SHAPING THE FIELD

KURT LEWIN AND EXPERIMENTAL PSYCHOLOGY IN THE INTERWAR PERIOD

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Introduction

This dissertation represents a historical reconstruction of the development and transformation of German experimental psychology between the emergence of the first experimental laboratory in 1879 and its *Gleichschaltung* by the Nazi regime in the 1930s. It traces the evolution of the conceptual as well as the experimental framework of psychology over the course of these years following three generations of experimental research. Hereby, the work attempts to grasp how early experimental psychology negotiated its place between the humanities and the natural sciences. The project's major focus lies in the period between 1922 and 1936, in which Kurt Lewin's Berlin Experimental Program on Action and Emotions took place. The work specifically investigates the process of constitution of Lewin's field theory, a system of concepts coined by Lewin in order to study psychological processes underlying human conduct. The dissertation shows how Lewin's concepts emerged out of interdisciplinary sources, and how experimental practices in psychology triggered the emergence of new knowledge. Eventually, it is shown how the investigated historical case of Gestalt psychology in Berlin fits into and plays a decisive role in the long-term development of experimental psychology.

0.1 Between two poles: Psychology as an academic discipline

At present, we live in an age of interdisciplinary research fields. Promising research is conducted in disciplines as diverse as biochemistry, neuroscience, organizational informatics, meteorology, psycholinguistics and the epistemic history of science. Pioneers of such emerging cross-border disciplines have both the appropriate expertise accumulated in their “parental” disciplines as well as the ability to demarcate their own territory. They have to prove the novelty and usefulness of their cross-disciplinary approach in order to eventually achieve scholarly and social acceptance. These academic challenges are today as relevant as they can be.

If one looks back at the period of the emergence of experimental psychology in the late 19th century, one finds obvious parallels with present day's development of any new discipline. What now seems a firmly established academic field needed to develop and establish shared concepts, methodological procedures, and negotiate its own academic space over 100 years. Wilhelm Wundt, one of the founding fathers of experimental psychology, thought that psychology should become the foundational discipline for the human sciences. Instead, two rather different but related things happened. Psychology became a core discipline that took up a special place among the sciences. It was encircled by methodological orientations derived from the physical and physiological sciences, on the one hand, and, on the other hand, treated problems extending into the social and human sciences. In today's German universities we often find psychology in a department on its own, not immediately allied either with the humanities (*Geisteswissenschaften*), cultural studies (*Kulturwissenschaften*), nor with the department of science (*Naturwissenschaften*). One will notice, however, that in different countries the concept of the discipline as well as its academic identity varies. For instance while North American psychology tends to be part of neuroscience (relying as firmly as possible on precision-oriented methodology), psychology in the Russian-speaking countries and in Japan is conceptually and methodologically much more strongly integrated into the framework of the humanities. On this scale, German psychology is today situated in the middle. The reasons for this state of affairs can be found in the long-term history of psychology. Having historical evidence at hand, this work will trace and review core patterns of the early constitution of psychology in Germany in order to gain insights not only about the past but also about the present and possible future of cross-border knowledge domains or disciplines like experimental psychology.

The history of experimental psychology is that of a “dual allegiance” and the negotiation between the humanities and natural sciences. These negotiations, however, have never been as intense as in the first

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1Cf. [Wundt, 1908b].
few decades of the emergence and establishment of the discipline, i.e. the period treated in the present
dissertation. From 1879 to 1930s is the time span when German-language psychology most intensively
negotiated, defined and sub-structured its own space, a space between other disciplines. The present
work attempts to follow the pathway in which the early experimental psychology in Germany defined
its territory at the socio-academic, conceptual and experimental level. We particularly delineate the
institutional controversy between philosophers-theorists and experimentalists that persisted over this
whole period. We discuss the research styles practiced by various pioneering experimentalists, who
had little in common aside from their shared belief that mental life could and should be explored in a
controlled set up, as well as their expectation to gain measurable and reproducible results. We outline
how functional requirements of World War I boosted the fast growth of applied psychology in Europe,
and stimulated a significant methodological turn towards the “mechanistic” and statistics-based research
styles. Eventually, we thematize the postwar spread of humanistic psychology, such as holism. In the
1920s and 1930s, a particular case of holism was represented by Gestalt, a psychology concerned
with the analysis of conscious human experience and structures along which this was organized. The
effort to combine scientific and philosophical in-depth expertise in the Gestalt approach to psychological
research is the starting point of this historical study of Kurt Lewin’s research program in Berlin.

0.2 Kurt Lewin and the challenges of his experimental program

In today’s psychological textbooks Kurt Lewin is most often referred to as the father of social psychology,
which found a particularly broad audience in the course of his American career. Nevertheless, the theo-
retical substructure that allowed for the exploration of socio-psychological reality, was elaborated much
earlier, in Lewin’s work in Berlin. The present dissertation focusses on the formation of this theoreti-
cal substructure retrospectively referred to as “field theory” (or, when pointing to one of its extensions,
“topological psychology”, “dynamical theory” or “vector psychology”).

A detailed historical case study was conducted to provide detailed insights contributing to the under-
standing of the history of science. To this end we have selected a protagonist, who was critically involved
in the interdisciplinary milieu which psychology grew from. Making use of the interdisciplinary impact
he succeeded to develop an individual theoretical and experimental approach: Kurt Lewin (1890–1947).
The nucleus of our investigation lies in in-depth analysis of Lewin’s work in the period between 1921
and 1936. In this time span Lewin held a position as Hans Rupp’s assistant, and later on got an As-
sociate Professorship at the Psychological Institute of Berlin (until 1932/33), then headed by Wolfgang
Köhler. During this whole period Lewin was working under the auspices of the then-flourishing Gestalt
school of psychology, one of the most influential psychological schools of the interwar period. Together
with his disciples he implemented a Research Program on Action and Emotions (Untersuchungen zu
Handlungs- und Affektpsychologie), which laid the pathway towards the new field of the psychology of
human conduct.

While Lewin’s research program took place in the middle of the above-mentioned controversy on the
nature and place of experimental psychology Lewin had to face its boundaries and exploit its advantages
both on the socio-academic and epistemic level. When Lewin started his investigations, neither a unified
psychological theory, nor a shared conceptual or methodological framework had yet existed. Instead, a
few scholars in laboratories scattered throughout the country tackled particular problems then attributed
to psychology (e.g. related to memory, will or perception) by means of experimentation. In other words,
at a time when psychology lacked an integrated theoretical system, Lewin emphasized the need and
suggested a way to develop such a system, termed “field theory”.

The field theory is a “conceptualization of behavior [in terms of] an attempt to describe the
essential here-and-now situation (field) in which a person participates. It assumes that if one
fully understood a person’s ‘situation’ (in the broadest meaning of this term), one would fully
understand his behavior. Hence, the goal of field theory is to be able to describe fields with systematic concepts in such a precise way that a given person’s behavior follows logically from the relationship between the person and the dynamics and structure of his concrete situation”.

Therefore the “field theory can hardly be called a theory in the usual sense. [It] is probably best characterized as a method: namely, a method of analyzing causal relations and of building scientific constructs” [Lewin, 1942a, 45].

Against this background, the seminal questions of the present dissertation focuses on problems related to Lewin’s German work and in a wider sense his pathway towards a new branch of psychology. These questions are:

What innovation did Kurt Lewin contribute to contemporary psychology? How did Lewin’s and his colleagues’ empirical work bring about the development of a new system of knowledge? What role does Kurt Lewin’s contribution, in particular his early professional experience in Germany, play in the history of experimental psychology as an academic discipline?

0.3 Theoretical framework, state of research and contribution of this work

Historical epistemology

This dissertation is motivated by a methodological approach in the history of science called historical epistemology, a specific version of which results from a collaborative research effort centered at the Max Planck Institute for the History of Science in Berlin. A recent overview article by Uljana Feest and Thomas Sturm identifies three versions of contemporary historical epistemologies developed in the works of Lorraine Daston, Hans-Jörg Rheinberger and Jürgen Renn (and in various associated studies).3

“Historical epistemology may be viewed as a branch of the history of science, namely one that looks at (a) the histories of epistemic concepts (e.g., observation, rationality, probability) or (b) the histories of the objects of scientific inquiry (e.g., heredity, life, gravity) or (c) the dynamics of scientific developments, as they can be extracted from an analysis of scientific texts or practices” [Sturm and Feest, 2008, 3].4

The present work is inspired by the last approach. For this reason, further on we refer to the theoretical framework put forward by Jürgen Renn. This approach exhibits several specific features. First, even when dealing with specific historical events the intention behind it is the explaining of general structures and repeating patterns. Second, the historical approach draws on the idea of a certain continuity of historical events closely linked with the shared accumulation of knowledge (rather than widely independent historical epochs determined by different knowledge and thinking structures). Third, the approach emphasizes the necessity to reflect both the social and the cognitive structures of knowledge; the latter being manifested in “external representations”, i.e. tools, language and other symbolic systems. If applied to long-term historical processes, historical epistemology leads to the view that large changes of (scientific) knowledge systems are not primarily a result of outstanding individual achievements by a few geniuses but rather emerge in certain socio-historical constellations as a result of an accumulation of practical experience and its abstract interpretation. Their framework is always constructed within a certain socio-historical context. In other words, the inventive capacity of individual scholars is to a large extent nourished by knowledge and beliefs they consciously or unconsciously share with a group of

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2This nice definition originates from an early systematic study of selected contributions from Lewin’s Berlin group, [de Rivera, 1976, 3, emphasis original].

3One will certainly find other concepts of historical epistemology. See for instance [Canguilhem, 1988].

4Cf. also [Feest and Sturm, 2011].
contemporaries. Shifts in knowledge systems (inter alia, conceptual systems) over time are historical transformations. The emergence and institutionalization of novel knowledge systems involve social and cognitive factors, as well as the accumulation of a certain type of experience. From this perspective, we investigate how the interplay of various intellectual, biographical and social contexts nourished the inventive process in the case of Lewin's psychological research in Berlin.

**Lewin's Berlin work for the English reader**

Research publications devoted to the work of Kurt Lewin are too numerous to be referred to in detail. More than a hundred monographs, research articles and commentaries particularly concerned with the historiography of Lewin's work are listed in the bibliography of this dissertation alone. Additionally, since the 1950s references to Lewin became a standard part of most of international handbooks and textbooks on psychology as well as in university curricula. A variety of semi-popular and semi-accurate images of Lewin's contribution to modern psychology has been published. Yet, despite this abundance of research literature, one will have difficulties to find even a handful of research contributions mainly focusing on the German-language sources originating from the years 1911 to 1936, as does this work. In contrast to the absolute majority of existing research literature, this dissertation is explicitly concerned with Lewin's German work conducted foremostly in Berlin. The two studies—Die experimentelle Willenspsychologie Kurt Lewins (1966) by Josef Schwermer and Das Frühwerk Kurt Lewins (1998) by Simone Wittmann—to my knowledge, represent the only earlier attempts to understand Lewin's German theoretical work as a whole. However, these contributions are written in German. The sources which the present dissertation draws on have not been entirely translated into English (or any other language) until now. A couple of unpublished dissertations by students of Lewin's may still rest in the archives. Considering that the present dissertation is the first work to offer an extended critical analysis of Lewin's and his groups' German-language work in English we hope to offer a source-based and detailed discussion on these German sources to English-speaking scholars.

**Roots and constitution of Lewin's field theory**

Concepts represent knowledge units around which we center the present investigation. They are fundamental elements of the mental system by which we structure our perception of the world. Compared to theories, they are implicitly embedded into the argumentation and therefore often escape the researcher's attention. Also in the history of psychology conceptual transformations play a role that can hardly be overestimated. As emphasized by historian Kurt Danziger, “the coming of modern psychology was associated with a revolutionary restructuring of the network of categories employed in the conceptualization of human experience and conduct” [Danziger, 1997, 36]. Against this backdrop, the present dissertation particularly explores the constitution of a conceptual system for a psychology of human conduct by Kurt Lewin and his closest colleagues. Rather than presenting a fully fledged theory Lewin builds on experimental studies and meta-theoretical organization principle to progressively elaborate his own conceptual system or network.

From various historical examples we know that conceptual shifts tend to disappear from the historical picture, or to be reconstructed as the "discovery of facts". The Polish immunologist and philosopher of science Ludwik Fleck further clarified:

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5See [Renn, 1994], [Renn et al., 2001], [Renn, 2006], [Damerow and Lefèvre, 1994], [Damerow et al., 2004], [Damerow and Renn, 2012], [Schemmel, 2008].
6Cf. the historiographical framework developed by the research cluster 644 Transformations of Antiquity, particularly the section “Was ist unwas will Transformationsforschung?” [Böhme et al., 2007, 10f.].
7See [Schwermer, 1966] and [Wittmann, 1998].
8Amongst others cf. [Steinle, 2005b, 530].
9Cf. [Fleck, 1994, 114].
“If after years we were to look back upon a field we have worked in, we could no longer see or understand the difficulties present in that creative work [...]. But how could it be any different? We can no longer express the previously incomplete thoughts with these now finished concepts” (Fleck 1935).10

Therefore, the particular interest of this dissertation does not lie in the analysis of a conceptual system at a presumably fixed moment of time but in grasping its change over time.11 Kurt Lewin’s German work offers rich material for a study of the constitution of new conceptual systems in modern history of science. The present dissertation reflects his intellectual pathway. Through a dynamic and explorative approach Lewin increasingly refines his conceptual system. Our work follows this transformation. We reconstruct the knowledge in psychology of will that was accessible to Lewin’s predecessors at the turn of the 20th century. Using this as a starting point, the dissertation delivers a comprehensive analysis of the way Lewin re-shaped the framework of his experimental program. We shall demonstrate how this drew on various roots, such as Gestalt theory, his epistemic agenda, as well as experience collected in the early psychology of will and accumulated in physics, biology and physiology. Moreover, we will take into account social impact factors such as encounters of the Weimar academic culture as well as the structure of research at the Psychological Institute of Berlin.

Research studying the same period of Lewin’s career mainly focussed on different aspects but delivered inspiring impulses to the present investigation. In Die experimentelle Willenspsychologie Kurt Lewins (1966) Schwermer discusses Lewin’s psychology of will of the years 1916 to 1931, looking systematically and accurately at a variety of concepts that are part of Lewin’s theory of action (Handlungslehre). For its contextualization he applies the prism of Lewin’s philosophy of science, and introduces further influences in contemporary philosophy and psychology, however, abstaining from explicit historical or epistemological contextualizations. In Das Frühwerk Kurt Lewins (1998) Wittmann searches for socio-psychological aspects in Lewin’s German work, subdividing this into two blocks, i.e. his field concept and philosophy of science. To my knowledge hers is the only extensive work focussing on the field concept in Lewin’s German work.12 While Wittmann’s monograph gives a rather detailed account on the philosophy-related contexts of Lewin’s work, including Ernst Cassirer’s and Hans Reichenbach’s influence, it is limited to rather general characteristics of his field concept: Only a few selected concepts—e.g. defiance (Trotz) and the life space or field—are discussed.

The research perspective adopted in this dissertation is new, as shall be explained at the following few pages. First, the work shows that Lewin’s quest for a novel, unified psychology of human conduct started in the academic “no man’s land” between an epistemic and a scientific view of psychology that at the time had no institutional niche. He experienced difficulties defending the research that he conducted in this period as his experimental investigations were obviously inspired by ideas originating from philosophy of science. The Gestalt school of psychology finally offered a convenient niche for his interdisciplinary research. The socio-academic background of Lewin’s work is taken into account while studying his intellectual decisions.

Second, we reconstruct Lewin’s conceptual system (that will be later framed as “field theory”) as it existed by 1926, and trace its conceptual roots back to its interdisciplinary origins. On the basis of this case study we demonstrate that the preexisting approaches to psychology of will relied on a rather simple “mechanistic” model while the psychology of human conduct developed by Lewin was based on a complex fine-grained distinction of mechanisms underlying behavior. Lewin struggled to frame each of these mechanisms into concepts as specifically as possible and to interconnect these concepts in a

10Blickt man nach Jahren auf ein selbst bearbeitetes Gebiet zurück, so sieht und versteht man die Nöte der Schöpferarbeit nicht mehr, man rationalisiert, schematisiert den Entwicklungsweg der Arbeit: man transmittiert die Ergebnisse in die Absichten. Wie könnte es auch anders sein? Man besitzt jetzt fertige Begriffe, mit denen unfertige Gedanken nicht mehr ausgedrückt werden können” [Fleck, 1994, 114].
11Cf. [Steinle, 2005b, 531].
12A short and comprehensive German-language introduction to the field theory (in Lewin’s German and American oeuvre) can be found in the fourth volume of the Kurt-Lewin-Werkausgabe; cf. [Graumann, 1982].
“dynamic” way. In order to explain the transformation a stepwise approach was chosen, i.e. contributions by Hermann Ebbinghaus (1850–1909), Georg Elias Müller (1850–1934), Narziss Ach (1871–1946), Albert Michotte (1881–1965), Lewin and some of Lewin’s students will be sketched and related to each other. Eventually, we will show that Lewin’s transformation of the mechanistic into a dynamic model of psychic processes was closely interrelated with the transformation of the conceptual system.

Third, both Gestalt psychology and Lewin’s field psychology employed theoretical and experimental patterns borrowed from different disciplines. This dissertation analyzes how Lewin integrated selected interdisciplinary, for instance physical and topological, patterns into one sophisticated system of concepts, and made this instrumental for research on mind and behavior. We demonstrate that by appropriating interdisciplinary theoretical and experimental elements Lewin preserved the “functional” links between the extracted concepts. He thus did nothing less than adopt thought patterns\(^{13}\) constituted in other disciplines. Thus, the in-depth study of Lewin’s work enable us to observe the integration and reorganization of diverse interdisciplinary principles within psychology.

Against this background, our work suggests an innovative approach to the study of early experimental psychology in general and Kurt Lewin’s work in particular. Applying an idea suggested as part of Renn’s historical epistemology we focus on the intellectual organization of scientific knowledge, e.g. by identifying the thought patterns shared by different branches of knowledge. In the course of this work we track their restructuring in new knowledge systems. We show that in contrast to formerly existing theoretical frameworks Lewin’s field theory was able to integrate elements of various preceding theories and psychological subsystems. In this way, the historical example of Kurt Lewin’s work offers rich material for the analysis of the way in which conceptual change, particular experimental and social practices are altogether decisive for the evolvement of a discipline.

**Experiments and the formation of a new body of knowledge**

Compared to the impressive amount of critical research on scientific theories, experimental procedures belong to the rather under-explored topics of the history of science. Yet, investigating the specific area of experimental psychology the present dissertation obviously cannot downplay nor ignore the dimension of empirical research. Given that the transition to experimental research represented a trigger mechanism in the foundation of the discipline, a close analytical look at the experimental procedures seems indispensable. A particular challenge for such an investigation consists in a striking paradox: Experiments, even those shaping theory, always rely on a theoretical and conceptual background themselves. What kind of inventive function may we then speak of when referring to experiments? Without having the space for an extended overview on experimental research we tackle the presented historical analysis with the help of recent contributions to the history of theory of experimental research, such as Christoph Meinel’s anthology *Instrument – Experiment: Historische Studien* (2000).\(^{14}\)

The chosen historical case study represents a vivid example of a dichotomy between theory and empirical research. How could such a theoretically versed experimentation be helpful to the constitution of an emerging domain? More specifically, this work discusses how Lewin’s and his colleagues experimental work brought about the formation of an extensive knowledge system between early 1920s and 1936. At present, we find the analysis of Lewin’s experimental procedures barely explored from this perspective. As the experimental program conducted under Lewin in the 1920s and the early 1930s constituted a joint collaborative effort with his student circle a few contributions focus specifically on the analysis of the demography and social dynamics of Lewin’s circle.\(^{15}\) However, these do not specifically

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\(^{13}\)We shall systematically introduce the notion thought patterns to denote ideas characteristic of a particular discipline that are incorporated in discipline-specific concepts. In the present work we show how such ideas and concept are adopted in Lewin’s psychological theory.

\(^{14}\)See [Meinel, 2000, espec. 13-81].

\(^{15}\)The essay collection *Kurt Lewin – Person, Werk, Umfeld* (1992, 2007) discusses a variety of specific aspects of Lewin’s life
deliver an in-depth analysis of the experimental procedures. Aside from this the two monographs by Schwermer's and Wittmann's offer compact introductions to Lewin's experimental style. Field theory as human-science (1976) is rather exceptional study presented by De Rivera. The author gives careful and precise commentaries on Ovsiankina's, Karsten's, Schwarz', Dembo's and Hoppe's (five of Lewin's Berlin disciples) work. Originally intended as a translation into English, the work sticks to a paraphrasing rather than analytical style, while the applied experimental methodology is no more than briefly sketched in the introductory passage. Last but not least, Ash (1995) looks at experiments conducted by Zeigarnik and Dembo attributing to them a seminal role in the research program. On top of this, most of the existing research focuses on Lewin's theory without having a close look at the experimental procedures and assumes that Lewin's solid knowledge of contemporary philosophical and psychological theory results in a strongly theory-driven approach to experimentation. By contrast, the present work intends to fill the existing gap. By looking at the specifics of the experimental procedures we shall explore how Lewin's experimental program combined deductive and inductive techniques, i.e. integrated knowledge assembled from experience and from meta-reflection.

First, the present study interlinks intrinsic and extrinsic factors relevant to the progress of the empirical work of the Berlin Experimental Program (BEP). This includes the socio-academic micro-culture of the Berlin Psychological Institute, as well as the fineness of the conducted experimental procedures. A variety of styles and approaches was characteristic of the Gestalt experimental procedures in Berlin, Frankfurt and Giessen. In this framework, Lewin delivered a rather far-reaching extension to the Gestalt style of experimentation. Instead of a strictly controlled experimental scenario standard at the time, he set up methodological guidelines that allowed for context-dependent conduct of both the experimenter and subject. We shall further demonstrate that the Berlin experimental style consisted of an interactive and an in-depth analytical procedure, in which the visualization of concepts played a seminal role.

Thereafter we draw a detailed conceptual “roadmap” from the beginning to the end of the BEP, which shall be of help to follow the undergone epistemic development in the closest and most intimate way. Throughout this “roadmap” we explore the process of concept formation, which is subdivided in three qualitatively different program stages: constitutive, explorative and maturity stage. We show how the basic conceptual scaffold of Lewin's “field theory” was expanded through the experimental contributions of his students. Most of these studies concluded with the elaboration of at least one new concept. These concepts extended the preexisting conceptual system block by block building upon one another. We shall further demonstrate that the investigations of Lewin's students had a twofold relationship with his own research. It is the student circle that applied the analytical system in experimental practice, on the one side. On the other side, Lewin also made use of the students’ experimental findings to gain empirical proof for his own (theoretical) work. Thus, the gradual development of Lewin's and his students’ theory and experimental agenda obviously emerged from a continuous collaboration.

