies does therefore not simply consist in a set of ideal ideas. But the foregoing analysis of ideas is an important, preparatory step. Locke's assessment of human knowledge thus spells out the implications of the preceding analysis of ideas as to knowledge on the backdrop of his conception of knowledge.

Importantly, when assessing human knowledge of bodies, Locke ingenuously applies his general account of knowledge with respect to the realm of bodies to the effect that a conception of an ideal of a science of bodies sets the stage for his analysis. Locke understands his conception of knowledge to imply that an ideal axiomatic theory enables one to deduce the possession of properties in the light of causal connections. These causal relationships hold between the real essence of a species and a further property or respectively between the real essence and the idea of the property. Thus, if one had a thorough grasp of the microphysical properties of bodies, namely a general understanding of matter, one could deduce properties, just as one can do in mathematics. I argued as to the character of such a science of bodies that Locke is committed to a quasi-geometrical model only in the sense that a comprehensive theory of bodies is an axiomatic, mathematical-like account which allows for deductive, demonstrative knowledge. The scope of this ideal account pertains in principle to all bodies irrespectively of whether they are of macro- or microphysical size and irrespectively of whether they exist on Earth or elsewhere in the universe. Correspondingly, the range of properties being deducible is only limited by our possession of ideas of them.

Such an axiomatic theory leads to the kind of knowledge which in this context Locke calls instructive and real. Real, instructive knowledge concerns a species of (possibly) existent bodies and is not "trifling", i. e. which does not concern the possession of properties

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defining the sort. This conception of knowledge of bodies being about (possibly) existing entities touches the crucial issue of any axiomatic theory of nature, namely of how one knows that a given account is truly the ideal one. However, Locke is apparently naive about the problem. If one only had "microscopical eyes", one could discern the fundamental structure of matter and the operations of bodies.

This account of deductive knowledge of properties becomes further complicated by additional considerations. According to Locke, a comprehensive grasp of a feature involves knowledge of all the circumstances conditioning the possession of the property. To pick up his example, if being alive were causally determined by distant stars, one would have to know this condition for a thorough understanding of being alive. As Locke indicates, a comprehensive grasp of bodies and their properties adds up to an understanding of matter under all circumstances. In fact, this contention simply corresponds to Locke's conception of ideal knowledge as affording a thorough grasp of matter and physical laws.

To return to Locke's train of thought, after having expounded his general account of knowledge, Locke quantitatively and qualitatively assesses contemporary knowledge on the background of his preconception of what ideal knowledge of bodies consists in. Thereby, he is genuinely interested only in our knowledge of universal propositions, e. g. that gold is fixed, because they relate to a class of entities and can thus enlarge human understanding as to many particulars at once. Given Locke's conception of the three degrees of knowledge, only intuitive and demonstrative knowledge concerns universal propositions. The result is, as Locke can easily point out, that contemporary general knowledge chiefly comprises facts that are grasped in the light of one idea including another one, e. g. that gold is not silver or that gold is yellow. For general knowledge comprises only few intuitively known universal propositions, e. g. that being uniformly coloured in one way excludes the possession of another colour, and comprises no demonstrative knowledge. In modern terms, knowledge by and large consists simply in conceptual analysis. In Locke's words, we largely know trifling propositions, but hardly any real, instructive ones. It is this viewpoint from which Locke judges knowledge of

bodies as “very short and scanty”.⁷³⁸ The reason is simple: since one is ignorant of real essences and causal relationships, one can attain instructive knowledge of only few facts. On the other hand, according to Locke, one does intuitively know the coexistence of some primary qualities. And, even though he seems to underestimate their significance, they effectively represent knowledge of fundamental laws: to have figure entails the possession of extension, being capable of passing on or receiving motion by impulse supposes to be solid, and being both solid and in space implies the filling of space. In principle, these propositions can serve as the starting point of the development of a deductive science of bodies because they relate to the defining features of bodies *qua* bodies. Moreover, I argued, one has knowledge entailed in one’s present conceptual understanding of macrophysical bodies, e. g. that this key opens that lock or that millstones grain corn.

In addition, one has sensitive, i. e. perceptual or experimental, knowledge of bodies. But, as already indicated, sensitive knowledge only pertains to a finite number of bodies. For, since we do not conceive any causal connections between, for instance, the defining features of gold and the property of being fixed, experiments can only show that particular bodies are fixed, but not that all gold is fixed. In this context, Locke is concerned with language. The reason is that, on the one hand, language is regarded as an indispensable means for thought and communication which is therefore relevant for knowledge and that, on the other hand, the Aristotelian abuse of words leads to false knowledge claims in terms of universal propositions about coexisting properties. The point of Locke’s discussion of the Aristotelian abuse in this context is, I argued, that large parts of Locke’s argument on knowledge of bodies could be questioned if the Aristotelian (ab)use of words led to knowledge. For, if the Aristotelian account of names, species, and precise essences were true, this would open the possibility to bypass Locke’s analysis of knowledge and to establish these far reaching knowledge claims which in truth are unwarranted according to Locke’s position.