Additionally, the present dissertation makes an effort to relate Lewin’s theory of science with the experimental practice of the BEP. In this respect, most preceding research that struggles with the determination of the nature of Lewin's theoretical system. As pointed out by Gold, there is wide disagreement on whether Lewin's theoretical system represents a “meta-theory”, an “applied tool”, or something else. Going further we resolve the problem at hand by differentiating meta-theoretical, operative and descriptive components. More specifically, we distinguish three theoretical systems introduced by Lewin—a philosophical, a methodological and a conceptual one; each of those had an individual practical function. As will be demonstrated, Lewin's philosophical directives sketch out a set of rules by which the experi-
mental framework has function, methodological principles represent specific guidelines to experimental procedures while the conceptual construct called “field theory” eventually incorporates an analytical tool. In a very explicit and detailed manner we delineate the way in which Lewin’s field theory, including its extension through a system of representations called “topological psychology”, was applied to the analysis of data collected in the experimental work.

Finally, we shall discuss how the Berlin experimental procedures paved Lewin’s way towards the social dimension of psychology. Various commentators have characterized Lewin with purpose as a “practical theorist” (Alfred Marrow) or a “philosopher-psychologist” (Alexandre Métraux). All in all, the present dissertation, elucidates both sides of the process that allowed Lewin’s experimental program in Berlin to result in the constitution of the new psychological sub-domain. We, thus, bring together the generative impact that the interactive dynamics of Lewin’s circle played in theory formation, on the one side, and the directing and analytical role of the theoretical constructs upon the experimental procedure, on the other side.

0.4 Methodological note

The present work is a stepwise diachronic study of change in a system of knowledge as part of the “maturing” process of a discipline. Therefore following Lewin’s German work in experimental psychology this dissertation combines historiographic and analytical methodology. The approach is process-focused (rather than factographic); the genealogical reconstruction of an intellectual process constitutes the core of the work.

A terminological remark

According to the stated methodological framework, we reconstruct Lewin’s theoretical system “layer after layer” with respect to their roots and the order of their introduction into Lewin’s work. Given that the “field theory” is a retrospectively shaped framework describing Lewin’s theoretical approach (in 1930s and 1940s, and especially as part of the American self-introduction and “image-making”), we choose to avoid employing the terms “field theory” or “field concept” when looking at its germs in Lewin’s German work. For example, discussing the early constitution of the conceptual system in the 1920s, we employ descriptive terms, such as “Lewin’s process model”, “early model of psychic activity” and “analytical system” more accurate at that time instead. In Part II of the work we then discuss the “transformation of this model into the field theory”. Lewin’s topological theory, which took shape in the middle of the 1930s, is duly analyzed in Part III. Therein, Chapter 9 (entitled, “a roadmap”) reconstructs the generative development of Lewin’s conceptual system as a whole while also taking into account his work with the Berlin student group (1923–33). Finally, in Chapter 10 we introduce the term “Topological Field Theory” (TFT), which refers to Lewin’s attempt to integrate the field-theoretical and topological concept layers (but belongs to the author of this work).

On the reconstruction technique

For the reconstruction we extract and interrelate various patterns of Lewin’s multiple theories and of experimental procedures accomplished by him and his collaborators. The particular challenge of this endeavor is to establish correct links between philosophical ideas, experimental designs and the various interdisciplinary concepts while also paying attention to intrinsic inconsistencies. The vagueness and partial absence of definitions typical of Lewin’s style make the defined task particularly challenging. An

17See [Marrow, 1969] and [Métraux, 1992]; the latter term was also used by Kusch (1995) in another context, cf. [Kusch, 1995a, 160].
additional complexity consists in the high degree of fragmentation of information in Lewin’s overall work. We strive to put together the diverse fragments of the puzzle to gain evidence about the constitution and transformation of such a complex knowledge system as is an emerging discipline. To give an example, reconstructing the experimental procedures of the BEP we had to interlink fragments originating from the following resources. (a) The general (but rather abstract) directives to experimental procedures have been extracted from Lewin’s philosophical papers (Chapter 5). (b) Commentaries on the analytical treatment of experimental observations could be found in the students’ publications (Section 9.1). (c) The methodological principles of the interactive procedure were borrowed from the students’ dissertations, in which these were explained as far as applied in individual experimental cases (Chapter 8). (d) The most complete outline of the topological tool developed for the analysis of empirical data could be detected in his later psychological publications (Chapter 10). (e) Finally, information pieces from all of these sources were needed to be smartly linked to reconstruct the conceptual development of the whole of Lewin’s Berlin Experimental Program, of which we drew a detailed “roadmap” (Chapter 9).

In addition to the verbal reconstruction, the present dissertation delivers various visualizations of the “gone lost” links in Lewin’s psychology of human conduct. These are listed in the Appendix B on page 192, where they are marked as “reconstructions”. The conceptual development of the whole experimental program studied in this work is reflected in figure 14 on page 116. Additionally, a variety of tables contrast seminal aspects of the discussed theories and procedures.18

0.5 Main sources

Lewin’s theory-centered writings, published between 1926 and 1936, and the experimental reports by his students that emerged in about the same period (approximately between 1922 and 1938) represent the seminal sources of this work. These are, on the one hand, the two programmatic papers – Vorbe-merkungen über die psychischen Kräfte und Energien und über die Struktur der Seele and Vorsatz, Wille und Bedürfnis (1926), which marked the official kick off of Lewin’s research program on action and the emotions. On the other hand, it is his consolidating and evaluating work – A Dynamic Theory of Personality (1935) and Principles of Topological Psychology (1936) that appeared about ten years later in English, after the author had already settled in the United States. Apart from these four main theoretical works a variety of talks and minor publications of this period is taken into account. They are chronologically listed in Appendix A. A directory of published and unpublished writings that emerged in the course of the Berlin experimental program can be found in the Appendix A. It is important to note that no individual experimental reports from this period have been accomplished single-handedly by Lewin. Instead, a whole range of detailed experimental protocols and dissertations was produced by his disciples, as a rule, as part of their predoctoral research. To grasp the gradual progress of the collaborative research program and to trace mechanisms of the transformation, a range of these are analyzed in Part III. All doctoral studies in experimental psychology conducted under Lewin are taken into account.

Most of Lewin's philosophical writings were composed between 1919 and 1931. All his major philosophical works from this period are explored in Chapter 5. Thereafter we reflect on the impact that Lewin’s epistemological investigations had on his work in psychology. In 1919, Lewin submitted his Habilitation paper Der Typus der genetischen Reihen in Physik, organismischer Biologie und Entwicklungsgeschichte in which he comparatively treated the development of conditional-genetic concepts in physics and biology. With this writing, he introduced a series of works theorizing the nature and challenges of science to which we will further refer as Lewin’s “comparative theory of science”. The 1931 essay Der Übergang von der aristotelischen zur galileischen Denkweise became Lewin’s concluding philosophical writing, in which he integrated most of his views on philosophy of science developed in the preceding years and set up programmatic goals for empirical research in psychology.

18See early psychological schools, Table no. 27; Lewin’s philosophy of science, Table no. 69; principles of early experimental psychology of will and human conduct, Table no. 80.
Further utilized sources are writings by the Gestalt psychologists, mostly, Wertheimer, Köhler and Koffka, as well as by different representatives of the early experimental psychology in Germany. They date back to the time span between the 1880s and the 1940s.

The introduced archival materials originate from the Humboldt University Archives (HUA) in Berlin, Germany, and the Secret State Archives Prussian Cultural Heritage / Geheimes Staatsarchiv Preußischer Kulturbesitz (GSIA PK) in Berlin. Photographs and illustrations in this dissertation were reproduced with the friendly permission of the Adolf-Würth-Zentrum for the History of Psychology at the University of Würzburg, the Berlin State Archive (Landesarchiv Berlin), as well as thanks to the digitalization by the Max Planck Virtual Laboratory.

0.6 Contexts of Lewin’s psychological work

To ensure a proper contextualization of Lewin’s work the present dissertation makes use of a variety of additional publications, which deliver information going beyond the listed sources and research literature.

On Lewin’s biography: In terms of the recollections on Lewin’s life and work in Berlin, the most substantial biography is authored by one of his close American collaborators Alfred Marrow, who after Lewin’s death systematically collected recollections from Lewin’s associates, friends and relatives (Marrow 1969). The work also employs other biographical recollections, i.e. by Lewin’s daughter Miriam Lewin (1992), Lewin-researcher Helmut Lück (2001), as well as by his German and American students and a collaborator of his, namely Lippitt (1947), Zeigarnik (1988), Deutsch (1992), White (1992) and Mahler (1996).

On the Gestalt theory and its protagonists in Germany: For a proper understanding of Lewin’s German work its contextualization vis-à-vis the work of (other) Gestalt psychologists, specifically the leaders of the school Wolfgang Köhler, Max Wertheimer and Kurt Koffka, seems indispensable. Also in this case, our work makes use of a range of witness recollections. In 1986, A. S. Luchins and E. H. Luchins presented a most complete summary of recollection on Max Wertheimer’s life, work and social networks from 1912 to 1929. Wolfgang Metzger, a student of the Gestalt psychological school, wrote the retrospection *Zur Geschichte der Gestalttheorie in Deutschland* (1963). Siegfried Jaeger edited Köhler’s letters to his teacher Hans Geitel from 1907 to 1920 (1988), and published biographical essays on Köhler’s life and work in Berlin, i.e. *Köhlers Verhältnis zur Philosophie und zu den Naturwissenschaften Anfang der Dreissiger Jahre* (1989) and *Wolfgang Köhler in Berlin* (2003). Brett King together with Max Wertheimer’s son Michael published a monograph on Wertheimer’s life and work, *Max Wertheimer and Gestalt Theory* (2005). Finally, Franz Heider’s autobiography (1984) presents a colorful and vivid account of the cultural and academic life in Berlin of the Weimar era; it includes reports on Heider’s meetings with Lewin but also with other psychologists like Köhler, Wertheimer, Koffka, Charlotte and Karl Bühler, and William Stern. The most extensive and complete critical account of Gestalt psychology, its protagonists as well as minor contributors, was without doubt provided by Mitchell Ash in a paper (1991) and in his monograph *Gestalt psychology in German culture* (1995). These works are employed in several places of this thesis for purposes of contextualization of our case study.19

On Lewin’s philosophy of science: As will be shown, philosophy of science represents the agenda-setting reference frame of Lewin’s psychological work. The author found the most inspiring, comprehensive and sophisticated reflection on Lewin’s philosophy of science in Alexandre Métraux’s publications in the German language (i.e. Métraux 1981, 1983 and 2007) and (Métraux 1992) in English.

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19 Further research publications on Gestalt that were useful to this project are e.g. the systematic monograph on the German holism *Reenchanted Science: Holism in German Culture from Wilhelm II to Hitler* (1996) by Harrington and *Wertheimer’s university career in Germany* (1989) by Ash.
0.7 Structure of the work

In Part I of the dissertation we reconstruct the establishment stage of German experimental psychology beginning with the foundation of the first laboratory in 1879 in Leipzig. The overall function of Part I is to provide comprehensible contextual information to the case study tackled in the succeeding chapters. Therein we delineate the interdisciplinary controversy over the nature of psychology taking place on the socio-academic, theoretical and experimental level, and point to the seminal function of the experiment in the constitution of the psychological discipline. In Chapter 1 we discuss the roots of experimental psychology and its struggle for self-positioning between philosophy and the sciences. In Chapter 2 we outline the evolvement of the methodological and conceptual framework of psychology during its struggle for emancipation. Chapter 3 is mainly devoted to the socio-academic set-up of the Berlin Psychological Institute between 1922 and 1933. Therein I present various facets of Gestalt psychology as both a doctrine and an academic network, including its methodological and conceptual agenda.

The overall ambition of Part II is to reconstruct and understand the emergence of an innovative theoretical system. To this end we look at the emergence of Lewin’s psychology of human conduct first focussing on its state of development by 1926. Thereafter we trace the interdisciplinary roots of Lewin’s theory identifying individual conceptual patterns and their functions within the system. In Chapter 4 we situate Lewin’s early scholarly ambitions within the sketched framework. In Chapter 5 we elaborate key aspects of his philosophical agenda to further demonstrate how these were applied in his research program in experimental psychology. In Chapter 6 I present research conducted in experimental psychology of will in the first three decades of the 20th century in the German-speaking Europe. Therein I show how this earlier research nourished the emergence of Kurt Lewin’s basic conceptual system for a psychology of human conduct. Chapter 7 is focused on psychological concepts inspired by science. We trace back Lewin’s concepts to their physiological and physical prototypes and discuss the function of the “quasi-physical” analogies in Lewin’s field theory. Eventually, we point out the links between field theory and other Gestalt theoretical work.

In Part III of the dissertation I investigate Lewin’s Berlin Experimental Program (BEP) and place this into the broader theoretical and socio-historical context. This Part specifically focuses on the interplay of the experiment and theory. To that end, Chapter 8 is concerned specifically with the style and function of Gestalt experiments. First, we delineate the micro-culture at the Gestalt-psychological institutes of the 1920s and briefly outline the different experimental types and practices encountered there. Thereafter we dedicate attention to the particularity of the student network that developed around Lewin in Berlin and identify specific features of the BEP. The chapter concludes by presenting examples of selected experiments. In Chapter 9 we map the process of concept formation over the whole duration of the BEP. In a “roadmap” we pin down changes of the experimental style that occurred during the course of the program, as well as elaborate its triggers. Additionally, we discuss how the structure of Lewin’s network conditioned the outcome of this research program. In Chapter 10 we discuss another major extension of Lewin’s field theory introduction of topological concepts inspired by mathematics. Moreover, the Chapter outlines the analytical challenges of Lewin’s psychology as a tool for visualizing the mental situation and the psychic dynamics in or across individuals. We specify the decisive methodological steps that bridged Lewin’s psychology of the individual and his social psychology showing that the transition relied on the research accomplished in Berlin.

Part IV, Epilogue and Conclusions of the present dissertation, consists of two chapters. Chapter 11 is a historical outlook in which I briefly outline the export of Gestalt psychology to North America. After discussing local research trends and general challenges faced by the Gestalt psychologists in the new academic environment, I restrict the narrative to the progression of Lewin’s career in the United States. The outlook shows how our protagonist was eventually able to develop and institutionalize social psychology as a new branch of the psychological discipline by integrating German experience and upcoming American impulses. The final Chapter deals with three topics. First, I summarize the key achievements
of Lewin’s German work against the background of his time. Second, I elaborate on the so-called “epistemic cycle”, which represents an attempt to refrain from the studied case and build a more universal model of the process of formation and transformation of knowledge. Ultimately, I elucidate Lewin’s legacy by drawing his pathway in the context of the history of psychology. Different receptions and perceptions of Lewin’s life’s achievements are outlined here.
Part I

Experimental psychology between two poles

1 Networks of the pioneers of experimental psychology (1879–1910)

Large parts of this dissertation deal with the way in which psychology combined and integrated interdisciplinary elements and negotiated its position in-between humanities and science. This negotiation, however, has never been as intense as in the few decades of the emergence and establishment of the discipline. This introductory chapter concentrates its attention at the period between 1879 and 1910, in which the first experimental laboratories were established. In this period philosophy and physiology had major influence upon the formation of the essential disciplinary features.

This chapter narrates the history of the early institutionalization of German psychology, focussing on the psychological laboratories and the styles of research established by five pioneers of psychology, who from today’s perspective deserve the credit for the decisive contribution to the institutionalization of experimental psychology in Germany. These are Wilhelm Wundt (1832–1920), Carl Stumpf (1848–1936), Hermann Ebbinghaus (1850–1909), Georg Elias Müller (1850–1934) and Oswald Külpe (1862–1915). All of these leading advocates of the early experimental psychology held chairs in philosophy departments, while together they introduced a “hybrid” academic role of a philosopher and experimental scientist, or “philosopher-psychologist”.20

1.1 Psychology as a Geisteswissenschaft: Roots of experimental psychology

From 1818 to 1914, there were 22 universities in the German states (excluding Austria). The four typical faculties at each university were those of theology (catholic and/or protestant), law, medicine, and philosophy (arts and sciences). In this system the faculty of philosophy had been conceived as the heart of a philosophically and philologically oriented system of higher education. Embodying the theoretical unity of knowledge, it was to devote itself to pure scholarship and to general education (Bildung), defined as the full development of the student mind, spirit, and character. In practice, since 1810 the faculty of philosophy also carried out the more specific task of preparing teachers for the classical secondary schools. In a way, it thus was a professional faculty in its own right. During the early decades of the 19th century, the faculty of philosophy transcended its initial philological emphasis and teacher-preparatory function. It was eventually to emerge as the most general of the German faculties and by far the largest as well.21

Yet, in the course of the 19th century, philosophy’s authority over other disciplines increasingly weakened. This was replaced by a variety of “communication communities” (Kommunikationsgemeinschaften) that were centered around separate systems of knowledge and wrapped into increasingly autonomous institutional structures, i.e. academic disciplines.22 Methodological progress in physics, chemistry and physiology not only yield new insights but also brought about a new level of legitimation to exact disciplines while academic philosophy (in particular natural philosophy) was increasingly forced into a marginal position.23 As the Neo-Kantian Wilhelm Windelband pointed out:

20The two observations were made my Kusch, see [Kusch, 1995a, chap. 6].
21Cf. [Ringer, 1979, 35]. For an overview discussion of the German academic landscape in the 19th and the early 20th century, including academic politics and the discourses amongst academics, see [Vom Bruch, 2006].
22For an elaborate survey of the emergence of the academic disciplines in the German culture between 1740 and 1890 see [Stichweh, 1984].
23Cf. [Métraux, 1983, 21].
In the late 19th century, this tension between Naturwissenschaft and Geisteswissenschaft came to a head on the grounds of psychology, which has until then been a fully integrated domain at service of philosophy. In this function it enjoyed major acceptance as a doctrine of reasoning useful to make conclusions about the materiality and spirituality of the world and about the nature of the soul. In his 1908 historical retrospective the psychologist Hermann Ebbinghaus characterized it as a doctrine of pure meaning and genuine logic.

"Früher stand sie [= die Psychologie] durchweg im Dienste anderer Interessen. Die Kenntnis des Seelenlebens war nicht Selbstzweck, sondern nützliche oder notwendige Vorbereitung, um andere und für höher geltende Zwecke zu erreichen. Für die meisten war sie ein Zweig oder eine Dienerin der Philosophie. Man beschäftigt sich mit ihr, um vor allen Dingen herauszubringen, wie unsere Erkenntnisse zustande kommen oder wie die Vorstellungen von Dingen der Außenwelt sich bilden, und dies dann wieder, um sogleich metaphysische und ethische Rückschlüsse machen zu können, auf Geistigkeit oder Materialität der Welt, auf das Wesen der Seele, eine vernünftige Lebensführung u. a., oder auch wohl, um über alle diese Dinge willkommene Bestätigungen anderswoher stammender und bereits feststehender Meinungen zu erhalten. Für andere stehen praktische Zwecke im Vordergrund. Sie treiben Psychologie, weil ihre Lehrsätze dem praktischen Leben nahe liegen und für viele andere Wissenschaften von Bedeutung sind, weil sie z. B. 'möglichst deutliche Begriffe von der wahren Sitten verschafft' oder weil sie den Menschen lehrt, was er aus sich machen kann, was er etwa tun muß, um sein Gedächtnis zu erweitern oder gewandt zu machen usw."

[<Ebbinghaus, 1908, 14f.>]

Thus, psychology as a branch of philosophy inherited two main functions. One was to explain the knowledge of the external world; the other was an ethical task inherited from philosophy – to teach about what goals and accomplishments should be. Psychological claims were to be applied to other disciplines (as superior), and were as a matter of course of use to practical life, while empirical psychology was widely identified with the so called "introspection" – an experimental procedure in which the subject had to complete complex tasks and to provide a retrospect account of its cognitive processes during the task accomplishment. In the German philosophical tradition stretching back to Kant and Leibniz, introspection was limited to the knowledge of the phenomenal self, and was subordinate to the method of universal logic.

At the same time, negotiations between parapsychological and natural scientific ways to obtain insights about the functioning of the human mind gave the psychological discipline another piece of ground. Towards the end of the 19th century, Europe witnessed the emergence and flourishing of numerous associations, called "societies", devoted to parapsychological thinking, such as "hypnotism", "metaphysics" or "spiritism" along with the swift economic and population growth of that period. Among the biggest societies were the British Phrenological Society (founded in 1886) and the Société Magnétique de France (founded in 1887). The most popular and long lasting amongst those were groups devoted to topics such as occultism, spiritism, and so-called psychic research. They were mostly located in capitals, tolerant of the amateur and usually much engaged in professional politicking. Also the German Psychologische Gesellschaft (1887) and Gesellschaft für Experimentalpsychologie (1888) were, in fact, spiritist associations. All these societies played a dual role in the development of experimental psychology; they were its precursors and formed part of a movement, which the "new" psychology used as its springboard to build the own identity. They also claimed the term "experimental" for themselves and psychologists

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24Cf. [Ash, 1985a, 48].
25One will find an elaborated account on the history of introspection in [Danziger, 1980].
26Cf. [Gundlach, 1997, 536f.].
Between 1890 and 1920, a group of scholars convinced that psychology had to step back from metaphysical speculations and to work empirically instead manifested itself. Experience (resulting from experimentation) instead of metaphysical presuppositions or philosophical speculations had to become grounds for the investigation of mental life. At the same time, physiology was regarded as the model science investigating the human being objectively. The standing of physiology as the science concerned with all aspects of human life, which included processes of mind and soul, gained currency in the middle of the 19th century. It was supported by a whole range of German natural scientists, physicians and physiologists. In 1828, at the Berlin reunion of German naturalists and medical practitioners the Königsberg physiologist Carl Friedrich Burdach explicitly declared that psychology had its place in physiology, and "psychic life" was "subject to physiology". He further declares:

"dass das körperlich Organische und das Psychische bei aller ihrer specifischen Verschiedenheit [...] in einem generellen Begriffe zusammentreffen, nämlich dem des Lebens. Wird aber dies zugestanden, so ergibt sich von selbst dass die Lehre vom psychischen Leben eben sowohl als die vom körperlichen nur ein Bruchstück der Wissenschaft des Lebens überhaupt ist. Denn haben wir zwei Arten des Lebens, so müssen wir auch das Gemeinsame derselben, was jede Art zum Leben macht, zu erkennen streben; und wo geschieht dies anders als in der Physiologie?" [Burdach, 1829, 4f].

The following decades have seen the appearance of several physiological textbooks and disciplinary lexicons treating psychological topics and questions without questioning their belonging. As then the first laboratories with a psychological self-determination emerged towards the end of the century, it seemed natural that a whole variety of their laboratory equipments was borrowed from physiology. The then-existing academic journals, such as *Zeitschrift für Psychologie und Physiologie der Sinnesorgane* (since 1890), published work from both domains.

Wilhelm Wundt is usually credited with the institutionalization of experimental psychology within the philosophical discipline. He was the founder of the world’s first psychological laboratory at the University of Leipzig, established in 1879. By the end of the 19th century, a group of young scholars was formed, who were less famous than Wundt but in many respects they were co-founders of experimental psychology in Germany. These men established a network of academic institutions strictly bound neither to the traditional faculty divisions of the university system nor to the confines of a single university. By 1890, three psychological laboratories (or laboratory-like institutions) had been set up in the German Empire: that of Wundt in Leipzig, the Philosophical Seminar at the University of Göttingen, founded by G. E. Müller in 1887, and the Psychological Laboratory at the University of Freiburg in Breisgau, founded by Wundt’s student Hugo Münsterberg in 1889. Additional research institutes had been founded by the turn of the century — the most prominent ones among them are the Psychological Seminar in Berlin, founded by Carl Stumpf in 1894, and the laboratory in Heidelberg, founded in 1894 by Emil Kraepelin. Oswald Külpe established a laboratory in Würzburg in 1896. While Münsterberg left for Harvard in 1892 and Kraepelin devoted his research to psychiatry Wundt, Ebbinghaus, Müller, Stumpf and Külpe substantially contributed to the establishment of experimental psychology in Germany on the experimental, theoretical and institutional level.

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27 Cf. [Ash, 2006, 137].
28 Cf. [Ross, 1967, 467].
29 The paper appeared a year late, see [Burdach, 1829, 7].
31 See Max Plank Virtual Laboratory, vlp.mpww-berlin.mpg.de/index_html.
32 Cf. [Ringer, 1983, 280].
33 Cf. [Métraux, 1992, 374f].
34 Obviously, besides these five eminent scholars there were others committed to experimental psychology, who were influential enough to leave tangible footprints in the history of this discipline. For instance the Germans Rudolf Hermann Lotze (1817–1881)
Other steps on the way to institutionalization of experimental psychology were its first organs of speech. The Zeitschrift für Psychologie und Physiologie der Sinnesorgane, founded in 1890 by Hermann Ebbinghaus and Arthur König, and the Archiv für die gesamte Psychologie, founded by Ernst Meumann in 1903, became the dominant journals of experimental and general psychology, respectively, open to contributions from the entire German-speaking world and beyond. The Society for Experimental Psychology (Gesellschaft für Experimentelle Psychologie), founded in 1904, was set up by G. E. Müller, the Giessen psychiatrist Robert Sommer, and the experimentalist Friedrich Schumann, then assistant to Carl Stumpf in Berlin. Its members included professors of philosophy and physiology, physicians and Gymnasium teachers, in brief, as R. Sommer states in a reminiscence, these were representatives of "all branches, insofar as they based themselves upon grounds of experimental psychology".35

1.2 The first experimental laboratory: Wundt in Leipzig

The Leipzig school of psychology is generally associated with the name of Wilhelm Wundt. Wundt established the first laboratory for experimental research in Leipzig, in 1879, after shifting from physiology to a professorship in philosophy. In 1883, he founded a journal entitled Philosophische Forschung in order to make the Leipzig work public. This journal purposely referred to philosophy rather than to psychology as Wundt considered himself a philosopher and envisaged to demonstrate that “this new psychology was entitled to be part of philosophy”:


In his landmark work on experimental psychology Grundzüge der physiologischen Psychologie (1874) Wundt emphasizes that the experimental method is the only way to produce reliable results.

“Dem gegenüber liegt nun der Schwerpunkt des psychologischen Experimentes darin, daß es eine zuverlässige Selbstbeobachtung überhaupt erst möglich macht […] . In dem Maße als sich die heutige Forschung dieser allgemeineren Bedeutung des Experiments bewußt geworden ist, hat sich daher der Begriff der experimentellen Psychologie über seine ursprünglichen Grenzen hinaus erweitert, indem wir nunmehr unter ihr nicht mehr bloß die direkt dem Experiment zugänglichen Teile, sondern die gesamte individuelle Psychologie verstehen […]” [Wundt, 1908a, 6f.].

The Leipzig school, which centered around Wundt’s laboratory, searched for universal laws of mental functioning. Human sensation and perception were main areas of research, chosen by Wundt since and Gustav Fechner (1801–1887). The first, Lotze was a German philosopher and logician, whose medical studies became pioneering works in experimental psychology. He taught two generations of students at Göttingen to recognize the importance of empirical research in psychology for the resolution of philosophical problems. The other, Gustav Fechner, who held a position at Leipzig, played a significant role in the history of psychology as the founder of “psychophysics”, a domain searching for lawful relations between subjective psychic experience and measurable physical stimuli. Both paved the way for the establishment of the first experimental laboratories. Cf. [Britannica, c, Britannica, b]. Mitchell Ash gives an overview over the biggest psychological institutes between 1874 and 1914 in: [Ash, 1980, 272] and [Ash, 1995, 415f.]. For further details see also [Geuter, 1986, 13-85].

35”Daraus entstand der Plan, die Vertreter dieser sämtlichen Richtungen, soweit sie auf dem Boden der experimentellen Psychologie standen, organisatorisch zusammenzufassen” [Sommer, 1932, 9]. Cf. also [Ash, 1980, 266].
they most clearly fulfilled his fundamental methodological requirements. Matters of secondary order were those concerning memory, imagery and attention, as the chosen experimental method was partly applicable to these. To be more concrete, the psychologists were trying to get at processes going on within individual minds that were, however, replicable in all (normal, adult) minds. Experiments were designed to provide evidence of these universal intraindividual processes and their special form of determination, the laws of “psychic causality” (as a pendant to the “causal analysis” in the natural science). Wundt believed that in case of physiological processes one could, in principle, infer from the properties of the parts to the properties of their synthesis. Yet, for the case of mental synthesis this would be altogether impossible; one could not predict a complex psychological resultant from the knowledge of its elements. What one could hope for, though, was a retrospective explanation of the outcomes in terms of its components. This principle, building the central difference between synthetic processes in the physical and in the mental world, determined the very existence of psychology as a discipline in Wundt’s sense. As a consequence, the experimental approach of Wundt’s Leipzig group sought to split the human mind into its basic units, which he called “elements of consciousness” (Elemente des Bewusstseins), and to analyze these as separate entities.

Wundt’s methodological revision of psychology’s territory resulted in a rejection of the method of “introspection” that had been fundamental to the philosophical psychology of the 19th century. As part of this he introduced the distinction between the introspection as ”self-observation” (Selbstbeobachtung) and “internal perception” (innere Wahrnehmung) judging that “internal perception” is foundational to experimental psychology quite oppositely to “self-observation”, which Wundt claimed scientifically unacceptable. The reasons for this were many: it prevented the experimenter from controlling or initiating the studied phenomenon; neither could he observe the phenomenon on his own, nor was he capable to precisely replicate the experiment or to modify its structural elements. Also the procedure of “internal perception” had to obey a set of rules in order to have a place in Wundt’s scientifically inspired experimental system. By and large, the method of internal perception was modeled after the external perception. The observation and report ought to follow immediately after the original perception; time for reflection and self-consciousness was not included. Replicability of experience had to be ensured. The experimenter’s tasks was strictly limited; he made sure that stimuli were presented as intended and that results were properly recorded. Apart from that, he remained as passive as possible during the course of the experiment. All in all, the Leipzig understanding of psychological experimentation was not far from that of natural science where the object (replaced by the subject) regarded himself as responding to physical stimuli.

The Leipzig experimental equipment was to a large extent shared with physics and physiology. Together with his students, Wundt conducted a remarkably multifaceted range of experiments on psychology and physiology of sense organs, on reaction times and associations, and in psychophysics. For the most part, experiments involved the “non-introspective” use of quantitative data; these were “behavioral” data that were measured and described in exact units. Even in the area of sensation and perception qualitative reports were largely excluded or limited themselves to the simplest judgments.

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36 Cf. [Danziger, 1980, 248].
37 See [Wundt, 1908a]; [Wundt, 1882, 206-8]; [Wundt, 1883a, 482]; [Wundt, 1888, 302]. Cf. also [Ash, 1980, 260-4], as well as [Danziger, 1979, 207f.], [Danziger, 2001, 78f.].
38 Wundt also re-employed the Kantian notion of ”apperception“ to delineate the process of human perception, in which single sensations and impressions organize themselves into an interconnected whole. The experience of this whole then becomes foundational to reactions.
39 Danziger notes that English-language references to Wundt’s position fail to reproduce this distinction and use the term “introspection” to point to both concepts indiscriminately [Danziger, 1980, 244].
40 See [Wundt, 1908a]; [Wundt, 1882, 206-8]; [Wundt, 1883a, 482]; [Wundt, 1888, 302].
41 Das Verhältnis der experimentellen Psychologie zu den benachbarten naturwissenschaftlichen Gebieten, speziell zur Physik und Physiologie, bringt es mit sich, daß jener ein großer Teil des Instrumentariums, über das sie verfügen muß, mit diesen gemeinsam ist [Wundt, 1909, 126].
43 See [Wundt, 1908a, 71:].
44 Cf. [Danziger, 1980, 244-248, 250].
Despite his putting to work a great deal of natural-science methods and apparatus, Wundt’s idea of experimental psychology had just one foot in the camp of the natural sciences. He considered problems in the areas of thinking, affect, volition and “psychology of cultures” (Völkerpsychologie) to be simply not researchable through experimental methods. Therefore, in his late years he devoted a lot of efforts to shaping a non-experimental “psychology of cultures,” which would tackle those areas.45

Apart from the research output, the history of psychology does not know many examples comparable to Wundt’s Leipzig school in terms of productivity and influence. In his 45 years of tenure Wundt supervised 186 dissertations, two-thirds of which were in (experimental or theoretical) psychology. Several of Wundt’s students became eminent psychologists in their own right in and outside Germany.46

1.3 Measurement of higher mental functions: Hermann Ebbinghaus in Breslau and Halle

Hermann Ebbinghaus (1850–1909) is probably the first to proclaim psychology a Naturwissenschaft (1873).47 Despite of his training in philosophy Ebbinghaus was largely influenced through the combination of philosophical and scientific points of view that he found in Fechner, a copy of whose Elemente der Psychophysik he picked up in a Parisian secondhand bookstall. In the Grundzüge der Psychologie (1897–1908), which he dedicated to the memory of Fechner, Ebbinghaus makes a first systematic attempt to establish psychology on a quantitative and experimental basis.48 Ebbinghaus occupied the chair in psychology at Breslau in 1894, then a professorship at Halle, in 1905; in both Breslau and Halle he was able to establish psychological laboratories.49

Ebbinghaus made it his goal to bring clear and exact methods into psychology, which resulted in an extraordinary care for experimental techniques and apparatus.50 He became famous for his complex statistical analysis of learning and forgetting processes; i.e. he brought memory, a fundamental higher mental function, inside the laboratory. Prior to Ebbinghaus, such precision was essentially the prerogative of physiological research.

“Dieses Streben, in die Wissenschaft vom Seelischen reine und durchsichtige Methoden einzuführen, war der Ursprung seiner ungemeinen Sorgfalt in der experimentellen Technik… Die Sorgfalt auf instrumentellem Gebiete war nur der äussere Ausdruck seines Strebens nach Reinheit und Stringenz der Methode im Gebiete der psychischen Forschung” [Jaensch, 1909, 5].

Ebbinghaus searched to identify fundamental law of mental activity that would be comparable to scientific laws. He was the first psychologist, who made an effort to study association in terms of laboratory experimentation. Studying the memorization of nonsense syllables he related the efficiency of the memory

45Wundt had repeatedly argued against the appropriateness of the experimental method for investigating topics in these fields. On "the processes of thought in themselves" see [Wundt, 1883b, 26]. On the "feelings and their complex connections, affects and processes of volition" see [Wundt, 1908b, 173]. See also [Wundt, 1882, 208] and Wundt’s Völkerpsychologie, 10 vols. (Leipzig: Engelmann, 1900–1920). Cf. also [Danziger, 1980, 247f.].

46Tinker gives a seemingly complete overview over Wundt’s students’ careers. The list includes many prominent names, founders of new laboratories and psychological currents, such as Oswald Külpe (the leading psychologist at the University of Würzburg), Ottmar Dittrich (who continued Wundt’s work in psycholinguistics by heading the group on phonetics and psychology of language at the University of Leipzig). Many of Wundt’s students contributed to the international spread of German psychology, for instance, James McKeen Cattell (the first professor of psychology in the US), G. Stanley Hall (the father of child and adolescence psychology and head of Clark University), Charles Judd (Director of the School of Education at the University of Chicago), Hugo Münterberg (who set up a great psychological laboratory at the Harvard University), Walter Dill Scott (who contributed to the development of industrial psychology and taught at Harvard University), Edward B. Titchener (who founded the first psychology laboratory in at Cornell University, US), Lightner Witmer (founder of the first psychological clinic in his country); the Englishman Charles Spearman (who developed the two-factor theory of intelligence and several important statistical analyses, Spearman’s rank correlation coefficient); the Romanian Constantin Rădulescu-Motru (personalist philosopher and head of the Philosophy department at the University of Bucharest). Cf. [Tinker, 1932, 630-637].

47See his Ph.D. thesis, [Ebbinghaus, 1873, 2].

48Cf. [Ebbinghaus, 1897].

49One will find a helpful account on the life and work of Hermann Ebbinghaus in [Shakow, 1930]. Another account is given by Ebbinghaus’ former student Jaensch, see [Jaensch, 1909].

50Cf. for instance, [Ebbinghaus, 1902].
to the persistence of memory traces in the brain. In his landmark study *On Memory: An Investigation in Experimental Psychology* (Über das Gedächtnis, 1885) he formulated the so called “law of association”: The stronger the memory, the longer the period of time that a person is able to recall the syllables.51 This approach that searched to locate modes of perception between objective physical stimuli and the thereby provoked subjective psychic sensations was later named “psychology of association” (Assoziationspsychologie).

His vivid personality made Ebbinghaus an outstanding lecturer, but he seemed to have shown few interest in producing a cavalcade of students or initiating a movement.52 According to the testimony of his student Jaensch, “he never urged another to undertake an investigation; in fact, if one wanted to work with him one had to practically obtrude oneself upon him”.53 The influence of Ebbinghaus’ work on memory and associations can hardly be exaggerated. It was succeeded by a whole wave of supportive and critical after-studies, and became the starting-point for practically all the work which has followed in this field. G. E. Müller, Narziss Ach and Kurt Lewin are among those who followed up on Ebbinghaus’ experiments (see Part II). With the work accomplished in his two experimental laboratories and the 50 volumes of *Zeitschrift für Psychologie* published up to his death, Ebbinghaus virtually left behind a complete portrait of psychology of two decades, i.e. 1890 to 1910 (with the exception of the Wundtian school products, which were being published almost entirely in *Philosophische Studien*).54

1.4 Psychology as an exact science: Georg Elias Müller in Göttingen

Georg Elias Müller (1850–1934) was appointed chair of philosophy at the University of Göttingen in 1881. In 1887, he founded and became director of the Philosophical Seminar, developing into one of the major centers of psychological research in Germany; he held this position until 1921. During this whole period, Göttingen was Germany’s third best equipped psychological lab (after Wundt’s Leipzig and Stumpf’s Berlin).55

A student of Lotze, Müller was a devoted adherent of the natural scientific method in psychology.56 Similarly to Ebbinghaus he limited his research almost exclusively to experimental psychology making occasional excursus into logic in the interest of developing more rigorous research methodology. Müller contributed to the advancement of the domains of sensation, memory, learning, visual perception (perception of colors) and psychophysics. By the mid-1890s, Müller began to extend Ebbinghaus’ pioneer efforts on memory and learning, as well as to explore the stimulus-response correlation in vision. He made a thorough analysis of Ebbinghaus’ methods and began to distinguish the active processes, such as conscious organization, in learning.57

One could say, the central effort of Müller’s lifework was to provide psychology with exact methodology securing its position amongst the sciences. He did not struggle to construct any system of psychology but was rather holding himself to experimental work and doing just as much theorizing as the experiments required. His students in Göttingen were trained in the spirit of correct measurement and kept research forth from individual perceptions and world views. Amongst Müller’s assistants were Narziss Ach (1901–1904), who followed up Müller’s research on memory and associations, Hans Rupp (1904–1907), who then became Stumpf’s assistant in Berlin, and David Katz (1907–1918), who became closely

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51 See [Ebbinghaus, 1885]. Ebbinghaus’ work on memory and associations is further discussed in Chapter 6.
52 Cf. [Shakow, 1930, 507f.].
53 “Der Wunsch, Schüler zumachen, lag ihm fern. Niemals drängte er jemanden zu einer wissenschaftlichen Unternehmung, ja, im Gegenteil, man musste sich ihm, wollte man bei ihm arbeiten, förmlich aufdrängen” [Jaensch, 1909, 6].
55 On Müller’s career see [Boring, 1929, 361-373] and [Katz, 1936, 234-240].
56 “Seine Lebensarbeit würdigen heisst sowohl wie die Schilderung der massgeblichen und entscheidenden Bemühungen um das Ziel, naturwissenschaftliche Betrachtungsweisen und naturwissenschaftliche Methoden auf psychologisches Gebiet zu übertragen” [Katz, 1936, 234].
57 Cf. [Behrens, 1997, 173-175]. Müller’s work on memory and learning is explored in Chapter 6.

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associate of the Gestalt psychologists in the 1920s.58

For his time, with the possible exception of Wundt, G. E. Müller was probably the most influential and prolific contributor of experimental psychology. However, his influence diminished around two decades from his death, due to the fact that neither of his major works was translated into English. Another reason was the quick change in the subject matter of experimental psychology.59

1.5 A mediation attempt: Carl Stumpf in Berlin

The Berlin Psychological Seminar, founded with an initial expenditure of 6,000 marks, a single assistant, and an annual budget of only 1,000 marks, began operating in the summer semester of 1894. Carl Stumpf (1848–1936) became its director after he had made important empirical contributions to the psychology of hearing and of perception. For this work, and for contributions to the theory of mathematics, he was granted one of the four existing full professorships before his 45th anniversary. With progressing time, enrollment in the seminar’s laboratory courses increased dramatically, from twenty-five in 1894 to more than fifty in 1907. Therefore in 1900, the Prussian government granted the psychologists a new and larger quarters. On this occasion, the seminar officially became an institute. By 1912, it boasted a budget of 4,400 marks (more than four times that of 1894), and became the second largest and by far the best-financed psychological laboratory in Germany.60

Trained under Franz Brentano (1838–1917)61 and Rudolf Hermann Lotze to respect psychological research and to recognize its relevance for philosophy, Carl Stumpf’s position was that of a mediator between the philosophical and the scientific approach to psychology. For instance, in his essay "Psychology and Epistemology" (Psychologie und Erkenntnistheorie, 1891) Stumpf intends to mediate between the neo-Kantian interest in principles of pure reason and the psychologists’ calls for attention to the facts of mental life. Psychology’s task, he argued, is to investigate the origin of concepts empirically, by determining "the exact ideas and the characterization of the aspects or modes of alteration of these ideas" (Bestimmung der jeweiligen concreten Vorstellung und [...] Charakerisirung der Momente oder Veränderungsweisen dieser Vorstellung) as they appear to the experiencing subject. The task of epistemology is to seek out and determine the logical foundations of “the most general, immediately evident truths” (die Aufsuchung der allgemeinsten unmittelbar einleuchtenden Wahrheit) such as the geometrical axioms.62 Different as these tasks may be, both in goal and in method, Stumpf concludes that they do not belong to different disciplines; for neither can be performed without the other.

“The theorist of knowledge cannot ignore the question of the origin of the concepts; he must be fully engaged in the depths and difficulties of this problem as an expert. The psychologist must at the same time be a theorist of knowledge, not only because judgments of knowledge are a special class of judgment-phenomena that need be described as well as the physical phenomena, but primarily because he must have clarity about the foundations of all knowledge, as anyone must for whom science is more than artisanry” (Stumpf 1891).63

58 Cf. [Katz, 1936, 235], [Boring, 1929, 367f.].
59 Cf. [Behrens, 1997, 172f.].
61 Brentano was German philosopher generally regarded as the founder of act psychology. He had great influence with his work, “Psychology from an Empirical Standpoint” (Psychologie vom empirischen Standpunkte, 1874), in which he tried to present a systematic psychology that would be a science of the soul. Brentano counted Sigmund Freud, Carl Stumpf, Edmund Husserl, and Tomáš Masaryk, the founder of modern Czechoslovakia, to his students. Cf. [Britannica, a].
62 See [Stumpf, 1892, 501f.]. Stumpf later extended this two-tiered conceptual framework to embrace all of the sciences in [Ebbinghaus, 1906]. Cf. also [Ash, 1995, 30f.].
63 "Der Erkenntnistheoretiker kann an der Frage nach dem Ursprung der Begriffe nicht vorbeigehen; er muss in die Tiefen und Schwierigkeiten dieses Problems als ein Fachmann eingedrungen sein; und der Psychologe wiederum muss Erkenntnistheoretiker sein, nicht blos weil die Erkenntnisurteile eine besondere Classe von Urteilsphänomenen bilden, die wie psychische Phänomene beschrieben sein will, sondern vor allem weil er wie jeder, dem seine Wissenschaft mehr als ein Handwerk, über die Grundlagen alles Wissens Klarheit haben muss" [Stumpf, 1892, 508].
Searching for the laws of psychology (like for instance Wundt) Stumpf insisted that these were immanent to the phenomena themselves.

The Berlin laboratory undertook research in the areas of perception of colors and sound, association and will, child and animal psychology. Stumpf was specifically interested in problems of hearing — the so called tone psychology (Tonpsychologie) and musical ethnology (musikalische Ethnologie). He was a dedicated experimentalist, whose superordinate goal was to characterize the investigated phenomena precisely using both philosophical and experimental means. To this end his laboratory made use of precision apparatus as well as of controlled introspection (or self-observation). Therefore in Berlin (as in Wundt's Leipzig) the goal of training was to create an elite of capable experimenters. Stumpf's doctoral students had to produce long and accurate reports of what subjects had experienced in the experimental set-up. Moreover, they needed to be able to accurately observe and report their own experience.64

Throughout his investigations in musical harmonies Stumpf noticed that the perception of a composition does not equal the perception of a sum of single tones; with those studies in perception of sounds he most probably stimulated the upcoming generation of students, the future founders of Gestalt psychology.65 During Stumpf’s directorship in Berlin (1894–1922) he counted Friedrich Schumann (1894–1905), Erich von Hornbostel (1905–1906), Narziss Ach (1906–1907), Hans Rupp (1907–1910), Adhemar Gelb (1910–1912) and Johannes von Allesch (1912–1921) to his assistants; many of them began successful academic careers with Stumpf.66 Max Wertheimer (1880–1943), Kurt, Koffka (1886–1941), Wolfgang Köhler (1887–1967) and Kurt Lewin (1890–1947) — the future leaders of the Gestalt psychological school were all trained by Carl Stumpf in Berlin.67

1.6 Revival of introspection: The Würzburg School

At the turn of the century, new psychological groups emerged. Younger psychologists did not fully share Wundt’s notion of psychological experimentation. Not all of them supported Wundt's banishment of the introspection, nor were they willing to accept his distinction between experimental and not-experimental fields. The most influential of these groups forgathered at the psychological laboratory in Würzburg, which was founded in 1896 and headed by Wundt's former student Oswald Külpe (1862–1915). Besides Külpe, Karl Marbe (1869–1953), Karl Bühler (1879–1963) and Narziss Ach were the main figures behind the movement known as the “Würzburg School”. While Ebbinghaus, Stumpf, Wundt, and Müller constitute the status quo of German psychology around 1890, Külpe, the youngest one of the group, whose psychology of thought represents the beginning of a follow-up movement that reacted to the situation in German psychology before 1890. The list of Külpe’s students and associates was long and included Narziss Ach, Otto Selz (1881–1943), and Johannes Lindworsky (1875–1939), who were about to become pioneers of psychology of will and thought, as well as Max Wertheimer and Kurt Koffka, who then founded the Gestalt psychological school.68

The Würzburg School rehabilitated introspection as a valid research method changing the emphasis.69 The new “systematic introspection” transcended the very narrow limits of classical Wundtian experimental introspection. First, subjective reports were now used on a regular basis, usually for every experimental trial, and it were these, rather than more objective measures, which provided the essential data for the investigation. Second, the reports consisted to a large extent of qualitative descriptions of a type that seemed unacceptable to Wundt. Third, also the experimenter’s position changed: the importance

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64See [Stumpf, 1910, espec. 206]. On the training of young scientists under Stumpf see also Cf. also [Ash, 1995, 38-41].
65See [Stumpf, 1890]; cf. also [Ash, 1995, 39f.].
66Cf. [Stumpf, 1910, 205] and also [Geuter, 1986, 15].
67An extended account on Stumpf’s student training in Berlin can be found in Section 3.1. For Stumpf’s intellectual autobiography see [Stumpf, 1924]. An overview over Stumpf’s life and psychological work is given by [Boring, 1929, 351-361] and [Sprung and Sprung, 1995].
68More information on the Würzburg School can be found in [Boring, 1929, 393-402], Cf. [Lück, 2009, 65-68].
69Wie die eigene Erfahrung der Grundquelle, so ist die Selbstbeobachtung die Grundmethode der beschreibenden Psychologie. Alle Fortschritte derselben beruhen auf der Anwendung dieser Methode” [Lück, 2009, 45f.].
of detailed qualitative introspective reports accomplished by the subject increased substantially. Thus the experimenter’s questions had to become more persistent and to the point. In some cases the investigator’s role seemingly consisted in conducting a dialog with the subject. Now the subject responded to the questions directed at him by the experimenter (instead of physical stimuli). Since the subject ought to be able to give an intelligible account of what went on in his mind while he attempted to solve the experimental tasks the introspection became less a question of observation than a matter of communication.\footnote{The most explicit advocate of these methods was Narziss Ach, who coined the term “systematic experimental introspection.” See [Ach, 1905, 41]. Cf. [Segal, 1908, 124-235] and [Danziger, 1980, 251-253].} Thus, experiments of the Würzburg school consisted of systematic self-observations during the thinking process. Subjects were asked to describe their own reasoning while solving complex tasks in detail or to give their associations to selected stimuli. Külpè insisted not only upon instructing the subject on techniques of self-observation but requested the experimenter to do the same, too.