After having advanced this disenchanting stock-taking, Locke develops a conception for a contemporary science of bodies. He suggests so-called remedies, means to advance the

⁷³⁸ 652, IV.xiv.1.

progress of knowledge. The proposed remedies add up to the development of a natural history. Scientists are recommended to compile their experimental findings in terms of a uniform, standardized nomenclature classifying bodies as precisely as possible with respect to known similarities. However, Locke regards this measurement as an ideal which cannot easily be established universally amongst scientists and which can therefore be realized rather by individual scientists with respect to their own work. At any rate, natural history is a conception of a *contemporary*, experimental science of bodies, since it is not an axiomatic theory, but a collection of similarities on the macrophysical level. In the light of Locke's ideal, a natural history is only a provisional account of bodies.

Besides collecting and compiling data in a natural history, Locke also recommends the employment of hypotheses. As has been suggested, hypotheses are probably conceived as suggesting new experiments which lead to the discovery of new properties and similarities. In this sense, hypotheses are means to enhance knowledge. Yet, Locke does not give any prominence to them, even though he uses the corpuscularian hypothesis in his argument on qualities and resemblance, because he apparently thinks that only natural history can genuinely advance human knowledge.

When assessing knowledge, Locke also comments on the prospects of a natural history to achieve significant progress. According to him, they are bleak. For besides his disillusioning stock-taking Locke also raises principal concerns over achieving a comprehensive understanding of bodies and their properties. For him, it is doubtful whether we will ever find out features of bodies that are part and parcel of an ideal grasp. Locke doubts whether mankind will ever know: real essences, matter, causal interactions amongst bodies, all the circumstances causally determining a property, and the causal relationship between body and the human mind.

As has been pointed out, these five aspects of an ideal account of bodies differ as to the inadequacy of our grasp of them and as to the difficulty of discovering them. With respect to real essences, Locke is pessimistic about our discovery of these microphysical structures since it seems to him too difficult to construct instruments equivalent to "microscopical eyes", i. e. to microscopes of a far higher resolution than were invented at Locke's time. But we have at least a general corpuscularian conception of what real essences are, namely of real essences being microphysical structures consisting of cohering corpuscles,

even though this depiction is not specific enough to determine for a given quality the corresponding microphysical feature. In the other cases, however, we even lack an adequate conception of the features so that the outlook of exploring them is even more gloomy. For instance, one has no convincing conception of what matter is, namely of how corpuscles cohere and how impulse is transmitted. In this sense, knowledge of matter is more inconceivable than knowledge of real essences. This ignorance of matter is of course likewise present in one's grasp of causal interactions, since they are understood in terms of impulse and, partly at least, of cohering corpuscles. This moreover implies that, due to its complexity, knowledge of all the circumstances causally determining a certain property is even more difficult to achieve than a general comprehension of matter and causal interactions, since it includes a comprehension of causal relationships all of which one can hardly recognize. Finally, the discovery of the causal relationship between body and mind, e. g. sense perception, is for Locke the most doubtful one, since we do not even come close to having an idea of the kind of causal interaction being involved. Is mind after all matter, or are they two numerically distinct kinds of substances? How do they interact? Here, we lack a conception of the most general kind of how this relationship is to be understood.

Corresponding to this gloomy outlook, Locke concedes that a classification of bodies in accordance to their real essences might be possible one day, but regards the attainment of real, instructive knowledge - not to speak of an axiomatic theory - as being out of reach. In the light of Locke's serious doubts about mankind advancing an axiomatic theory, natural history appears not only to be a provisional conception for a science of bodies, but also to be an everlasting one: "*This way of getting, and improving our Knowledge in Substances only by Experience and History [...] makes me suspect that natural Philosophy is not capable of being made a Science [scil. a mathematical-like, axiomatic theory].*"⁷³⁹

So far to the course of Locke's argument. We can now take on the question of what the specific topic of Locke's theory of bodies is. In the light of the developed interpretation, one can naturally distinguish between four aspects comprising the account and elucidating its character.

⁷³⁹ 645, IV.xii.10.