“Aber auch der VI hat heute eine große Bedeutung gewonnen, indem er sich nicht bloß als technischer, sondern auch als psychologischer Leiter der Untersuchung zu fühlen und zu benehmen hat. Er muß die Versuche möglichst innerlich mitmachen” [Külpe, 1920, 47].

Due to such high expectation towards the personal involvement of the experimenter with her/his study also the social order of the Würzburg experiments significantly differed from that practiced in Leipzig.\footnote{On the “Leipzig model” of experimentation see, e.g. [Kusch, 1995a, espec. 340-343].} To Wundt, who had formulated strict experimental rules inspired by natural science, these were “feigned experiments” (Scheinexperimente), of course.\footnote{See [Wundt, 1907, 307-12].}

The Würzburg school of psychology initiated the experimental research of higher mental functions by studying psychological processes of thought and volition. Contradicting Wundt’s claim that higher mental functions could not be investigated in the lab, the Würzburg psychologists accomplished for the process of thought what Ebbinghaus had accomplished for memory—they made it measurable. They claimed that thoughts, termed as “imageless thought”, could occur without a particular sensory or imaginal content. “Conscious attitude” (Bewusstseinslage), Marbe’s term, or “awareness” (Bewusstheit), Ach’s term—a vague, intangible, conscious content that is not image or sensation—was the new imageless element of mind. Orth (1903), Watt (1904) and Ach (since 1905) carried out experiments, termed as “systematic experimental introspection” (Ach), in which they challenged the explanation of thinking processes by contrasting the power of association against the impact of volition on active problem solving.\footnote{See [Orth, 1903, Watt, 1904, Ach, 1905]. Part III of this dissertation expands on Ach’s experimental work.}

At the same time, the experimental work of the Würzburg school was deeply rooted in philosophical psychology. According to Edward Boring, “it would seem that Külpè was more concerned, during the first decade of the present century, with philosophy and esthetics than with psychology” [Boring, 1929, 394]. His own books were devoted to philosophy. It is therefore likely that a great deal of his leisure time was devoted to philosophy. However, his staff produced a whole range of experimental outcome. So, to say it with Boring, “psychology was philosophy for Külpè just as much as it was for Stumpf” (ebd. 401).\footnote{Cf. [Mack, 1997].}

### 1.7 Early experimental styles in summary

Despite a whole spectrum of differences, the experimental psychologists of the first generation shared distinct points of view on their work. All of them were eager to adapt natural scientific methods of experimentation. Many of them believed that the recognized objectivity of natural-scientific methods could become key asset in the struggle for legitimacy of experimental psychology and its emancipation from the speculative philosophy. Therefore a tendency appeared to restrict psychology’s subject matter to
topics that could be addressed by the natural scientific methods and apparatus then available. The restricte
d areas, however, varied; while psychophysics, sensory psychology and psychology of perception (visual, hearing, attention span) were accepted early; the experimental accessibility of higher mental functions, such as memory, volition and thought, was widely disputed. Simultaneously, experimental psychologists used physiological and physical analogies in order to describe their findings. There was a strong temptation to speak of processes of the mind in natural scientific terms, which reinforced the interdisciplinary shape of the conceptual system for the new field.

All the men, who institutionalized experimental psychology in Germany, had a solid training in philosophy. Thus, philosophical thinking determined their reasoning and research at least to some extent. Some of them, such as Stumpf and Külpe, attempted to find a middle ground and integrate philosophical and psychological research. Others, for instance, Wundt, searched to distinguish philosophy’s and psychology’s methods and areas of application. The third group, Ebbinghaus, Müller and their associates, made its academic position of the rejection of philosophical methods. However, through their distinct dissociation from philosophy they were no less influenced than the others.

As one can see, natural-scientific and philosophical elements were intertwined in the identity of experimental psychology from its beginnings while the notion of empirical psychological itself was disputed. The discussion of Kurt Lewin’s theoretical and experimental system (Parts II and III) demonstrates how the interdisciplinary roots were intertwined in the emerging field of psychology of human conduct.
<table>
<thead>
<tr>
<th>Leipzig School (Wundt)</th>
<th>Göttingen, Breslau, Halle (Ebbinghaus, Müller)</th>
<th>Marburg School (Külpe, Selz, Ach)</th>
<th>Berlin School (Stumpf)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Positioning psychology</strong></td>
<td>▪ Psychology as part of philosophy applying scientific methods and using physiological apparatus</td>
<td>▪ Psychology as an independent discipline with natural-scientific methods</td>
<td>▪ Psychology as part of philosophy applying scientific methods and using physiological apparatus</td>
</tr>
<tr>
<td><strong>Research goal</strong></td>
<td>▪ Search for universal laws of mental functioning (laws of “psychic causality”) ▪ “Deconstruction” of the mind and analysis of its basic units (“elements of consciousness”)</td>
<td>▪ Search for exact (quasi-scientific) laws and functions of the mind</td>
<td>▪ Search for universal structural elements and individual differences of mental functioning</td>
</tr>
<tr>
<td><strong>Area of psychological research</strong></td>
<td>▪ Experimental areas: sensation and perception; ▪ Semi-experimental areas: memory, imagery and attention ▪ Non-experimental areas: thinking, affects, volition and culture</td>
<td>▪ Measurement of higher mental functions: memory. ▪ Other research areas: learning, sensation, visual perception (perception of colors) and psychophysics</td>
<td>▪ Perception of colors and sound, association and will, child and animal psychology ▪ Tone psychology and musical ethnology</td>
</tr>
<tr>
<td><strong>Experimental methods</strong></td>
<td>▪ Refusal of introspection ▪ “Internal perception” modeled after “external perception” ▪ Exact measurement of behavioral data (e.g. reaction times) ▪ Principle of repeatability of experiments ▪ The experimenter remains neutral</td>
<td>▪ Exact measurement of behavioral data ▪ Research fourth from individual perceptions and world views ▪ Statistical analysis of data</td>
<td>▪ Systematic instructed introspection ▪ Interview-like style of experiments: active role of the experimenter, subjective qualitative reports</td>
</tr>
</tbody>
</table>

Table 1: Early experimental styles (an overview)
2 Defining psychology’s territory (1910–1933)

2.1 Psychology’s struggle for existence: Lehrstuhlstreit

In the 1910s, philosophy in Germany headed for an inner-disciplinary crisis. This crisis was mainly caused by the emancipation of natural science, which heavily nagged at philosophy’s self portrait as crown of other disciplines. In this context, the situation of experimental psychology that found itself in the centre of the controversy was even more fragile. Psychology remained both institutionally and intellectually a branch of philosophy. In the 1850s, German universities had just one funded professorship per university for each fundamental discipline, mainly financed through student fees. By the 1910s, the big universities, such as Berlin and Leipzig, arrived at up to 3 chairs for philosophy, one of which could be jointly co-occupied by philosophical side branches, such as psychology, pedagogy and history. Thus, if psychology was to rise within philosophy, it would leave fewer positions to ‘pure’ philosophers.\(^75\) Furthermore, the tremendous expansion of scientific funding in the Wilhelminian Germany did not touch philosophy in the same way as other disciplines. Between 1892 and 1913 the number of full professorships increased from 39 to 44, but the number of experimental psychologists that held such chairs more than tripled, namely from 3 to 10.\(^76\) Alongside with this one could observe a tangible increase of research productivity in experimental psychology: The number of serial publications in German language grew from 3 in 1880 to 59 in 1925.\(^77\) Thus, philosophy’s funding was too scarce for expensive psychological laboratories. If psychology as a branch of philosophy was to embark upon an experimental course, akin to physiology and natural science, philosophy would become much more expensive. In sum, psychology’s path towards an academic emancipation was inhibited not only by matters of mind but by pragmatic interest related to funding and academic politics.

Negotiations between theorists and experimenting psychologists centering on a struggle over academic positions (Lehrstuhlstreit) became increasingly conflictual. Additionally, the experimenters tried to advance their position by advertising the direct applicability of experimental results, especially in such areas as the examination of witnesses in court and the determination of moral responsibility in cases of insanity.\(^78\) In 1912, an appointment decision transformed the controversy into a crisis. To fill the chair remaining after the retirement of the doyen of Marburg Neo-Kantianism, Hermann Cohen, the philosophers there recommended Ernst Cassirer, who shared similar views. At the same time, the natural scientists had been pressing for years for the appointment of an experimenting psychologist. The eventual appointment of the philosophically trained experimenter Erich Jaensch lead to a far-reaching protest movement by means of an open letter; initiated by such renowned philosophers as Paul Natorp, Rudolf Eucken, Edmund Husserl, Wilhelm Windelband, Heinrich Rickert, Hermann Cohen and Alois Rhiel, and signed by 107 German and Austrian university teachers in total, which made about two-third of philosophy teaching staff at all German-speaking universities.\(^79\) The letter postulated the following:

“Es muß im gemeinsamen Interesse der beiden Wissenschaften sorgfältig darauf Bedacht genommen werden, daß der Philosophie ihre Stellung im Leben der Hochschulen gewahrt bleibt. Daher sollte die experimentelle Psychologie in Zukunft nur durch die Errichtung eigener Lehrstühle gepflegt werden und überall, wo die alten philosophischen Professuren durch Vertreter der experimentellen Psychologie besetzt sind, ist für Schaffung von neuen philosophischen Lehrstühlen zu sorgen”.\(^80\)

The letter was published in all professional philosophy journals and sent to Ministries of Education and Cultural Affairs. This act of open lobbying was an unprecedented step in the history of a discipline

\(^75\)See [Ash, 1980, 267f.] and [Hoffman and Deffenbacher, 1992, 9ff.].

\(^76\)Cf. [Frischeisen-Koehler, 1913, 371].

\(^77\)Cf. [Kusch, 1995a, 123].

\(^78\)Cf. [Goldschmidt, 1912, 96].

\(^79\)Cf. [Ash, 1995, 46f.].

\(^80\)The full text of the declaration was reprinted e.g. in [Frischeisen-Koehler, 1913, 371].
whose members thought of themselves as being above politics. In 1913, the then 80 years old Wilhelm Wundt reacted to the escalation of the controversy with a polemical essay Psychology in the Struggle for Existence (Die Psychologie im Kampf ums Dasein), in which he argued for the preservation and extension of the status quo on both intellectual and practical grounds.\(^81\)

Wundt’s essay brought about a whole range of polemical writings defending philosophy’s and psychology’s position and status. For instance, the experimental psychologists aimed at showing their relevance for other applied and academic fields, including arts, literature and linguistics, history, jurisprudence and political economy.\(^82\) Psychologists emphasized that their research could become in various ways a determinant contribution to philosophical problems. In the essay tellingly entitled Die Aussperrung der Psychologen the Innsbruck psychologist Franz Hillebrand argued that experimental psychology of perception was about to design the path for epistemology, the emerging psychology of thought enriched the doctrine established by hermeneutic and logic, as psychology brought forward decisive arguments in the struggle against metaphysics.

“Wieviel nutzlose Kontroversen wären ferner der Metaphysik und Erkenntnistheorie erspart geblieben, wenn die Untersuchungen über Wesen und Ursprung unserer Raum- und Zeitschauung anderthalb Jahrhunderte früher gemacht worden wären oder wenn sie wenigstens gegenwärtig von den 'reinen Philosophen' der Beachtung wert gehalten würden, anstatt dass die Fiktion ihres apriorischen Charakters noch bis zum heutigen Tag ihr Unwesen triebe!” [Hillebrand, 1913, 12].

Külpe’s student Karl Marbe, who had founded the Frankfurt Institute for Psychology, particularly outlined psychology’s productive involvement in natural scientific research, for instance in fields like psychophysics, physiology and medical psychiatry.\(^83\) Moreover, psychologists developed new significant application areas, such as the pedagogical psychology, psychotechnics and diagnostic techniques.\(^84\) In contrast, in the Wilhelmine Germany, philosophers made particularly two points to defend the relevance of research based on pure reasoning. These were ideological and pedagogical challenges that had to be met. For ideological reasons, philosophers were busy developing a normative worldview. The pedagogical challenge was that of its mediation to the body of students, i.e. to the future educational elite. The philosopher Georg Simmel amongst others outlines this special role for society as a contribution to the challenge of the time.

“Mit all ihrer Unzulänglichkeit, mit aller Vergänglichkeit ihrer die Ewigkeit postulierenden Lehren bietet die Philosophie der gestrigen Entwicklung einen neuen durch nichts Anderes ersetzten Werth. Was man, vielleicht etwas anmaßend, als philosophische 'Weltanschauung' bezeichnet, hat eine innere Bedeutung für uns, die in die sonst geltende Alternative exakter Wissenschaftlichkeit und subjektiver Willkür nicht einzusperren ist und nach der seit geraumer Zeit wieder eine starke Sehnsucht der Jugend erwacht ist [...]. Denn sie [= die Jugendlichen] wollen, außer all den vortrefflichen Belehrungen spezialistischer und exakter Art, noch etwas Allgemeineres oder, wenn man will, Persönlicheres, das freilich auch die Behandlung der Geschichte, der Kunst, der Philologie geben kann, das aber die Philosophie am Reinsten und Vollsten, trotz ihrer fachlichen Fragwürdigkeiten, zu bieten vermag” [Simmel, 1913, 233].

If experimental psychology wanted to keep its position within the philosophical faculty it had to stick to these priorities, and psychologists, as affiliated within philosophy, were expected to meet these ideological and pedagogical requirements.

Finally, political authorities predetermined the controversy’s eventual dissolving. In 1912, at the Yearly Congress of the Society for Experimental Psychology, the Berlin mayor emphasized that psychologists were expected to soon deliver “solid, tangible outcome of psychological research” (handfeste, greifbare

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\(^{81}\) See [Wundt, 1921].  
\(^{82}\) Cf. for example, [Marbe, 1913].  
\(^{83}\) Cf. [Marbe, 1913].  
\(^{84}\) Cf. [Jaeger, 1985].
Ergebnisse der Psychologie) that could be applied in such domains as the assessment of testimonies in court of the accountability of mental illness. By this time it became clear that if the proponents of experimental psychology hoped to gain political support they needed to make the step beyond the ground of pure academic research in order to prove and provide the extended applicability of their work. The outbreak of the war sparked an unexpected acceleration of this process.

2.2 The functional commitment: Psychology as a Naturwissenschaft

"Die Anfänge der modernen angewandten Psychologie liegen vielleicht noch mehr außerhalb als innerhalb des Feldes der Psychologie selbst" [Münsterberg, 1914, 25].

In the prewar period, the commitment to functional (or applied) research made by a majority of psychologists substantially extended psychology’s territory, and stimulated its emancipation as an academic and applied discipline. History of science knows a long range of cases in which social and practical problems stimulated research, and practitioners’ experience helped reshaping the essentials of a discipline no less than the work of theorists. Psychology of the 1910s was no exception to this kind of dynamics. Nothing else than practical problems shaped its research practice and the theoretical realms. The fast growth of applied psychology, not only in German-speaking Europe, was largely a consequence of the success of the wartime industrial applications of psychology in testing programs and personnel classification systems. The constitution of the technological battlefield in the context of World War I sealed the alliance of technology and research in many fields including psychology.

In 1914, when the war broke out, only few German psychological laboratories were appropriately equipped for experimentation that would go beyond demonstrative and pedagogical needs. Among those the largest and most wealthy two were Leipzig and Berlin; others were Göttingen, Würzburg, Munich and Frankfurt. With the fast-growing significance of applied psychology, the situation radically changed, leaving behind the former purely philosophical and pedagogical canon. Scientists in numerous ways strived to demonstrate the usefulness of basic research by using their laboratories, instruments and techniques to solve military problems. This trend ranged from the development of sound-ranging devices in physics to the preparation of poison gas in chemistry. In this process, psychology, too, had become an instrument of military technology, and by that a primarily applied domain.

During these years, psychology tackled divers practical challenges. However, at least two new applied fields of experimental research that arose and were established stimulated through military problems have to be named, i.e. “human factor psychology” and “psychotechnics”. The new research aimed at integrating and controlling the "human factor" in human-machine interaction. The focus of these efforts was on the "human factor", the human organism as a functioning part of a fighting machine. Psychologists adopted psychophysical measurement to skills-testing regarding the selection of vehicle operators, communications specialists and pilots. In particular, they evaluated the soldiers’ sensory perception and ability to act (such as reaction to environmental stimuli). Others, for instance Max Wertheimer and Erich von Hornbostel (1877–1935), got involved in the development of specialized equipment such as the artillery range finder (Schallmeßverfahren).
In the context of war services the significance of work psychology grew, as well. Applied psychologists in the new field called “psychotechnics” were concerned with problems of rational use and fast replacement of manpower. For instance, they selected machine operators with skills best suited for the tasks in question, searched for female replacement of those left for army, etc. Other practical fields in which German psychologists and neurologists employed their knowledge during the World War I were the examination and treatment of brain injuries, reintegration of traumatized people into the everyday working life, investigation of changes in psychical performance in stress situations, and the training of war dogs by specialists in animal psychology.

The war and the ensuing economic situation did not only change the standing of psychology within German academia but above all it changed the self-conception of the discipline. In the 1910s, the still philosophically oriented experimental psychology lived in uneasy balance with varied attempts to transform the field into a science-based profession and to expand its subject matter and methodological options accordingly. The commitment to practical accomplishments asked for methodological changes. The new trend was to treat subjects of investigation not much different than objects or machines; the individual mattered less than the optimization of the workflow. This kind of methodological change brought experimental or applied psychologists much closer to natural science enlarging the divide between the experimental psychologists and the philosophers. Meanwhile, the philosophers accused the experimentalists of reducing mental life to an interplay of essentially meaningless hypothetical “elements”. The philosopher-pedagogue Eduard Spranger drew the controversy’s bottom line by stating that natural-scientific (naturwissenschaftliche) and humanistic (geisteswissenschaftliche) psychology were fundamentally opposed.

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93Cf. [Stumpf, 1918, 278-281].

94The field of applied psychology “psychotechnics” (Psychotechnik) was founded by the German-American psychologist Hugo Münsterberg in his Grundzüge der Psychotechnik (1914), cf. [Münsterberg, 1914, 6]. Although the term had been coined by William Stern (1903), and used to demarcate “psychological impact” (psychologische Einwirkung) in all areas of life from psychological diagnostics, see [Stern, 1903].

95Cf. [Jaeger, 1985, 101]; see also Stumpf’s contemporary testimony, [Stumpf, 1918, 278-281].

96Around the same time, a growing university network and the rise of private research foundations in the United States offered greater opportunities for institutional independence than were given in Europe. The more advanced professionalization of psychology implied the demand that academic psychologists present their work as both quantitative and socially relevant. Cf. [Ash, 1992, 198].

The whole and the parts: Gestalt in Weimar Germany

The concept of holism gained public resonance in 1926, after being introduced by the South African statesman Jan Christiaan Smuts (1870–1950) in his monograph *Holism and Evolution*. He defined holism as “the tendency in nature to form wholes that are greater than the sum of the parts through creative evolution” [Smuts, 1927, 88]. Smuts’ formulation of holism has been linked with his political-military activity, especially his aspiration to create a League of Nations. Yet, in fact, as early as at the beginning of the 20th century, Germany was already prevailed by, what the historian Ernst Plaum calls, a “holistic climate”, which then stood for a socio-political emancipation from the “machine-like society”.

The self-evident political turning point was 1890, when the old emperor died and the new one, Wilhelm II, dismissed Bismarck, lifted the Anti-Socialist Laws and indicated that he would be willing to institute social reforms. Those were the years when in the universities academicians first began to turn urgent calls for professional and national “wholeness”, “oneness” and the “whole” in their fight against the fragmentation of knowledge. Those years also saw the rise of quasi-religious and occult movements, all with the aim to reconnect the individual, lost in the bourgeois society, to his “organic”, “whole” self. The new generation began to insist that the goal of individual wholeness required that human beings no longer restricted themselves to thinking like machines. From the high levels of academia the call went out for willingness to explore mental horizons beyond empiricism and the passive association of ideas.

The philosopher Wilhelm Dilthey (1833–1911) was one of the most systematic and influential fin de siècle challengers of the old positivist ways; he argued that a person’s perception of the surrounding world (*Weltanschauung*) goes beyond the rational and analyzable, and must also include the irrational and the holistic.


At the beginning of the 20th century, holism was widely present in different scientific doctrines, such as, for instance, quantum theory, ensuring that by the 1920s and until 1933 holistic science had an unusually strong voice in socio-cultural debates on the means and costs of modernization. The scholar, who probably first related holistic thinking with the concept of Gestalt was the Austrian philosopher Christian von Ehrenfels (1859–1932). His work *Über Gestaltqualitäten* (1890) treated a problem occupying many contemporary thinkers, the problem of the relationship between the mental whole and its parts or elements. He first stated that the whole equals the sum of its parts plus another element, i.e. the “Gestalt quality”.

In the early years of the new century, appeals were made against the unreasonable predominance of classical associanism, which tried to defend mind “associates” to arrive at “rational conclusions” stressing the (de facto, limited) role of conscious reasoning in human thought. Oswald Külpe’s school of psychology in Würzburg and the Berlin psychologists were the first to put up an agenda against the associational approach to mind. Köhler’s first institutionalized Gestalt assuming the psychological chair in Berlin in 1921/22. During the 1920s, Gestalt psychology expanded to the universities of Frankfurt and Giessen, when Kurt Koffka and Max Wertheimer secured their own chairs. Between 1921 and 1933, Kurt Lewin worked first as an assistant, and later on as associate professor at the Psychological Institute of Berlin, then headed by Wolfgang Köhler. There he was part of the flourishing of the Gestalt psychological movement together with Wertheimer, Köhler, Koffka and many of their followers. The Leipzig school

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98Cf. [Plaum, 1993, 32].
99Cf. [Harrington, 1996, 24f.].
100See e.g. Darrigol’s paper about quantum statistics, where holism is a central topic, [Darrigol, 1991].
101Cf. [Plaum, 1993, 32].
102Cf. [Ehrenfels, 1890].
103Cf. [Harrington, 1996, 28].
of Ganzheitspsychologie, a competing holistic school, formed about the same time, and was headed by Felix Krueger (1874–1948), who succeeded Wilhelm Wundt as the chair of the Psychological Faculty at Leipzig in 1917.

In the present Chapter we focus on the development and institutionalization of Gestalt in German-speaking experimental psychology of the 1920s and the early 1930s. The rise of Gestalt psychology was both an offspring of the institutional, methodological, conceptual, and political situation German psychology found itself in the end of World War I and its countermovement. The Gestalt school of psychology was centered at the University of Berlin.

3.1 Gestalt psychology coming of age

"Trotz der grundsätzlichen Übereinstimmung, die die Zusammenarbeit dieses brillanten Trios so fruchtbar machte, gab es auch Differenzen, was bedeutete, daß jeder seinen eigenen Beitrag zum gemeinsamen Werk geleistet hatte. Wertheimer war der temperamentvolle und inspirierte Künstler; Köhler der immer etwas reservierte Physiker, der viel in räumlichen Begriffen dachte; und Koffka war der wortgewaltige Jurist und Logiker, der alles in ein Gesamtsystem zu bringen suchte" [Heider, 1984, 111].

Stumpf’s Psychological Institute in Berlin: Teaching and students

At the turn of the 20th century, the Psychological Seminar at the Friedrich Wilhelm University of Berlin had been upgraded to a Psychological Institute; this was accompanied by a substantial raise of funding and new ample accommodations in the Dorotheenstraße 95/96. The Institute was headed by Carl Stumpf, its founding director, and shared the location with the Philosophical Institute headed by the neo-Kantian Alois Riehl (1844–1924), who was specialized in the criticism of perception and philosophy of science.104

As mentioned, Stumpf was a dedicated experimentalist striving to create an elite of suitable experimenters who could accurately observe and report their own experiences.105 Therefore some philosophy students looking for an intellectually and emotionally exciting worldview might have been repelled. One such student, Ludwig, Marcuse, reports about Stumpf’s lecture in the spring of 1913:

“The professor was a man of world-wide authority, so I was told. I entered his lecture hall and left it just as quickly; for a larger-than-life-sized picture of an ear labyrinth hung on the blackboard. Obviously I had wandered into a medical course. Eventually, I discovered that the psychology of Professor Carl Stumpf was not at all what I understood under that name.”106

104 Cf. [Riehl, 1910] and [Stumpf, 1910].
105 Cf. [Ash, 1995, 39f.].
106 Der Professor war ein Mann, von dem man mir sagte, er sei Welt-Autorität. Ich betrat seinen Hörsaal und war ebenso schnell wieder draußen; denn es hing an der Tafel das überlebensgroße Abbild eines Ohr-Labyrinths, ganz offenbar war ich in ein medizinisches Kolleg geraten. Schließlich entdeckte ich, daß die Psychologie bei Carl Stumpf gar nicht war, was ich darunter verstand [Marcuse, 1960, 24].

Figure 1: Carl Stumpf as portrayed in his autobiography [Stumpf, 1924]
Some students in Berlin put their observations into a song: “Philosophy here is no big deal / It’s being destroyed by Stumpf and Riehl” (ebd.).

In the 21 years of Stumpf’s directorship (1900–1921) 21 doctoral dissertations were successfully accomplished. What appears to be a modest number was a consequence of Stumpf’s own selectiveness and distinct requirements towards his protégés. Under Stumpf, not research but pedagogy was the primary obligation of his institute. Therefore despite the impressive number of enrollments, the Berlin Institute produced just a few experimenting psychologists. As Stumpf put it in 1910:

"In such a young research tendency with so little developed methodology, so many sources of error, such great difficulties in the exact setting up and carrying through of experiments, it could not be the main goal [of the Institute] to produce as many dissertations as possible. Instead, the leading aims must be these two: first, support of the lectures by means of demonstrations and exercises; second, provision of the necessary aids for the experimental work of the director, the assistants, and a few especially advanced workers.”

Kurt Lewin, who started his doctorate under Stumpf in 1911, recalled the supervision somewhat anecdotally:


Meanwhile, among the “few especially advanced workers” capable of meeting Stumpf’s high experimental standards there were nearly all of the founders or associates of the future Gestalt movement – Max Wertheimer, Kurt Koffka, Wolfgang Köhler, Adhemar Gelb, Erich von Hornbostel and Johannes von Allesch; Kurt Lewin was one of Stumpf’s last doctoral students. All except for Wertheimer received the doctorate for experimental work done in Berlin from 1906 to 1914. Wertheimer worked for two years in the Berlin Institute before completing his dissertation under Oswald Külpe in Würzburg in 1904; he then often returned for discussion and research. All of these scholar-scientists also studied at other universities, but Stumpf was the person under whom the Gestalt psychologists learned the experimental metier.

The starting point

The starting point of Gestalt psychology in Germany is typically taken in 1912, the year in which Max Wertheimer published his article Experimental Studies on the Seeing of Motion (Experimentelle Studien über das Sehen und Bewegung) describing the phi phenomenon. This article reveals the future Gestalt maxim that “the whole is different from the sum of its parts”. The preamble of this discovery was a personal experience made by Wertheimer in 1910. While traveling in a train he observed an optical phenomenon that gave him the idea of an experiment, which he set up a few hours later in a hotel room. He used a stroboscope to substitute strips of paper on which he had drawn series of lines and found that by varying the time interval between the exposure of the lines he could observe completely different things, i.e. either one line after the other, or two lines standing side by side, or one line moving from

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107 “Die Philosophie gilt hier nicht viel / Man rotet sie aus mit Stumpf und Riehl.”
108 The literary translation is suggested by Mitchell Ash, [Ash, 1995, 35].
109 For a complete list of doctoral dissertations supervised by Stumpf see [Ash, 1995, 419f.].
one position to another. The apparent movement observed by Wertheimer that day came to be known as the \textit{phi} phenomenon. Of course, there have been psychologists and philosophers before him, who believed that movement was a sensation \textit{sui generis} rather than an inference from static sensations on the retina. Yet, they had not demonstrated this in a scientific manner. By contrast, in his 1912 paper Wertheimer formulated the underlying problem as well as the way to solve this problem, which made experimentation possible. The \textit{phi} phenomenon launched Gestalt psychology and became illustrative of its central tenet. Unlike in phenomenology, experience has to be studied in the way it occurred, as a whole, and not broken down in an artificial analysis.\footnote{See [Wertheimer, 1912]. Cf. also [Luchins and Luchins, 1986] and [Luchins and Luchins, 1999].}

However, the virtual birthplace of the Gestalt theory was not Berlin but Frankfurt am Main. In 1910, Köhler was promoted to second assistant at the Psychological Institute in Frankfurt where Wertheimer and Koffka were employed. Wertheimer was already pursuing his research on apparent motion, and therefore needed experimental subjects. Köhler wrote later:

> “The winter term had barely begun when Max Wertheimer appeared with a primitive stroboscope in his suitcase and with many ideas in his head. At the time, none of us knew much about the two others; but Wertheimer stayed, and working together we became the first three Gestalt psychologists” [Köhler, 1942, 97].

As Kurt Koffka recalled in 1935:

> “Wertheimer had just completed his experiments on the perception of motion in which Köhler and I had served as the chief observers. Now he proposed to tell me the purpose of his experiments, of which, as a good subject, I had been entirely ignorant. Of course I had had many discussions with those two men before. One could not live in constant contact with Wertheimer without learning some aspects of gestalt theory, even in those old times” [Koffka, 1935a, 53].

And so Koffka recalls that when, in 1911, he left to take a position in Giessen some forty miles away from Frankfurt both he and Köhler were convinced of the promising Gestalt theoretical views.\footnote{Cf. [Wertheimer and King, 2005, 102].}

Before the noteworthy encounter with Köhler and Koffka in 1910, Max Wertheimer had studied philosophy with Christian von Ehrenfels in Prague.\footnote{Wertheimer entered Charles University of Prague in 1898, where he enrolled in the legal faculty. However, courses in philosophy, physiology, music and art history soon began to dominate his university life and after five semesters he shifted to the philosophical faculty. Cf. [Metzger, 1986, 100f.].} However, he spent the years 1902 to 1904 in Berlin working under Stumpf.\footnote{On Wertheimer’s university career in Germany see also [Ash, 1989].} He had then conducted a dissertation study on psychology of testimony. Together with Julius Klein, his law school friend from Prague, he devised an associative lie detection procedure.\footnote{See [Wertheimer and Klein, 1904].} In 1910, he was the eldest and most experienced in empirical work of the three.

Kurt Koffka started his academic career in 1903, as philosophy student under Alois Rhiel. Yet, as he himself stated later, he “was too realistically minded to be satisfied with pure abstractions”, so he switched to psychology.\footnote{See [Wertheimer and Klein, 1904].} Köhler entered university in 1905. In the years 1905 to 1910 he attended 25 courses in sciences, 13 in philosophy and 10 in psychology. His most attended teachers were Max Planck (8 courses), Benno Erdmann (7) and Carl Stumpf (6). Köhler’s major interest at the time of him finishing the \textit{Gymnasium} probably was philosophy, though following a teacher’s advice he devoted his attention to the study of science.\footnote{“... daß nur ein einigermaßen gründliches Studium der Mathematik und der Naturwissenschaften auf diesem Gebiet zu irgendwelchen Leistungen Hoffnung gebe;” Köhler quoted in [Köhler, 1988, 55]. See also [Jaeger, 1989, 60f.]. Besides Alois Riehl, a specialist in the philosophy of mathematics and natural science, he also attended classes of Walther Nernst, cofounder of physical chemistry, the physicist Max Planck, who was then in the midst of intense debates on quantum theory, and the organic chemist Emil Fischer. In addition, he attended the colloquium of experimental physicist Heinrich Rubens, in which nearly all of the important physicists in Berlin took part. Cf. [Ash, 1995, 113].} In 1908, Koffka finished his doctorate, in which he needed to determine whether rhythm could be elicited visually as well as aurally. Köhler conducted acoustic
experiments for which he affixed a tiny mirror to his own eardrum, so that a light beam directed at it could, by reflection, record its movements when stimulated by a sound (Über elektromagnetische Erregung des Trommelfelles and Intelligenzprüfungen am Orang); he completed his doctorate in 1909.\textsuperscript{118} (Kurt Lewin followed in 1916.)

We see that the future founders of Gestalt psychology Max Wertheimer, Kurt Koffka and Wolfgang Köhler shared a considerable joint background. All three came from the cultured upper middle class milieu that nurtured most of Germany’s academic scientists. During their university studies, each of them had acquired a broad background in both philosophy and natural science. All of them had been engaged in experimental studies concerned with links and boundaries between different perceptual processes. Most importantly, though, they all enjoyed the same type of psychological training—each of them had learned under Stumpf where psychological research was a cooperative effort by an elite of trained observers and rigorous experimenters. Thus, each of them has been initiated in a similar variety of ways to the scientific career they were about to start.

3.2 Principles of Gestalt

By the time Wertheimer and his colleagues developed their psychological doctrine, the idea of Gestalt had already been employed in the broader holistic literature with a range of non-scientific, at times mystical, implications. In this discourse Gestalt could work as an ordering principle or as a plurality of connected wholes, it reassured people that community, nation and culture need not to be melded in an all-embracing cosmopolitism. It could also imply that individuals were not just engulfed by an undifferentiated whole but occupied a logical position within it. In short, in the public discourse the concept of Gestalt represented the German political, cultural and spiritual efforts for a renewal.\textsuperscript{119} The Gestalt psychologists needed to draw a line liberating their work from these implications. Wertheimer mastered this challenge by granting his doctrine a strict lawfulness, which had to be respected with absolute mathematical accuracy.


In very simple terms, the nucleus of the Gestalt doctrine can be formulated as follows: Gestalt is a product of organization and the organization of the process that leads to a Gestalt. In this context organization is as a category diametrically opposed to juxtaposition or arbitrary distribution. The claim that a process, or the product of a process, is a Gestalt means, thus, that it cannot be explained by a random combination of essentially unconnected causes but that its essence consists in a reasonable structure.\textsuperscript{120} Accordingly, the central principle of Gestalt, as spelled out by Wertheimer is “what happens to a part of the whole [in the process of organization] is determined by intrinsic laws inherent in this whole” [Wertheimer, 1925, 7]. Starting from this (in today’s eyes) simple idea, a theoretical doctrine, an experimental program, a school with dozens of disciples and a particular worldview arose altogether.

\textsuperscript{118}Cf. [Köhler, 1988, 55].
\textsuperscript{119}Cf. [Harrington, 1996, 103f.].
\textsuperscript{120}Cf. [Koffka, 1935a, 682f.].
but conversely; what happens to be a part of the whole is, in clear-cut cases, determined by
the laws of the inner structure of its whole" [Wertheimer, 1944, 84].

The Gestalt psychologists’ goal was not to uncover laws that could account for the variance in different
subjects’ perceptions under particular conditions, but to search for what Max Wertheimer called the
“essence” of phenomena. By this he meant the order believed to inhere in phenomena as experienced
under concrete stimulus conditions, not cor relational or other contingent functional relationships between
independent and dependent variables. In other words, the perceptual fields appear to us organized in a
particular and meaningful way. This implied that experience has to be studied as it occurred, as a whole,
and not broken down in an artificial analysis. 121

The invariant relationships between the whole and its parts became subject to the so called “Gestalt
laws” of perception. These were first presented to wider public in a two-parts manifest-like article in the
volume 1 and 4 of the Psychologische Forschung (1922, 1923). Wertheimer believed that the laws were
fully researchable using experimental methods. The Gestalt laws are not perception principles as such
but more general principles of formation and constitution of Gestalten. Maybe the most foundational
laws Wertheimer named were the following. 122

1. The law of proximity (Nähe) states that a row of dots with equal intervals between them, for exam-
ple, will be seen as a series of pairs, while the same number of dots with only slight changes in the
spacing will be perceived as single groups of three dots (figure 2). 123

2. The law of similarity (Ähnlichkeit) states that if an array of equally spaced black and white dots is
shown in alliterating vertical and horizontal rows of the same color, observers will see verticals or
horizontals, as decided by the similar grouping (cf. ebd. 309, figure 3).

3. The law of closure (Geschlossenheit) states that an enclosed region or field tends to be perceived
as a figure. The tendency to closure is clearest with adjoining figures. For example, if two squares
touch at only one point, they will be seen as two distinct figures; but if they overlap, or if one
encloses the other, the observer’s judgement may be different (cf. ebd. 326ff., fig. 4).

4. The law of continuity (Kontinuität): Wertheimer claimed that observers typically see continuous
lines, and resist the changes of direction necessary to see the organization. For instance, in figure
5 one would perceive the crossing of who lines, one going from left to right, the other from top to
the bottom.

5. There were also more general of the laws, such as the law of good continuation (gute Fortsetzung):
Observers tend to perceive figures in ambiguous or imperfect fields as “good” (simple, regular,
symmetrical, etc.) as the prevailing conditions allow (cf. ebd. 324ff.).

6. Finally, the law of the tendency toward simple formation (Prägnanz), states that there is a tendency
toward “simple formation” of structures. This means that the visible connection of the position, size,
brightness and other qualities of objects within a perceptual field takes on the simplest and most
impressing structure permitted by the given conditions (cf. ebd. 318f.).

In conclusion, Wertheimer reasoned that not punctiform “sensations”, but clearly identifiable structures
(Gestalten) were the primary constituents of consciousness. These structures weremeaningfully related
to one another in ways that generally do not correspond to one-to-one connections between stimuli and
sensations. Sometimes Wertheimer spoke of “good” phenomena, those that most clearly and immedi-
ately exemplify the structure experienced in a given situation. Wertheimer was convinced that Gestalt

121 Cf. [Wertheimer, 1923, 301ff.].
122 See [Wertheimer, 1922, Wertheimer, 1923].
123 Cf. [Wertheimer, 1923, 304-307].
laws were subject to empirical proof. The challenge was thus to devise experimental situations in such a way that "good" phenomena could happen.\textsuperscript{124}

The joint commitment to Max Wertheimer's epistemological Gestalt principles kept the Gestalt psychologists together in the first place. Anyone of the trio pursued individual research interests which, however, did not oppose the deep joint commitment to the Gestalt doctrine. Various recollections attest that he was considered by students and Gestalt followers to be "the intellectual leader," "l'eminen
cence grise," "the leader of the Gestalt movement" and "the most creative person at the Institute," even though he was neither the director nor a full professor. "On theory matters he [=Köhler] behaved toward Wertheimer as if he were the last word. [...] He was the high priest with Köhler and Koffka as front man and disciples. [...] One had the impression that both Köhler and Koffka owed much to Wertheimer and that they regarded him as a high priest".\textsuperscript{125}

The journal in which the members of all three institutes published most of their work was founded on May 15, 1921, with a contract between the editors – Kurt Koffka (the first editor in chief), Max Wertheimer, Wolfgang Köhler, Kurt Goldstein and Hans Gruhle, a psychiatrist and philosopher from Heidelberg – and the \textit{Julius Springer-Verlag}, a well-known Berlin publisher in the field of natural science. This journal, named \textit{Psychologische Forschung} (Psychological Research), gave Gestalt psychology its name and identity, and served as a publication vehicle for Gestalt theory until 1938. At first, its intention was to cover all fields of psychology. Contributions appeared on psychology of thought, ethnological psychology and psychopathology. However, psychology of perception, especially visual perception, clearly dominated. Of 270 original research articles in the journal's first 22 volumes, 151 dealt with such topics. Over the years, research reports from Berlin, Giessen and Frankfurt took up the vast majority of the journal's pages along with writings by the Gestalt theorists themselves. Thus, the editors' declared intentions gradually lost force; the self-presentation of Gestalt theory became more important than that of the psychological discipline as a whole.\textsuperscript{126}

\textsuperscript{124}Cf. [Wertheimer, 1923, 324-329].

\textsuperscript{125}See quotations from the students' recollections assembled and published by Abraham Luchins, formerly Max Wertheimer's assistant at the of Social Research in New Y ork, and Edith H. Luchins, [Luchins and Luchins, 1986, 9, 15, 14].

\textsuperscript{126}Cf. [Ash, 1995, 217].
3.3 Stumpf’s heritage in the Gestalt theory: Continuity and discontinuity

A number of Gestalt ideas was rooted in Stumpf’s theoretical approach and resulted from his training, which is few discussed in the preceding research literature, e.g. Sprung (1995) and Toccafondi (2009). Moreover, Ash forwards the thesis that Gestalt psychology exhibited important phenomenological and methodological continuities with Stumpf’s research style. I shall further outline aspects of continuity and discontinuity between the Stumpf era (1893–1922) and the Gestalt era (1922–1935) in Berlin, since these are not simply relevant to the Gestalt theory per se but are also foundational to Lewin’s theory (discussed in the following chapters).

(1) A mediative attitude

First of all, it is most obvious that the integrative attitude towards the empirically exact science and epistemological thinking is common to the two approaches. Similarly to Stumpf, Wertheimer (as the head of Gestalt theory) believed that the key to productive research laid in the combination of philosophical reflection and empirical research.

(2) The whole is more than the sum of its parts

Stumpf’s concepts of “independent contents” (selbständige Inhalte) and “partial contents” (Teilinhalte) directly pertained to the relationship between the whole and its parts. Holistic thinking in Stumpf’s work not only dates back to his teachers Lotze and Brentano but also evolves into Stumpf’s own concepts of a “melting process” (Prozess der Verschmelzung) and “perception wholes” (Empfindungsganzheiten).

"Alle Empfindungsqualitäten treten, wenn sie aus aufeinanderfolgenden in gleichzeitige übergehen, ausser in dieses Verhältniss, der Gleichzeitigkeit noch in ein anderes Verhältniss, dem zu Folge sie als Teile eines Empfindungsganzen erscheinen. Aufeinanderfolgende Empfindungen bilden als Empfindungen eine blosse Summe, gleichzeitige schon als Empfindungen ein Ganzes" [Stumpf, 1890, 64].

"Wir nannten Verschmelzung dasjenige Verhältniss zweier Inhalte, speciell Empfindungsinhalte, wonach sie nicht eine blosse Summe sondern ein Ganzes bilden" [Stumpf, 1890, 128].

Consequently, one can state that the roots of the most fundamental Gestalt principle – the whole is more than the sum of its parts – not only points to Christian von Ehrenfels but also to Carl Stumpf. Yet, Stumpf has never been as much focused and insisting about it as the Gestalt psychologists have.

127See [Ash, 2002, 130].
128The following discussion particularly refers to arguments made in [Sprung and Sprung, 1995, 261-266] and [Toccafondi, 2009].
(3) Analysis of the whole phenomenon

Since Wertheimer’s discovery of the “phi phenomenon”, Gestalt made the whole phenomenon the subject of psychological research; by contrast, the Wundtian reverse deconstruction of phenomena up to its stimuli and components (“psychical causality”) did not seem of use to Gestalt. Yet, also Stumpf on the existence of structural laws of psychic phenomena. He searched for a way to apply these to his studies of mental functions, as well.

“Anywhere inside the sphere of the appearances there are laws; not causal laws […] but immanent structural laws” (Stumpf 1907).129

"Als psychische Funktionen (Akte, Zustände, Erlebnisse) bezeichnen wir das Bemerken von Erscheinungen und ihren Verhältnissen, das Zusammenfassen von Erscheinungen zu Komplexen, die Begriffsbildung, das Auffassen und Urteilen, die Gemütsbewegungen, das Begehren und Wollen” [Stumpf, 1907a, 4f.].

Moreover, in his treatise on space, Stumpf specifically opposes the Kantian separation between form and content of intuition. He points out that without sensible qualities (e.g. visual sensations such as color or tactile sensations of contact) no visual or tactile space can be conceivable. Therefore spatial representation and representation of sensible qualities cannot be separated in any way; one is inconceivable without the other.130 This point of view proves essential to the Gestalt theory, where the divide between form and content is completely abandoned.

Despite these similarities we find in Stumpf and Gestalt different concepts of “the whole phenomenon”. In Stumpf, for instance, sounds and colors are recognized as the original foundations that bear inherent properties; these are also elements that form relationship with other elements. By contrast, in Gestalt, relations themselves imply the existence an inherent lawfulness; the phenomenon is more than one sound or color.