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First, Locke expounds a conception of an ideal science of bodies. This ideal account is more than simply a true, comprehensive physical theory of body. First, bodies are sorted as to their most significant resemblances. Second, bodies are understood in causal, explanatory terms describing their properties in a perception-neutral way. Third, an axiomatic theory assigns further properties to specimens of sorts in virtue of causal relationships holding between (the ideas of) these features and the defining properties of the species. Fourth, to enable the corporative search for proofs, the account is expressed in a generally accepted, unambiguous language, i. e. speakers use the same names to denote the same ideas and species. Thus a Lockean ideal science of bodies includes four elements in particular: a classificatory component, a perception-neutral viewpoint, an axiomatic character, and a semantic aspect. One crucial upshot is a partial re-positioning of Locke's place in the history of philosophy. Since, in rough and ready terms, Locke's conception of an ideal account of bodies is substantially farer away from Descartes's rationalism and closer to Hume's empiricism than is usually thought. The problem with Locke's conception is not that it has a Cartesian, mathematical-like *a priori* character, but that Locke is rather naive on the question of its material adequacy.

Second, Locke's theory of bodies assesses contemporary knowledge on the backdrop of his ideal. Most of Locke's chief contentions are negative accounts of the limited contemporary grasp of bodies. First, there is virtually no knowledge of the explanatory, microphysical properties. One does know the existence of matter, but has no adequate conception of its properties. Similarly, one is ignorant of real essences and of causal relationships in terms of microphysical features. Moreover, on the supposition of corpuscularian theory, contemporary ideas depict bodies largely by non-real, secondary qualities and only by few real, (macrophysical) primary qualities. That is, ideas of bodies hardly resemble their properties. On the other hand, given corpuscularian theory, one's knowledge of macrophysical primary qualities amounts to knowledge of the concepts in terms of which (some) microphysical properties are understood *qua* real qualities, i. e. one knows the "conceptual type" of (some of) the explanatory basic features of bodies.

Second, this attested ignorance of microphysical features implies of course that one is not even close of having an axiomatic theory. Contemporary knowledge is "very short and scanty", namely it comprises few intuitively known instructive propositions, and no

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deductive, demonstrative knowledge. Contemporary knowledge consists largely of trifling propositions which simply spell out the content of ideas. Third, a positive account of human knowledge is however advanced as well. Besides numerous trifling propositions, one knows some very basic laws of nature. Fourth, there is no established, standardized scientific vocabulary in terms of which scientists can compile their experimental findings to a natural history. Fifth, given Locke's comprehension of knowledge, the prospects are bleak for him that one will ever achieve significant progress: to discover real essences, the substratum of bodies, the causal relationships amongst bodies, all the causal circumstances fully determining the possession of properties, and the causal interaction between mind and body.

Third, Locke advances a conception of an experimental science of bodies. Given our ignorance of causal relationships, only natural history can enhance knowledge of similarities existing amongst bodies on the macrophysical level. Scientists are recommended to compile corporatively their results of regularly experienced coexisting properties. Ideally, they do so in terms of a uniform language to avoid confusions and to promote corporation. The introduction of hypotheses is furthermore welcomed to guide and to inspire scientists to conduct new experiments and thus gather new data, but this is not conceived as being essential for the progress of knowledge. Instead, careful observation and systematic collection of empirical facts are proposed.

Fourth, Locke complements the argument for his own conception of a science of bodies by a thorough refutation of other contemporary accounts of bodies. These alternative ideas of a science of bodies are based on confusion for the most part, namely on abuses of names of bodies. First, the Cartesian notion of body dissolves in the face of language criticism just as, second, Aristotelian knowledge claims as to universal propositions, species and their essences. Third, in the light of Locke's conception of knowledge, Aristotelian maxims are moreover revealed as not founding a science of bodies. Finally, as alluded to, additional objections are raised against the intelligibility of the Aristotelian theory of essences and species as to its explanatory value. These latter reasonings however stand rather in the shadow of Locke's sweeping, semantic arguments.

In the light of this line of interpretation, the programme of Locke's comments on bodies emerge as amounting to a theory which: (1) specifies what a science of bodies ideally

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consists in, (2) assesses contemporary knowledge in this perspective, (3) advances an experimental conception of a contemporary science of bodies that proposes means to enhance contemporary knowledge, and (4) refutes alternative ideas of a science of bodies. These are the chief issues of Locke's discussion of bodies. In his comments on bodies, John Locke therefore spells out the general programme of his epistemology to determine the origin, certainty, and extent of human knowledge in terms of a philosophical framework for a science of bodies.

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Selbstständigkeitserklärung

Ich versichere, dass ich die hier vorliegende Arbeit selbstständig verfasst und alle benutzten Hilfsmittel angegeben sowie die Arbeit weder anderweitig als Dissertation eingereicht noch bereits veröffentlicht habe.

Berlin, 14.03.2000