(4) Psycho-physical isomorphism

One of Köhler’s main contribution to the Gestalt theory consisted in the “principle of isomorphism”. This suggests that all psychic processes can be unambiguously attributed to physical ones, and vice versa (more in Chapter 7).131 Yet, the search for physiological and neurological fundaments of psychic processes has been part of research in Berlin since the foundation of the Psychological Seminar. Every so often Stumpf pointed at the significance of organismic data to psychological phenomena in order to explain experimental results.

"Die Ursache der Verschmelzung ist eine physiologische. Alle bisher betrachteten Erklä rungsversuche waren psychologisch. Ihr Misslingen deutet an, dass wir auf psychischem Gebiete den Grund der Tonverschmelzung überhaupt nicht zu suchen haben” [Stumpf, 1890, 211].

Although the foregoing examples demonstrated the presence of an essential common ground between the Stumpf and the Gestalt era their discontinuities are much stronger emphasized in research literature. To this respect, Helga and Lothar Sprung suggest three explanations. First, the explicit elaboration of holistic principles was genuine merit of the Gestalt psychologists. Second, the spread and wide establishment of the Gestalt maxims was closely linked to the formation and recognition of their own school. The third reason is the mutual public criticism expressed by Stumpf and his former students.132
The public controversy was however not centered around essential believes. Rather it contrasted the two positions and contributed to the profiling of the Gestalt school.

3.4 Institutional standing of the Gestalt school

After World War I, economic depression, inflation, political, industrial, and social upheaval and strife verging on civil war, as well as campus rioting built the scenery in which academic life needed to find back into its daily life. In front of this scenery, the Weimar period evolved into the Golden Age of the German arts and sciences where creativity and innovation were not restricted to the universities, but occurred in all walks of life—in technology and industry as well as in literature, music, art, sculpture, architecture, etc. Germany had become a Mecca to which scholars of the entire world pilgered despite the instability and tensions in the social and political field.\(^{133}\)

This period, in particular the years from 1920 to 1933, marked the high point of Gestalt psychology, including its theoretical development, its research productivity and its impact on German science and culture. In the early 1920s, Gestalt psychology made its transition from a promising research thread pursued by three motivated protagonists to a research school. By April 1920, the Psychological Institute of Berlin had moved to a new quarter in a wing of the former Imperial Palace, near the main building of the university.\(^{134}\) The move more than doubled the institute’s size; Stumpf wrote that it had “more than twenty-five rooms”. The Psychological Institute was located on the 2d and 3d floor of the Imperial Palace, while the 1st floor was occupied by the physical department (see in fig. 6).\(^{135}\) At the same time, its budget increased more than six times, from 4.400 to 28.200 Marks, a figure almost as large as the budget of the Physical Institute in 1920 (30.274 Marks). The multiplied budget allowed for a growth of personnel, which made the Institute of Psychology in Berlin one of the largest and best-equipped psychological research establishments in the world. In Germany, its importance was exceeded only by that of the Leipzig Institute. The latter included 35 rooms and five permanent assistants by 1930.\(^{136}\)

It was Wolfgang Köhler, who succeeded to give Gestalt its first and main institutional identity when he was appointed as professor of philosophy in Berlin in October 1921 and then formally assigned head of the Psychological Institute in February 1922. When Carl Stumpf resigned in 1921 motivating his early retirement with an eye disease. He strongly supporting Köhler candidature as his succeeder:

\begin{quote}
\end{quote}

\(^{133}\) Cf. \cite{luchins1986studies}.


\(^{135}\) See \cite{ash1995wolfgang}.

Wertheimer was given teaching assignments in 1922. In the same year, a second department of applied psychology in the interest of rationalizing industrial production was founded. This was headed by Stumpf’s long-time assistant Hans Rupp, who had been made associate professor for labor psychology the year before. In this way, the staff rose from one paid and one unpaid assistant to three full-time assistants. In the period between 1922 and 1933, there were 6 assistants. Johannes von Allesch (1882–1967), since 1923 Privatdozent of psychology and esthetics and later Ordinarius (full professor) in Halle and Göttingen, Kurt Gottschaldt (1902–1990), Wolfgang Metzger (1899–1979), since 1942 Ordinarius in Münster, Karl Duncker (1903–1940), who would follow Köhler in the emigration after the Nazi regime would inhibit his Habilitation, Hedwig von Restorff, who would maintain the Psychologische Forschung after Köhler’s leaving Germany in 1935, and Otto von Lauenstein (1906–1943), who would experience two emigrations to Denmark and England in 1935, and be killed at the eastern front.

Although the group was centered in Berlin, with a small group of scholars, Kurt Koffka succeeded to establish a new psychological laboratory in Giessen in 1919, which he headed until 1927. Through this teaching Koffka gathered around him a small but loyal and hardworking group of students. A former student recalls:

“As an academic teacher Koffka was a really attractive force for Giessen. Many foreigners and students of other faculties, especially medical students, sought him. His teaching activity was extraordinarily intense. He developed new and most fruitful experimental methods, and had them applied in really valuable theses for doctorates. His lecturing was extraordinarily stimulating for us students and others who attended […]. In the seminar discussions he was liable to press one hard; he was no forbearing examiner” [Eisen, 1942, 75].

In 1922, Max Wertheimer became Ausserordentlicher Professor für Philosophie under Köhler’s director-
ship in Berlin. In spite his intellectual leadership he was forced to content himself with this appointment until 1929. He finally became *Ordentlicher Professor* of philosophy at the University of Frankfurt in 1929. There he co-directed the psychological laboratory until his emigration in 1934. By 1930, the Gestalt was well established at 3 of the only 14 psychological institutes in German universities, including one of the most prestigious in the world, the Psychological Institute of Berlin. The Berlin/Frankfurt/Giessen school of Gestalt psychology succeeded to take a central place in the landscape of Weimar psychology.

### 3.5 Interdisciplinary ambitions

In the 1910s and 1920s in Germany, particularly in Berlin, the development in various scientific fields was intense. Encounters of intellectuals of diverse scholarly profiles were preprogrammed and cross-disciplinary research was progressing. Various personal contacts were established between Wertheimer, Köhler and Lewin on the one side and Albert Einstein, Max Planck, Max Born and other natural scientists on the other. Wertheimer was close to Einstein with whom he shared hobbies, as well as political and moral views. Their colleagueship and friendship spanned the period from 1916 to Wertheimer’s death in 1943. During this whole time, they had numerous conversations about the development of the theory of relativity and Wertheimer’s work on Gestalt theory. As a consequence, Gestalt psychology abounds with concepts borrowed from physics, a discipline considered paradigmatic in Wertheimer’s theory of science. Moreover, Wertheimer stepped into physical research in the context of World War I, when he did research for the Austro-Hungarian army on the construction of devices to detect hidden artillery batteries by a triangulation technique based upon the reports of the cannons. However, Wertheimer was not the only Gestalt psychologist to carefully follow the fast transformation of ideas in physics of the early 20th century and reacted to its impulses. Köhler, who studied under Planck, remarked in one of his last American lectures: "Under Planck’s influence I had dimly felt that between Wertheimer’s new thinking in psychology and the physicists’ thinking in field physics there was some hidden connection" [Köhler, 1969, xxii]. As a consequence, physics became to them a significant source of inspiration in matters of theory (see more in Chapter 7 on page 81).

Inspired by these encounters, the Gestalt psychologists used their training in natural science in order to extend their doctrine from the psyche to the areas of the physical world. For instance, in his book *Die physischen Gestalten* (1920) Köhler suggested that the field theory in physics was actually concerned with the problem of Gestalt, as well. Physical systems, such as for instance electromagnetic fields, could not be conceived as simple collections of isolated events. Instead the whole or the "field" determined the state of the parts. Köhler called the phenomenon "physical Gestalten". “Strong Gestalten” were in Köhler’s terms densely interrelated system while “weak Gestalten” referred to systems with a rather loose cohesion. He elaborated this claim in *Gestaltprobleme und Anfänge einer Gestalttheorie* (1922).

Köhler’s physical extension of Gestalt amounted in the formulation of the principle of “psychological isomorphism”, which comprised the transferability of psychological structures, i.e. *Gestalten*, into physiological, biological and physical phenomena. The principle could be inverted, so physiological hypotheses applied as guides to psychological research. Köhler argued that “the most essential traits of experimental or perceptual contexts are the same as those of their physical counterparts. With respect to these traits the perceptual and the physical structures are isomorphic”.

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140 Cf. [Luchins and Luchins, 1986, 25].
141 One gets an impression of how congenial the viewpoint of Gestalt psychology was to Einstein’s own view on science from the following excerpt from Einstein’s foreword to an unpublished collection of Wertheimer’s essays: “Behind these essays lies above all an epistemological need which derives from the gestalt-psychological point of view: beware of trying to understand the whole by arbitrary isolation of the separate components or by hazy or forced abstractions!” [Wertheimer, 1965, 87]. On Wertheimer’s relations with Einstein see [Miller, 1975]. Cf. also [Ash, 1995, 191, 196f.].
142 Cf. [Miller, 1975, 75].
143 Cf. [Köhler, 1920, 114-132].
144 Cf. [Köhler, 1922].
145 Although the isomorphism concept played a role in Köhler’s work since the 1920s it is as late as in 1938 that he gives an extensive account on its meaning in The Place of Value in a World of Facts, [Köhler, 1938, 162, italics original].
Apart from physics, Köhler searched for examples of isomorphism in physiology claiming that also physiology and neurology provide examples of “good Gestalten” of brain activity:

“We have an immediate correspondence between mental and physical processes and the demand seems inescapable that at this point organic functions be thought of as participating in and exhibiting essentially Gestalt characteristics. The import and extraordinary significance of this was first recognized by Wertheimer who thereby attached to Gestalten a degree of reality far beyond any they had previously possessed. This implies, as Koffka emphasized, that central physiological processes cannot be regarded as sums of individual excitations, but as configured whole-processes” [Köhler, 1920].146

Köhler further argued that brain events that underlie perceived Gestalten could obey the same laws as phenomenal structures do. He further maintained that Gestalt characteristics could be found in brain processes and that the whole “somatic field” (somatisches Feld) of the brain could be treated as a single physical system. He felt that science would ultimately show that every psychological Gestalt mapped isomorphically onto a physical Gestalt within the brain.147 Studying successive comparisons, learning, and memory, Köhler and his students developed and tried to test hypothetical models of brain events presumed to cause specific perceptual and cognitive phenomena and links. They hoped to confirm that psychological facts could become guides to brain events or processes presumed to underlie them.148

Another substantial attempt to apply Gestalt principles to physiological processes was connected with the need to treat brain injured soldiers during and after World War I. To do this, the Jewish-German neurologist and medical practitioner Kurt Goldstein (1878–1956) was given the opportunity to set up one of the hospitals for brain-injured soldiers. He did so in Frankfurt in 1916, by founding the Institute for Research into the Consequences of Brain Injuries, where he started his Gestalt neurological research. In that institute, based in a hospital, Goldstein established a psychology department in order to assist in both diagnostic assessment and research. The clinic’s purpose was quite functional — to treat soldiers in order to send them back to the front, or to determine their appropriate civilian employment and disability allowances. To this end, on top of medical care the clinic made use of interdisciplinary, e.g. psychological, pedagogical and occupational expertise. Goldstein hired Adhémar Gelb (1887–1936), a former student and assistant Stumpf’s, familiar with the Gestalt psychologists and their theory, to help him.149

In the 1910s, the neurological theory still stated that it was possible to identify fixed reflex paths and to relate these to specific brain centers. This so-called practice of “localization of brain damages” was established since 1874, when the Breslau neurologist Carl Wernicke had published his impactful study of aphasic symptoms. Notably, Wernicke’s work had reflected the then-widespread associanist research on brain functions.150 However, with the war going on observations of practitioners bypassed theory; physicians repeatedly reported that one brain region could take over functions of another so that patients could compensate for lost functions. New observations undermined the plausibility of the practice of strict localization of brain damages.

Looking to resolve their medical problems with the help of theories from outside of their own discipline, Gelb and Goldstein turned to Gestalt theory. They reported a few cases, which they claimed to be “pure” cases of physiological Gestalten, and therefore of fundamental theoretical importance. A 24-years-old injured soldier named Schneider became Goldstein’s and Gelb’s paradigmatic case. In 1915, Schneider had suffered two wounds to the back of his head that penetrated into the occipital lobes of the brain. Once his wounds had healed and his physical condition had improved, Goldstein and Gelb subjected him

146Quoted as in the English translation of 1948, [Köhler, 1948, 6].
147Cf. [Köhler, 1920].
148Cf. [Köhler, 1922, 115]. See also [Ash, 1995, 223].
149See [Goldstein, 1913, 54f.] and [Goldstein, 1919, 211ff.]. Cf. also [Ash, 1995, 276]. For a more extended account on Kurt Goldstein's work in neurology in the interwar years as well as his relationship with the Gestalt psychologists see e.g. [Stahnnisch and Hoffmann, 2010].
150See [Wernicke, 1874].
to a battery of psychological tests to check for deficits. The tests failed to reveal any obvious perceptual
defects, and the classical neuropsychological approach of the 19th century would probably have stopped
with that. However, looking beyond the surface, the Gestalt neurologists discovered that Schneider was
seriously handicapped in his perceptual capacities—able to read almost any text by means of a range
of minute head and hand movements ("während dieser Schilderungen schrieb Patient in die Luft die
Buchstaben"). If prevented from moving his head or body, the patient could not read any more.151

Schneider’s organism had obviously learned to compensate for the destruction of selected regions.
Strikingly, the patient was in no sense conscious of having modified his accustomed reading habits; in
some unknown way, his injured brain had established compensatory strategies, which the investigators
attributed to the Gestalt “tendency towards completion”.152

The scrutinization of neurological theories followed these practical observations. Just as psychologists
came to question Ebbinghaus laws of association rooted in the stimulus-response paradigm, according
to which cognitive responses can be easily isolated, neurologists, started to revise their own paradigms.
By the mid-1920s, Goldstein refuted the classical “brain modules” hypothesis that understood the human
brain as consisting of different minimally interconnected entities or modules. Instead, following Bethe, he
formulated a holistic theory that perceived brain and nerves of an organism as a joint network. According
to Goldstein’s holistic theory, the neuronal network could only react to a stimulus as a whole.153

In addition to physiology and physics, the interest for philosophy and epistemology of science amongst
Gestalt theorists (not only Wertheimer) was strong. Their chief public affiliation outside academia was
with publications and societies dedicated to meta-reflection on science. Kurt Koffka was member of
the editorial board of the journal Annalen der Philosophie from its founding in 1918. Köhler and Lewin
published in the journal Erkenntnis, successor of the Annalen that specialized in the philosophical re-
flexion on science, and was edited by Hans Reichenbach (1891–1953). Both were guest lecturers in
the Society for Scientific Philosophy, which was headed by Reichenbach as well.154

In sum, the Gestalt theorists strived to fruitfully combine philosophy as the foundation of knowledge and
experimental psychology as its validation. Therefore they tried to justify psychology as both an empirical
and a philosophical discipline instead.155 Contrarily to the contemporary academic diversification and
specialization, the Gestalt psychologists accepted experimental psychology’s double identity as a natu-
ral science and as a part of philosophy. Practicing an interdisciplinary style of research they borrowed
concepts from physics and provided extensions to other disciplines, such as physiology. Their strong in-
terdisciplinary ambition contradicted contemporary academic tendencies introduced by their proceeders.
On top of this, Wertheimer and his colleagues claimed the Gestalt theory to be an overarching doctrine
(Einheitswissenschaft), whereas the search for its interdisciplinary extensions aimed at substantiating
this daren aspireation.

3.6 Hopes and disappointments in the socio-political arena

Initially, the Gestalt psychologists had addressed their intellectual cause to a limited audience of exper-
imental psychologists, philosophers and scientists interested in epistemic questions. However, in the
intense atmosphere of the Weimar Germany their views gained new significance. With increasing con-
"iveness in the germ of a new worldview they took several occasions to present their holistic ideas to the

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151 See [Goldstein and Gelb, 1918, 78ff., esp. 83].
152 On the soldier Schneider case see [Goldstein and Gelb, 1918, 1-142]; cf. also [Ash, 1995, 278ff.] and [Harrington, 1996, 146ff.].
153 Cf. [Goldstein, 1927, 617-45], [Goldstein, 1934, esp. 70, 161]; see also [Noppeney, 2000, esp. 82-4].
155 Since the late 1920s, the Gestalt psychologist were quite dedicated to promoting the epistemic implications at various inter-
derisiplinary congresses. For instance, Köhler took the chance to speak to physicists (1927, 1930), biologists (1927, 1930) and
philosopher (1932). He further presented Gestalt at international congresses (Cambridge 1924, New Haven 1929, Copenhagen
1932), as did Koffka, Lewin and others. Cf. [Jaeger, 2003, 287].
The upholders of Gestalt were committed to liberal humanistic views. In the 1920s and early 1930s, the pallet of political ideas at the Psychological Institute of Berlin was liberal and diverse. Max Wertheimer, the intellectual leader of the Gestalt movement, was known as a free-thinking cosmopolitan, who shared his pacifistic beliefs with his friend Albert Einstein. Einstein had “high regards” for Wertheimer as a human being and a psychologist.\footnote{From a recommendation letter that Einstein wrote to Schlick to help Wertheimer with a position at the University of Göttingen, 28 April 1922. Cf. [Luchins and Luchins, 1979, 181].} When in September 1922, Einstein needed replacement to represent him at a meeting of a Commission of the League of Nations’ to be held while he was traveling in East Asia, he wrote to Wertheimer: “I know only one whose free and objective spirit I trust in every respect, and that is you”.\footnote{Wertheimer was reluctant to accept the invitation because he was a Jew, a citizen of Czechoslovakia and spoke rather poor English. He suggested that it would be better to send a Christian with better language skills instead. (Letters form Einstein to Wertheimer, 12 and 18 September 1922; letters from Wertheimer to Einstein, 17 and 19 September 1922. Cf. [Luchins and Luchins, 1979, 178-180].)} From 1923 to 1929, other members of the institute, such as Wolfgang Metzger and Rudolf Arnheim, published reviews on current psychological work in the left-wing journal Sozialistische Monatshefte (Socialist Monthly). Although these, as a rule, did not touch upon political events, the place of publication sent a signal for itself.\footnote{On the political views of the Gestalt group cf. [Ash, 1995, 292f.; quoted from p. 293].} “Asked to place the Gestalt theorists politically, one former Berlin student who knew them all linked Köhler with the party of Stresemann, Koffka with the Social Democrats, and Lewin with the independent, left-wing Social Democrats”.\footnote{A range of American students came to Berlin with scholarships, e.g. by the National Research Council and other foundations, including J. F. Brown, Donald K. Adams, Karl Zener, Donald McKinnon and Jerome Frank.}

Another liberal side of the Berlin Institute was the multicultural and integrative micro-culture that materialized itself in the Köhler era. During the heyday of Gestalt theory the institute attracted numerous students and scholars from abroad. The list of visitors included Kanae Sakuma from Japan as well as G. Usnadze and Alexander Luria from the Soviet Union but exchange with the United States was particularly intensive.\footnote{Cf. [Ash, 1995, 291].} Ash points out that Berlin was the most impressive psychological institute in Germany for the number of international visitors and the length of their stays.\footnote{A broad and detailed account on the fate of German psychology in the Nazi era see the collection of essays edited by C. F. Graumann, [Graumann, 1985].} Besides the Berlin Institute represented a peculiar academic harbor for social minorities. There was merely another psychological institute in the Weimar Germany that would exhibit a comparable share of women (15, or 48.4%), foreigners (9, or 29%), as well as Jewish staff (see Section 8.1). The institute’s head, Wolfgang Köhler managed to defend this fragile academic microcosm against rightists attacks up until the Gleichschaltung of all of the German academia, which in Berlin was completed with Köhler’s dismissal in 1935 (see Chapter 11).\footnote{The English translations was published in 1944, [Wertheimer, 1944]. See also [Ash, 1995, 294-296].}

Eventually, Wertheimer openly addressed the intellectual challenge by pronouncing a Gestalt solution to “a problem of our times”. In a lecture to the Kant Society in Berlin, on December, 17, 1924, he described this problem as that of a fundamental discontinuity between science and concrete human experience. In reaction Wertheimer offered the Gestalt theory as a new worldview that promised to overcome philosophical and psychological dualism. The powerfully synthetic Gestalt theory would unify discourses about nature and mind without sacrificing experimental method. If one expands on this idea, the discipline of psychology this way would pertain the role as the fundamental discipline of the human science, inherited from Wundt and Dilthey, without either scarifying its legitimating affiliation with exact science.\footnote{The lecture was published a year later under the title Über Gestalttheorie (1925, Erlangen); cf. [Wertheimer, 1925].} Nevertheless, the search for strictly scientific ways to explain the perceived Gestalten, the effort to integrate psychological methods with physical models and a strict commitment to lawful reasoning applied
in the holistic framework of mind and matter disappointed, even repelled, those who were looking for a broader humanistic application of the Gestalt ideas. People distant from academic life were disappointed as the sparks romanticizing holism in popular did not jump over onto the research directed in psychological laboratories. The ideal of Gestalt lost parts of its popularity.165

On the other side, academicians criticized the Gestalt theory for being monistic, in particular in terms of its courting physical science. Köhler's “physicalism” was traded amongst his opponents as an insult to the autonomy of the psyche, and thus to psychology.166 Nonetheless, in the academic context the Gestalt theorists were most sharply criticized by a group that could have become their closest allies, i.e. Felix Krüger and his school of holistic psychology (Ganzheitspsychologie) that resided in Leipzig.

The alternative holistic school of psychology claimed that everything original in the Gestalt doctrine was ideologically charged and short-sighted while everything else was long known to other psychologists. Amongst others, Krüger insisted that “the Gestallists” seemed unaware that their key postulate “the whole is more than the sum of its parts” had been central to Wundt and others for many years. Wertheimer and his entourage have done more than turning the idea into a political party slogan. At the same time, Krüger would stress that the Leipzig school understood holistic processes much more comprehensively incorporating an appreciation for the variety of diffuse experiences that did not (yet) possess structured Gestalten. At Leipzig, these were called “total experiences” and characterized by their associated “affect-color” or “feeling”.167

The key concept introduced by the Leipzig school of Ganzheitspsychologie (as counterpoise to that of Gestalt) was “Structure”. As the Leipzig psychologists saw it, Structure could address individual differences in perception and experience in a way that Gestalt could not. The Leipzigers identified a spectrum of perceptual and cognitive styles into which people should be sorted. In other words, Structure made the study of holistic perception and cognition useful for personality typologies and characterology.168 In a society increasingly preoccupied with racial traits and racial differences this part of the Leipzig agenda got particular attention. The bitter dispute between the two holistic schools endured into the 1950s.169

From a broader socio-political point of view, Gestalt theory eventually became one of many attempts to respond to the challenge of the interwar years. Its protagonists assumed that the switch of perspectives linked with a conceptual change was sufficient to resolve the tensions experienced by the Weimar society. In the politically highly intense and technologically rapidly evolving society this was not, however, the case. As phrased by Ash, “all of the participants in these Weimar-era debates expected far more of Gestalt theory than it could deliver” [Ash, 1995, 306].

165 Cf. [Harrington, 1996, 123f.].
166 This criticism was expressed e.g. by the vitalistic biologist Hans Driesch, cf. [Harrington, 1996, 123f.] and [Ash, 1995, 321].
167 Cf. [Harrington, 1996, 123-6].
Part I Conclusion: Experimental psychology between two poles

So far we have evoked a rough historical overview over German history of experimental psychology from the establishment of the first laboratory (1879) to the Nazi Gleichschaltung (mid 1930s). Three generations of psychologists within this time frame play a role in this dissertation. The generation of the pioneers of experimental psychology, such as Wundt, Külpe, Stumpf and Ebbinghaus, succeeded to translate their academic endeavor into an increasingly firm institutional presence. These eminent scholars were trained in the spirit of duality between psychology and philosophy rooted in the philosophical hegemony of the 19th century. They developed experimental procedures that conflicted with this hegemony pushing psychology towards an independent disciplinary identity. Regarding the content, the nucleus of the apple of discord between the philosophers and the experimentalists became the disagreement over matters of objectivity of psychological research. Early experimental psychologists, such as Wundt, Ebbinghaus and Müller, attributed a purely subjective cognitive faculty to such methodological procedures as the introspection, which were in turn exclusively accepted by the opponents of philosophical psychology. Nevertheless, as we have seen, behind the screen the struggle for financial and infrastructural predominance in the German-speaking academic world added fuel to the fire of the controversy between theorists and experimentalists.

Their successors were trained in the middle of an academic controversy between the “pure” philosophers and the experimentalists resulting in a movement towards disintegration and specialization. The war intermezzo boosted the fast growth of applied psychology in Europe, initiating a significant methodological turn towards the natural science. While administratively psychology remained unified with philosophy for decades after the war, a diversification of experimental-psychological approaches took place in the same time. With a variety of experimental laboratories and research schools, German psychology then developed an academic infrastructure. In this context, Gestalt, being one of the major schools of that period, found ways to combine experimental command with a humanistic attitude.

The Gestalt movement appeared in the German-speaking academia in the first decades of the 20th century, when the limits of psychology were yet unclear and its principles no more than vaguely defined. By the 1920s, Gestalt took the place of a majorly influential school of psychology. Gestalt psychologists in Berlin, Frankfurt and Giessen shared methodological and theoretical principles, as well as a joint academic culture. In matters of theory, Gestalt integrated an innovative understanding of the structure of phenomena combined with an integrative interdisciplinary attitude and the ambition to create a doctrine bypassing the frames of their own discipline. The Gestalt hallmark consisted in a joint commitment to the epistemological principles advanced by Max Wertheimer, i.e. the holistic principles of organization of phenomena. These were rooted in the holistic impulse coming from Ehrenfels and the elitist methodological training by Carl Stumpf, but were first weaved into a consistent epistemic system in the early 1920s (Wertheimer 1922, 1923). The ambition of the Gestalt doctrine went beyond psychology. The scholars intended to justify Gestalt as both a philosophical and empirical domain challenging the trend of specialization in the academia. They adopted concepts from physics and provided extensions to other disciplines, such as physiology, in the hope to prove the general validity of their doctrine.

Finally, the third generation, those who studied in Berlin in Köhler’s directorship time, experienced the consequences of the inner-disciplinary split and psychology’s establishment as an independent discipline. As we will see in Chapter 9 and 11, all of Lewin’s students chose experimental investigations over philosophy of science; none of them followed his path in philosophy of science. The young psychologists of the third generation formed a new academic layer of specialists committed to psychological research and practice.

In the following two parts we turn to a systematic investigation of Kurt Lewin’s experimental and theoretical work mainly undertaken in Berlin from the 1920s up to 1936. Hereby, the formation and establishment of experimental psychology outlined in Part I will provide the context of Lewin’s work helping to unfold the
roots and the reference frame of his experimental program. As will be further shown, also the discussed conflict and interdependency between philosophy and experimental psychology plays a crucial role in Lewin's research endeavor.
Part II

Interdisciplinary roots of Lewin’s theory of human conduct

In the present part we investigate the emergence of Lewin’s psychology of human conduct with respect to its interdisciplinary roots and holistic background. We further outline the specific multi-layered structure of his system of concepts. Chapter 4 situates Lewin’s early scholarly ambitions within the sketched framework. In the last three chapters of this part we investigate the interdisciplinary roots and constitution of Lewin’s theory. Importantly, the interdisciplinary conceptual patterns possess different functions in Lewin’s psychology of human conduct. Chapter 5 elaborates key aspects of his philosophical agenda with the objective to further on demonstrate how these were applied to his research program in experimental psychology. Chapter 6 presents research conducted in experimental psychology of will in the first three decades of the 20th century in German-speaking Europe. It shows how this earlier research nourished the emergence of Kurt Lewin’s basic conceptual system for a psychology of human conduct. Chapter 7 focuses on psychological concepts inspired by natural science. We trace Lewin’s concepts to their physiological and physical prototypes and discuss the function of the “quasi-physical” analogies in Lewin’s field theory. Eventually, we link the field theory to the Gestalt theoretical work equally inspired by natural science.

4 Kurt Lewin in context

The present chapter suggests a change of the narrative perspective. We will closely focus on Kurt Lewin’s theoretical and experimental work in Berlin under the auspices of the Gestalt-theoretical movement. We will show that, on the one side, Lewin was an offspring of the Gestalt school, who, on the other side, developed an individual research style and shaped his own school sprout.

We shall distinguish between two types of influence, immediate and indirect. The two main immediate influences on Lewin’s German career years occurred during his apprenticeship with Carl Stumpf (1911–1921) and the close collaboration with several Gestalt psychologists in Berlin (1922–1934). After a short biographical introduction of Kurt Lewin’s life and work, this chapter takes a closer look at these two influences. Other less direct sources of inspiration to Lewin’s work will be identified, as well. Scholars, who shaped the natural scientific approach to psychological research, such as H. Ebbinghaus and G. E. Müller, were pioneers in terms of research on functions of memory and learning. Measurement techniques developed by Ebbinghaus and perfected by Müller were taken up by members of the Marburg school (Ach and Selz), who have then inspired Lewin’s early research on intentionality of human memory performance, as well as his later work on mechanisms underlying human conduct. Applied psychology that flourished in the war time presumably had two types of by-products on after-war research in Berlin. On the one side, its clear-cut reductionist style stimulated the emergence of anti-movements the most powerful of which was Gestalt. On the other side, it is in this time that psychologists discovered new areas of application and transformed their scholarship into a “science-based profession”; in many respects this applied turn inspired Lewin’s own applied research (performed later on in his American years).170

To sum up, not only did the Gestalt psychologists possess a mature psychological doctrine and a journal of their own but they also developed far-reaching interdisciplinary and socio-political aspirations of this

170 For multifaceted reflection on how psychology turned into a profession see [Woodward, 1989, 295ff.]. A more detailed treatment of Lewin’s professional engagement after the emigration can be found in Chapter 11 of this work.
doctrine. By the end of the 1920s, they became a school with the means to extend and reconstruct the scholarly discourse, including epistemic and experimental practices of their time.

The concepts and experimental practices Lewin introduced in his experimental program rely on the expertise that was discussed earlier. From this point onwards, the work is mainly devoted to the elaboration of Lewin's approach with respect to its roots and various influences.

4.1 A short intellectual biography: Kurt Lewin (1890–1947)

Kurt Lewin was born from a Jewish family in Mogiino (Posnania) on 9 September 1890.171 In 1909, he entered the University of Freiburg to study medicine, but transferred to University of Munich to study biology, then psychology. Eventually, he transferred to Berlin in order to study psychology with Carl Stumpf and philosophy with Alois Rhiel and Ernst Cassirer. Between 1911 and 1916 he was doctoral student under Stumpf. He served in the German army when World War I broke out but due to a wound, he returned to the University of Berlin in 1918. There he got his Habilitation in 1921. Between 1921 and 1933, Lewin worked as Hans Rupp's assistant, who was later on promoted to an associate professor at the Psychological Institute of Berlin, then headed by Köhler, and was part of the flourishing of the Gestalt psychological movement together with Max Wertheimer, Wolfgang Köhler and Kurt Koffka (the latter was teaching in Giessen). In 1932, Lewin left Berlin for a sabbatical year in the United States, and opted for emigration in 1933.

After his emigration Lewin taught at the Cornell University from 1933 to 1935 and at the Iowa Child Welfare Research Station attached to the University of Iowa from 1934 to 1944. From 1944 to 1947, Lewin was Professor and Director of the Research Center for Group Dynamics at the MIT in Cambridge, Massachusetts. In 1942 and also from 1944 to 1945 Lewin was consultant for several US ministries. Shortly before his sudden death, 1946, he also established a privately funded Center for Community Interrelations (CCI) in New York. During his American years, Lewin managed to establish a large network of students and followers, and gained significant influence working with industrial, political and ethnocultural institutions. Kurt Lewin unexpectedly died on 12 February 1947 as a consequence of a heart attack.172

Although this dissertation foremostly discusses Lewin's work of the German period accomplished before his emigration in 1933, Lewin is widely known in the scientific community particularly because of his later research. The second part of Lewin's career, his American years (1933–1947), is characterized by a shift of interest towards social and political questions, as well as problems of economic life. His research concentrated on the intersection of social sciences (including sociology, anthropology, economy) and attempted to integrate these in a joint research field that he named “social psychology”. In the late 1930s and 1940s, Lewin extended and published accounts on his famous theoretical systems “field theory” and “vector psychology”. In these works he gave shape to such wide-spread psychological concepts as “group dynamics”, “action research”, “processes of change”, “leadership and social climates” and the

171 The picture (fig. 7) was taken in Iowa and is property of the Adolf-Würth-Zentrum for the History of Psychology in Würzburg.
impact of “feedback”. The experimental side of Lewin’s American research consisted in the trial of new socio-psychological research techniques in the field as well as in constructed social settings.173 Ultimately, it seems important to add a note on Kurt Lewin’s personality, which – as numerous testimonies by his students, co-workers and the wider circle of contacts accentuate – was one of the most impactful keys to his success both within German (student) networks and, even more so, in North America. According to Horace Kallen, an American philosopher, who met Lewin at a meeting of the International Psychological Society in 1925:

“Lewin had a kind of objectivity about himself, a lack of self-consciousness, which enabled him, for instance, to telephone prominent people whom he had never met and discuss his problem with them. It was not himself he was concerned with, but rather the problem and how to solve it. He was like an inventor trying to sell an invention, no matter what the cost to himself; or like a poet trying to get a hearing, not for himself, but for his poetry. [...] He had the rare ability to get along with people with whom he disagreed, because he respected the opinions of others, because he was no fanatic, and because he was sure of his own views” Kallen quoted in [Marrow, 1969, 105f.].

4.2 Lewin in the early role conflict between epistemology and experimentation (1911–1921)

Lewin started his academic career in the 1911. Back then, philosophy and natural sciences were institutionally intertwined and most students in German universities enjoyed a humanistic education (Bildung)—interdisciplinary training including classes in philosophy and psychology as well as in natural science. Against this background, Lewin got a cross-disciplinary education in medicine, botany, physics before he committed himself to a doctorate with Stumpf in 1911.174

As mentioned earlier, in the pre-war years psychology experienced a significant turn towards applied research, which resulted in an “emancipating turn” away from philosophy and towards a self-positioning as an experimental domain. During the war, Stumpf’s Psychological Institut was as dedicated to experimental practice as most other psychological laboratories with adjusted equipment; methodological accuracy as well as quantifiable experimental results were highest priority. Against the background of the hardening academic split and the starting professionalization of experimental psychology, young scholars found themselves in need to specify their intellectual belonging either to the philosophical or to the experimental domain.

Given this, with the beginning of his doctorate Kurt Lewin had to (temporarily) say goodbye to multidisciplinary scholarship and to commit himself to a unidisciplinary career path. By choosing the supervision of the experimentalist Stumpf instead of for instance the neo-Kantian philosopher Alois Riehl, he assumed a position in the camp of the experimentalists. This work shows that despite all, both Lewin’s doctoral dissertation and his Habilitation work represented attempts to overcome this reinforced frame of a narrow specialization. In both works Lewin tried to integrate interdisciplinary impulses and to create an epistemological framework complementing his experimental investigation. Lewin’s approach to scholarly work in which a sophisticated epistemological framework has a directive function regarding the experimental research (more Chapter 7) originates from this apprenticeship period.

173 Much of Lewin’s professional achievements in the American years was can be traced back to his German work. On continuity and change in Lewin’s carrier see also [Ash, 1992, Sokal, 1984].
4.2.1 The doctorate: Stick to experimentation!

In 1911, Lewin signed up for a doctorate under Carl Stumpf’s supervision. On 20 August 1914, he ended up submitting a work entitled “Die Erziehung der Versuchsperson zur richtigen Selbstbeobachtung”, for the peer reviewing by Stumpf and Riehl. The work was concerned with questions of experimental procedures and tried to improve techniques of self-observation in experiments with probands. In reaction to that the two reviewers suggested a revision of the dissertation emphasizing that the candidate needed to deliver a detailed report on his technical improvements of the experimental apparatus. Stumpf’s survey states:


The mentioned apparatus improved by Lewin is supposedly a “self-timing memory device” that automatically adjusting the presentation speed to the speed of probands’ reactions and a “counting chronographer” that allowed for a continuous measurement of time during the whole experiment.

The second reviewer Alois Riehl added that the candidate’s work lacked precision.

“Nun könnte zwar, was der Verf. in der vorliegenden Schrift unter dem Gesichtspunkt der Erziehung der Versuchsperson zur richtigen Selbstbeobachtung entwickelt sehr wohl selbständiges wissenschaftliches Interesse erwecken; allein die Art der Darstellung in ihrer selbstgefühligen Breite, und der öfters zu bemerkende Mangel an Exaktheit der vorgeschlagenen Fragemethode mindert wesentlich das an sich Verdienstliche der Arbeit des Candidaten” (A. Riehl, 1 Sept. 1914).

Nevertheless, Lewin was invited to pass his doctoral exam on 9 September 1914, in terms of a then-common “fast procedure” (Schnellpromotion) before leaving for the front. Upon his return to Berlin in 1916, Lewin submitted a detailed report the reviewers pressured him for. This contained the results of his experimental series verifying Narziss Ach’s association law entitled Die psychische Tätigkeit bei der Hemmung von Willensvorgängen und das Grundgesetz der Assoziation (published in 1917). The work represents an experimental refutation of a then-popular theory of memory and thought. In his influential work Über den Willensakt und das Temperament (1910) the Würzburg psychologist Narziss Ach had suggested that “determining tendencies” stimulated by an experimenter’s instruction inhibit the subjects’ habit to recall associative connections they had learned earlier. The resulting delay in carrying out the instruction would, thus, be a measure of employed will power (we elaborate on this in Chapter 6). Lewin re-constructed the experiment in which Ach asked observers to learn lengthy series of meaningless syllables, then instructing them either to reverse or rhyme the syllables. Lewin’s prediction was that they would either take longer to complete the “heterogeneous” second task or give wrong answers. Yet, the surprising result was that there generally was no “inhibitive delay,” and only a few errors. As the predicted effects failed to occur even under optimal conditions, Lewin argued that an underlying psychical construct — an intention introduced through the experimenter’s instruction — was responsible for the subject’s conduct.

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175 Wittmann was the first to reconstruct Lewin’s doctorate procedure; cf. [Wittmann, 1998, 152-155]. After the revision of source material we shall give a summarized and slightly corrected account of this in order to ensure a more sensitive understanding of Lewin’s ensuing career.


178 These are described in later publications. Cf. [Lewin, 1922a, 198f.].


180 See [Ach, 1910b] and [Lewin, 1917].

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Both reviewers welcomed the submission of experimental data and approved of the dissertation. Stumpf commented as follows: “Die Versuchsanordnungen sind sehr scharfsinnig und umsichtig erdacht, die Versuche mit grösster Sorgfalt durchgeführt. Der Vf. schliesst daran genauere Bestimmungen über den Begriff der Übung und des Lernens”. Lewin's included reflections on epistemological problems remained largely disregarded. Finally, on 15 December 1916, the doctorate procedure was finalized under the signatures of Stumpf, Riehl and Norden, the dean of the Philosophical Faculty. This short survey shows that Lewin had troubles to obtain his degree with overly meta-theoretical work. Instead, a convincing doctoral work had to testify the candidate’s mastery of precise experimental work, and to demonstrate his know-how in designing and conducting psychological experiments. The lack of methodological mastery earned Lewin reproach at first and its demonstration yielded him praise and recognition at the second try.

4.2.2 The Habilitation: In no man’s land

In August 1918, Lewin was severely wounded and spent over eight months in a hospital recuperating before his discharge from military service. Upon his return to Berlin he completed a large monograph entitled “Der Typos der genetischen Reihen in Physik, organismischer Biologie und Entwicklungsgeschichte”, which he submitted in late 1919 or early 1920 hoping to obtain his Habilitation and the venia legendi, i.e. the right to teach, at the Philosophical Faculty of the Kaiser Wilhelm University of Berlin. The oeuvre was published in 1922 with minor changes, including the title now switched to “Der Begriff der Genese in Physik, Biologie und Entwicklungsgeschichte”.

The Habilitation paper is the first elaboration of Lewin's comparative theory of science. The paper addresses the challenge of the constitution of scientific disciplines. Lewin argues that this can be achieved only through a systematic examination and reconsideration of basic categories of a discipline. While each science constitutes a closed unit of systematically connected concepts separated from another sciences by a specific logic of construction, concepts of one scientific discipline need to be integrated in one joint system, all other concepts have to be excluded.

In his original survey of 28 January 1920, Stumpf seemed rather reserved but sympathetic with the candidate’s approach:

“Rein formell betrachtet zeichnet sich die umfangreiche Arbeit, die man ihrer allgemeinsten Tendenz nach auch als einen Beitrag zur allgemeinen Verhältnislehre bezeichnen kann, jedenfalls durch Streben nach Gründlichkeit und Genauigkeit des Denkens aus... Vorausgesetzt, daß die physikalischen und biologischen Fachmänner der Kommission keine wesentlichen Einwendungen zu erheben finden, mochte ich die Zulassung des Kandidaten [...] zu den weiteren Habilitationsstadien empfehlen” (C. Stumpf).

In the next step an interdisciplinary committee received the task to evaluate Lewin's work. Besides the psychologist Carl Stumpf the committee was composed of a botanist, a physicist, a zoologist and two philosophers. Already on 27 March 1920, the ongoing Habilitation procedure came to an abrupt end.

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181 C. Stumpf's survey, 8.11.1916.
182 Cf. HUA, Phil. Fac., no. 576, sheet 158f.
183 Cf. [Lewin, 1992b].
184 Cf. HUA, Phil. Fac., file no. 1237, sheet 133f.
185 The Concept of Genesis in Physics, Biology and Evolution, published in 1922, displays only minor deviations from the originally submitted Habilitation paper; cf. [Métraux, 1992, 38].
186 Cf. [Lewin, 1983a]; for a more detailed discussion of this paper see Chapter 5.
187 Cf. [Lewin, 1980a]; for a more detailed discussion of this paper see Chapter 5. The emphasis is mine.
188 One will find more information on the committee members and their statements in Métraux's publications. He describes Lewin's Habilitation procedure in the introduction to the 2nd volume of the Kurt Lewin Werkausgabe. See in German [Métraux, 1983, 18-25] and a short version in English [Métraux, 1992, 374-7]. I further re-sketch the issues relevant to the here presented argument.
Stumpf asked the faculty to cancel the Habilitation as none of his colleagues seemed to find that Lewin's monograph significantly contributed to the advancement of a natural scientific discipline since in any case the greater part of the submitted monograph dealt with purely philosophical (i.e. non-scientific) matters, as one committee member, the physicist Heinrich Rubens, remarked.

"A monograph submitted to obtain the Habilitation in natural philosophy should provide certain stimulating ideas for natural scientists, but none of the colleagues has mentioned anything of value in this respect, and I myself had to express some considerable reservations" (C. Stumpf).^189

It seems that the cross-disciplinary character of Lewin’s Habilitation paper created an academic situation in which Lewin found himself in no man’s land. Although his work was concerned with the constitution of theories in two natural scientific disciplines, physics and biology, and approached these with an analytic method he attributed to philosophy, both parties did not perceive the work as explicitly belonging to their discipline nor could they determine its concrete experimental or practical value. The strong disciplinary divide existing at that time between the faculties of philosophy and natural science hindered the appreciation of borderline work of that kind; a work that did not explicitly demarcate its belonging nor respect the “rules of coexistence” of the disciplines.^190

On 28 June 1920, Lewin re-applied for Habilitation with a series of texts relying on experimental psychological investigations, Experimentelle Untersuchungen zum Grundgesetz der Assoziation, which was an extension of his doctoral dissertation.^191 This time Stumpf stated:

The work "on the experimental investigation into the fundamental law of association is an extended version of the doctoral dissertation. It is quantitatively extensive, qualitatively exact and as daring in its aims as it is careful in the performance of the experiments. The author achieves nothing less than the refutation of the fundamental law of associationism [and] replaces this law [. . .] with the fact of the training of skills. He concludes with developing a theory of training and learning" (C. Stumpf, 10 October 1920).^192

Although Stumpf’s appraisal was in parts an exaggeration,^193 once the candidate demonstrated neat experimental skills, and a self-positioning at the side of exact science was thus accomplished, the faculty voted unanimously in favor of Lewin’s Habilitation.

As one can see, despite Lewin’s efforts to combine the epistemological and experimental approach he both times found himself in the need to present an explicitly experimental work. While the mastery of concrete methodological skills had to be demonstrated its epistemological implications did not evoke interest. As a matter of fact, Lewin’s research approach relying on the integration of various methodologies and disciplinary styles opposed the predominant academic reality in which science tended to become more and more independent from the philosophical influence. In the course of his apprenticeship this mainstream frame rather hindered him in evolving the own research vision. Lewin was forced to (temporarily) align himself to the existing horizon of expectations of the prevailing academic system. Yet, soon after his Habilitation he found a niche that promised the liberty to develop his meta-conception of scholarship. The niche was the heart of Gestalt movement established at the Psychological Institute in Berlin directed by W. Köhler since 1921/22.

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^189 Da man von einer naturphilosophischen Habilitationsschrift verlangen muß, daß auch die Naturforscher selbst gewisse Anregungen darin finden, keiner der HH [=Herren] Kollegen aber etwas Verdienstliches in dieser Beziehung erwähnt, und da ich ohnedies selbst nicht unerhebliche Ausstellungen zu machen hatte... (HUA, file no. 1237, sheet 134. Survey by C. Stumpf).

^190 Cf. also [Métraux, 1983, 21f.].

^191 The work was published in 1922, in two volumes of the Psychologische Forschung under the title "Das Problem der Willensmessung und das Grundgesetz der Assoziation". Cf. [Lewin, 1922a] and [Lewin, 1922b].


^193 Métraux remarks that Lewin’s refutation of associationism was anything but innovative—Otto Selz had already done this in his book on productive thinking in 1913. See [Selz, 1913]; cf. [Métraux, 1992, 376f.] and [Métraux and Herrmann, 1991].
4.3 Lewin and the (other) Gestalt psychologists (1922–1934)

After his Habilitation, Kurt Lewin got appointed as Hand Rupp's assistant at the University of Berlin where he joined Köhler and Wertheimer in their research endeavor committed to Gestalt psychology. He found a nearly optimal academic niche under the Gestalt umbrella in Berlin, where he was employed between 1922 and 1934. Holding a position within a highly estimated school in a world-wide renowned institute, he enjoyed the liberty to pursue his diverse academic interests. Within the epistemologically inspired holistic framework of Gestalt, he could combine research and teaching in experimental psychology and philosophy of science without far-reaching restrictions.\textsuperscript{194} In the present section we do no more than introducing the general terms of collaboration between Lewin and the (other) Gestalt psychologists. Various concrete links in their research will be outlined in the course of this work. The interdisciplinary constitution of both theoretical approaches is discussed in Part II while experimental practices are focus in Part III.

4.3.1 Lewin's niche

After Wertheimer published his programatic paper Untersuchungen zur Lehre von der Gestalt, I: Prinzipielle Bemerkungen in 1922,\textsuperscript{195} Lewin worked his way into Gestalt-style research with a 1923 paper on the perception of upside-down figures and a 1925 study with Japanese visitor Kanae Sakuma on depth effects in motion perception. In these studies the authors adjusted Lipman’s memory apparatus and Heting’s haploscope (Hetingsche Haploskop) in order to manipulate and grasp the proband’s visual perception of words or figures.\textsuperscript{196} Up until 1926, Lewin was also involved in measurement-focused research. For instance, he delivered two papers suggesting improvements on apparatus measuring sound intensity and finally a separate paper on his invention of the “self-timing chronographer” based on the Hipp chronoscope, a device that was commonly used for time measurement in the first psychological laboratories (see fig. 8).\textsuperscript{197} These rather diverse partly technical publications over around four years point to a phases of a scholarly identity-forming Lewin went through.

However, Lewin bypassed the “unfocused phases” by 1926 when he set up his individual research program on “Psychology of Action and Emotion”. Since mid-1920s he organized and headed a proper student circle and installed an own publication series in the Psychologische Forschung. Thus, a partly autonomous infrastructure was established within the Gestalt framework and maintained up to Lewin’s emigration in 1933/34. Certainly, a precondition to this partly independence was that Lewin accepted the Gestalt theoretical claims and shared holistic views of the part-whole-relationships without restrictions. None of Lewin’s concepts was strictly opposed to those of the Gestalt theorists. No significant theoretical contradictions existed. Another precondition was that convenient collaboration modes between Lewin and the (other) Gestalt psychologists were found. Lewin identified himself with Gestalt psychology, willingly lectured Gestalt concepts and systematically used some of these in his publications. He gave a range of public lectures devoted to Gestalt psychology and its distinction from other contemporary schools.\textsuperscript{198} Also after the emigration he promoted Gestalt ideas and the work of his Gestalt colleagues.\textsuperscript{199}

\textsuperscript{194}Most of the staff in the Berlin Institute taught philosophy as well as psychology. Between 1921 and 1932, Lewin had offered a total of 70 courses of which 20 had addressed topics related to philosophy or theory of science and 50 themes pertaining to experimental psychology, in particular in psychology of action and emotion, and developmental psychology. An extensive account on the teaching in Berlin is given in Chapter 6.

\textsuperscript{195}See Wertheimer, 1922.

\textsuperscript{196}See [Lewin and Sakuma, 1925, esp. 199]. Lipman’s memory apparatus was introduced in the previous section.

\textsuperscript{197}See [Lewin, 1923], [Lewin, 1922d, Lewin, 1922c, Lewin, 1926a]. The illustration is from [Zimmermann, 1904], reproduced in the Max Planck Virtual Laboratory: http://vlp.mpib-berlin.mpg.de/technology/data?id=tec119, 23 June 2014.

\textsuperscript{198}One of Lewin’s lectures on Gestalt psychology was, for instance, “Gestalttheorie und Kinderpsychologie” (1929), [Lewin, 1982b]. See also [Wittmann, 1998, 90].

\textsuperscript{199}See Some Social-Psychological Differences between the United States and Germany (1936), [Lewin, 1936b].
During the whole period between 1922 and 1934, Köhler ensured support in matters of administration and funding. In 1927, Köhler addressed the Ministry of Education in order to prolong Lewin’s appointment and upgrade it to an associate professorship (“nichtbeamte außerordentliche Professor”). Therein he insisted, referring to the series on Psychology of Action and Emotion: with his successful research in the field of general psychology Lewin became increasingly indispensable (“Prof. Dr. Lewin, ist durch seine erfolgreichen Forschungen auf allgemein-psychologischen Gebiet für die theoretische Abteilung immer unentbehrlicher geworden” W. Köhler, 20 Oct. 1927). He emphasized the same for his contract extension two years later adding that nobody besides Lewin would be competent to head the work in psychology of will and affection:

“Dr. Lewin ist nach wie vor die treibende Kraft für eine neue und wertvolle Forschungsrichung, die er eingeführt hat, und deren weitere Entwicklung ganz von ihm abhängt. Die Studierenden, die in Berlin unter seiner Leitung arbeiten und das Institut überhaupt, können ihn keinesfalls entbehren” (Köhler, 27 Aug. 1929).201

In 1932 and 1933, when Lewin was about to leave Germany for the US, Köhler still did as much as possible to prolong his contracts.


It is curious to note that all extensions of Lewin’s work appointment at the Berlin University were specifically motivated by the importance of his experimental achievements without regards to his natural philosophy.


See also request no. UI5768 from the same year: “Herr Dr. Lewin leitet eine Serie von besonders wichtigen Untersuchungen, deren Unterbrechung wir auf keinen Fall verantworten können” (Köhler, W., in: GStA PK, I.HA, Rep.76 Va, Sect.2, Tit.X, Nr. 150, III, p.249).


4.3.2 The contradictions

However, despite this extensive support, Lewin never belonged to the core triad in the most intimate way. Some students of the Berlin Institute pointed out that a certain private aloofness existed between Lewin and the Gestalt trio. The Gestalt psychologists did not share with him the informal “Du” they used among themselves. Carl Frankenstein, another student at the Psychological Institute between 1923 and 1926, wrote to Alfred Marrow that “little contact seemed to exist between him [=Köhler] and Lewin”.203 At least to some extent, Lewin was the marginalized one in this group of four. As the student Norman Meier summed up: “Lewin was on the fringe”.204

Reasons for the indicated distance might have been diverse. First, as the youngest one, Lewin joined the group in 1921/22 when the core theory was already written down and implemented in Wertheimer’s, Köhler’s and Koffka’s research. Second, he was an originally rural Jew who moved to Berlin. Wittmann suggests that a somewhat significant marginalization reason was the social gap between Lewin’s modest origins and the milieu of Bildungsbürgertum the others belonged to.205 Third, no contradictions but differences in matters of theory existed between Lewin and his collegues.

“Sie wissen, wie hoch ich Lewin schätze, aber ich würde auch ihm gegenüber die Ansicht vertreten, dass W. [=Wertheimer] fruchtbarere und weniger formale Probleme anpackt, zum mindesten bisher” (Köhler, 30 Sept. 1923).206

We explicitly discuss theory-related contradictions at the example of natural-scientific elements in Gestalt and in Lewin’s field approach (cf. Section 7.4).

Ultimately, a certain rivalry between Wertheimer and Lewin might have played a role:

“I could imagine that Lewin with his more active and ambitious temperament surpassed Wertheimer very soon. In so far as one could understand that Max stood in certain defense against Kurt Lewin... Max Wertheimer, altogether, was quite a rather tender man, a more shy, sensitive, introverted person“ (Metzger).207

In any case, no potentially existing tensions were carried out openly.

“It came as a surprise to many of Lewin’s former students of Berlin’s Psychological Institute to hear the opinion expressed that in the U.S.A. Wertheimer felt that Lewin was teaching non-Gestaltist and/or heretical ideas, and that Lewin and Wertheimer did not get along because the latter could not tolerate ideas that were different from his” [Luchins and Luchins, 1986, 14].

By and large, in the 1920s Weimar a whole variety of controversial discussions between different psychological currents and schools (e.g. Würzburg, Leipzig) was carried out. In their light the listed internal differences were minor and Lewin was constantly bracketed together with the Gestalt school.208 The umbrella of the Gestalt group at the Berlin University offered Lewin a combination of infrastructure, research resources and substantial work liberty which he needed to develop and implement his proper agenda, and which he lacked as student under Stumpf. Lewin’s formal belonging to the Berlin Institute, where the core of Gestalt was established, was supported by Köhler over years. In these years, he essentially contributed to the publishing and teaching endeavor of the institute. While Gestalt gave Lewin the infrastructural stability and nurtured him with scientific ideas, it granted him the needed liberty to carry out his own increasingly independent research program. In 1926, Lewin set up an individual

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204Cf [Luchins and Luchins, 1986, 15].
205Cf. [Wittmann, 1998, 33f., 90f.].
206Köhler’s letter to Reichenbach, 30 Sept. 1923. Quoted as transliterated in [Wittmann, 1998, 191]. The original can be viewed at the University of Pittsburgh Libraries, Pittsburgh, Penn.
207Metzger, quoted as in [Luchins and Luchins, 1986, 12].
208Cf. [Graumann, 1982, 31].
research program on *Psychology of Action and Emotion* as a part of which he assembled and headed a proper student circle and installed an own publication series in the *Psychologische Forschung*. This partly autonomous research infrastructure that was established within the Gestalt framework subject of discussion in Part III of the present dissertation.
5 Constitution of new concepts in Lewin’s pragmatic philosophy of science

Lewin’s major philosophical work derived from the period between 1919 and 1931. In 1919, he finished and submitted his Habilitation paper Der Typus der genetischen Reihen in Physik, organismischer Biologie und Entwicklungsgeschichte in which he comparatively treated the development of conditional-genetic concepts in physics and biology. With this writing, he introduced a series of works theorizing the nature and challenges of science to which I will further refer as Lewin’s “comparative theory of science”. In 1931, Lewin published his subsuming essay Der Übergang von der aristothelischen zur galileischen Denkweise, in which he integrated most of his views on philosophy of science developed in the past dozen of years and set up programmatic goals for empirical research in psychology. No more significant work in philosophy of science appeared in his American period. Though, in 1946, Lewin wrote a recollection on Cassirer as his teacher for Arthur Schilpp’s volume—Cassirer’s Philosophy of Science and the Social Sciences— that was not published but in 1949, after Lewin’s death.

The first priority of Lewin’s effort at creating a new type of experimental psychology was its functional application derived from the belief that his discipline, the yet “immature” psychology, needs the support of the philosophy of science to find out what a truly scientific psychology might look like. Lewin aims at grasping the implications of philosophical insights for his work on psychological work. For instance, the early developmental state of psychology requires a proper specification of its principles and conditions of manifestation. Hereby, philosophy should take a consulting function towards empirical psychology.


In the middle of the academic controversy between the emerging new type of empirical psychology and its “parental discipline” philosophy, most philosophers felt the need to take a self-delimiting position towards the emerging experimental psychology over questions on the theoretic and empirical research methods on the nature of the consciousness. In contrast, Lewin was concerned with the question: How can philosophy substantially contribute to the development of empirical sciences? Clearly, there have been also other – earlier and possibly more substantial – arguments on the same question that inspired epistemic investigations. One of those was delivered by Lewin’s admired teacher Ernst Cassirer and had direct influence upon Lewin’s proper work. Another influence significant to Lewin’s philosophy of science was Hans Reichenbach, whom Lewin met in a sociodemocratic student group. Later on Reichenbach founded the Society for Scientific Philosophy, with which Lewin was associated for a period of time in Berlin.

After a short introduction to the early work of Ernst Cassirer, I delineate the general traits of Lewin’s philosophy of science, and discuss his treatment and extension of Cassirer’s work. Further, I introduce

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210 On the relationship and exchange of letters between Lewin and Reichenbach see [Wittmann, 1998], on the Society for Scientific Philosophy see [Hecht and Hoffmann, 1991, 44, 49f.] and [Hoffmann, 2007a], and on the relationship between Lewin, Gestalt theory and logical empirism see [Ash, 1994].
his comparative theory of science as an epistemic system and discuss the implications of its key components, such as "lawfulness" and "conditional-genetic concept type". Eventually, I highlight the inherent functional side of Lewin’s theoretical construct that he later on translated into a theoretical framework for applied research.

5.1 Cassirer’s impact

Cassirer’s philosophy represents the constant reference frame of Lewin’s work in philosophy of science. Although probably there was no close collaboration or however manifested informal and reciprocal exchange between teacher and student,211 Lewin himself felt towards Cassirer “the deep gratitude of a student to his teacher”. Looking back a year before his passing away, Lewin recollected: “Scarcely a year passed when I did not have specific reason to acknowledge the help which Cassirer’s views on the nature of science and research offered” [Lewin, 1949, 271f.].

“It is not easy to point in Cassirer’s work to a specific concept or any specific statement which provides a striking new insight and solves a previously insoluble problem. Still, […] Cassirer’s approach seems to me a most illuminating and constructive help for making those decisions about methods and about the direction of the next step, upon which it depends whether a concrete piece of research will be a substantial contribution to a living science or a well polished container of nothing” [Lewin, 1949, 272].

Cassirer’s early monographs *Das Erkenntnisproblem in der Philosophie und Wissenschaft der neueren Zeit* (Habilitation, 1906) and, in particular, *Substance and Function* (Substanzbegriff und Funktionsbegriff, 1910) had lasting impact on Lewin’s work.212 By contrast, Lewin probably never had the opportunity to read Cassirer’s late work, including his *Philosophie der symbolischen Formen* (1923, 1925, 1929).213 In the named early monographs Cassirer interprets the history of modern science through the paradigm of its eternal change. As early as in 1906, he emphasizes that, while science is involved in an eternal transformation process our understanding of scientific theories and practices is rooted in our epoch, and therefore historically relative. “Jede Epoche besitzt ein Grundsystem letzter allgemeiner Begriffe und Voraussetzungen, kraft deren sie die Mannigfaltigkeit des Stoffes, den ihr Erfahrung und Beobachtung bieten, meistert und zur Einheit zusammenfängt” [Cassirer, 1906, v]. Based on this historical perspective Cassirer develops his theory of the formation of scientific concepts. In his view, science progresses from naively realistic, “substantialistic” concepts, focusing on underlying substances and mechanisms subsisting beneath the observable phenomena towards increasingly “functional” concepts.

In *Substance and Function* Cassirer first of all delineates the deficiency of the “Aristotelian” scientific logic. According to the Aristotelian “abstractionist” logic (particularly characteristic for the philosophical empiricism) general concepts are derived inductively from our perceived reality and clustered into groups of phenomena.

“Nichts anderes wird in der Tat vorausgesetzt, als das Dasein der Dinge selbst in ihrer zuletzt unübersehbaren Mannigfaltigkeit und das Vermögen des Geistes, aus dieser Fülle der individuellen Einzelexistzen diejenigen Momente herauszuheben, die einer Mehrheit von ihnen gemeinsam zugehören. Indem wir auf diese Weise die Objekte, die durch den gemeinsamen Besitz ein und derselben Eigenschaft gekennzeichnet sind, zu Klassen vereinigen und dieses Verfahren fortschreitend auf den höheren Stufen wiederholen, entsteht uns allmählich eine immer festere Ordnung und Gliederung des Seins je nach der Abstufung der sachlichen Ähnlichkeiten, die sich durch die Einzeldinge hindurchziehen” [Cassirer, 1910, 5].

211 Cassirer has probably never read Lewin’s work. He never explicitly quoted Lewin in any of his published or unpublished writings. Neither did the research literature up until now identify any letter exchange. The one reference pointing to personal contact between the two is given in Lewin’s letter to Reichenbach wherein Lewin mentions that he spoke to Cassirer at a Philosophical Congress in Hamburg, in July 1923; despite usual habit Lewin does not add any further details. Cf. [Wittmann, 1998, HR-016-36-25 on p. 126].

212 Cf. [Métraux, 1983, 28].

213 Cf. [Wittmann, 1998, 126f.].
For Cassirer the outreaching achievement of the abstractionist logic consists in creating an order of things in accordance with their similarities and differences. This is apt to deliver a consistent perception of the world unity that an individual needs for the constitution of the self.

“Die wesentlichen Funktionen, die das Denken hierbei betätigt, sind also lediglich die des Vergleichens und Unterscheidens gegebener sinnlicher Mannigfaltigkeiten. Die Reflexion, die zwischen den besonderen Objekten hin und her geht, um sich der wesentlichen Züge, in denen sie übereinstimmen, zu versichern, führt von selbst zur Abstraktion, die eben diese verwandten Züge losgelöst von aller Beimischung mit ungleichartigen Bestandteilen rein für sich erfaßt und heraushebt. So wird durch diese Auffassung—und dies scheint ihr eigentümlicher Vorzug und ihre Rechtfertigung zu sein—die Einheit des natürlichen Weltbildes nirgends gestört und gefährdet” [Cassirer, 1910, 5f.].

Yet, the problems emerging in contemporary mathematics and exact sciences urge for a revision of the Aristotelian system. The Aristotelian concepts are qualified to deal with abstractions belonging to one particular category of objects at a time214 while the contemporary mathematics needs to deal with abstract classes and relations between these.

The replacement of the Aristotelian scientific logic through a Galilean one, which Cassirer calls “critical theory”, is equally a pivotal epistemological shift, to which the problem of concept formation (Begriffsbildung) is central. On the level of concepts the shifts consists in the transition from the object-bound substance concept (Substanzbegriff) to the genetic function concept (Funktionsbegriff).

In the Galilean system of science the underlying ontology is finally being abandoned in favor of functional correlations. For Cassirer the function concept is dynamic and relational at once. The relational dimension implies its embedment in and dependency on the system of concepts as a whole. Our sensory representations achieve truth and “relation to an object” not by matching or picturing a realm of metaphysical “things” or substances constituting the stable and enduring substrate of the empirical phenomena, but rather due to the embedment of the empirical phenomena into an ideal formal structure of mathematical relations. These relational structures, which Cassirer calls “systems of order”, shall re-integrate and reconnect existing scientific concepts in a new way (as, for instance, the new non-Euclidean geometries contain the older geometry of Euclid as a continuously approximated limiting case).


Thus, developments in contemporary formal logic (the mathematical theory of relations) demand a definite rejection of phenomenal reasoning in favor of the genetic conception of knowledge. This way we can conceive all the structures in one genetically interconnected system as continuously converging (cf. ebd. 148ff.).

The “dynamic” dimension of Cassirer’s theory of knowledge implies a reinterpretation of Kant’s synthetic a priori. Contrarily to the original Kantian conception of the a priori, which assumes that the fundamental principles of Newtonian mechanics “need to be taken as absolutely unchanging dogmas,” according to Cassirer even our most general “functional form” for the laws of nature undergoes a change. Yet, such transformational dynamics can never entail that “the one fundamental form absolutely disappears while another arises absolutely new in its place.” In this sense, for Cassirer the scientific revolution is a change in the principle of law formation. In the Aristotelian system laws are not exceptionalness but

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approximations derived by means of deduction from the majority of experienced cases. In contrast, the Galilean principle of induction is essentially a process of generalization, aiming to subsume individual facts under ever more universal laws. It attempts to subsume even the most general laws at a given stage of theorizing (e.g., Newton’s laws) under still more general laws, in such a way that the more general laws at an earlier stage are exhibited as approximate special cases of the still more general laws at a later stage. For Cassirer this implies that we must form the idea of an ultimate or limiting set of laws, in such a way that all previous stages are approximate special cases of these ultimate laws. “In this sense, the critical theory of experience actually aims at constructing a universal invariant theory of experience and thereby to fulfill a demand towards which the character of the inductive procedure itself ever more clearly presses”\(^{215}\)

In the light of the sketched picture it seems nothing but logical that Cassirer’s viewpoint on the formation did not contradict but support the respect of the whole-parts relationship hold up by Gestalt.

“Was uns im Gebiete des Bewußtseins empirisch wahrhaft bekannt und gegeben ist, sind niemals die Einzelbestandteile, die sich sodann zu verschiedenen beobachtbaren Wirkungen zusammensetzen, sondern es ist stets bereits eine vielfältig gegliederte und durch Relationen aller Art geordnete Mannigfaltigkeit, die sich lediglich kraft der Abstraktion in einzelne Teilbestände sondern läßt. Die Frage kann hier niemals lauten, wie wir von den Teilen zum Ganzen, sondern wie wir von dem Ganzen zu den Teilen gelangen” [Cassirer, 1910, 445].

### 5.2 Main traits of Lewin’s comparative theory of science

Lewin’s interest in philosophy was not bound to a specific current or mode of thought but eclectic. He drew from whatever sources seemed profitable to his own endeavor borrowing from phenomenology (Edmund Husserl), logical positivism (Hans Reichenbach), Marxism (Karl Korsch) and the neo-Kantian movement, i. a. Alois Riehl and Ernst Cassirer. In the curriculum vitae Lewin submitted in 1914 as attachment to his dissertation, he listed Ernst Cassirer (1874–1945), Jonas Cohn (1869–1947), Benno Erdmann (1851–1921), Heinrich Rickert (1863–1936) and Alois Riehl (1844–1924) as his philosophy teachers.\(^ {216}\) Yet, among those, the influence of Ernst Cassirer, whose seminar Lewin attended in 1910, has often been accentuated.\(^ {217}\) Métraux states that Lewin obviously did not aspire to membership to the inner circle of the philosophical establishment. This rather unusual philosophical melange, nourished by personal and intellectual idiosyncrasies, went far beyond what was likely to be accepted by orthodox philosophers. Lewin makes use of a network of philosophemes in order to systematically verify and correct his own ideas.\(^ {218}\)

Following Métraux, Lewin’s philosophy of science could be characterized as descriptive and analytical, not prescriptive or normative.\(^ {219}\) It derives from the insight that the main problems which the scientist has to face are inevitably bound to the particular state of development of his science. One is in permanent danger of making the science of the past a prototype for all science and of making past methodology the standard by which to measure what scientific methods “ought” to be used or not to be used. Looking at scientific methods of the past in the way in which the research-worker at that time would perceive them, is a good way to avoid this danger. The philosopher’s contribution here can be to gain insights into the development of science, to perceive both the permanent characteristics of scientific systems and procedures and the specific conceptual form. According to Lewin (and Cassirer) the basic character of

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\(^{215}\) In diesem Sinne will die kritische Erfahrungslehre in der Tat gleichsam die allgemeine Invariantentheorie der Erfahrung bilden und damit eine Forderung erfüllen, auf welche die Charakteristik des induktiven Verfahrens selbst immer deutlicher hindrängt” [Cassirer, 1910, 356].

\(^{216}\) Cf. HUA, Phil. Fac., dissertation file no. 576, sheet 151, Kurt Lewin’s Curriculum Vitae, 1914.

science is the eternal attempt to go beyond what is regarded scientifically accessible at any specific time. “To proceed beyond the limitations of a given level of knowledge the researcher, as a rule, has to break down methodological taboos which condemn as ‘unscientific’ or ‘illogical’ the very methods or concepts which later on prove to be basic for the next major progress” [Lewin, 1949, 275]. The “comparative theory of the science” can be used to reveal “the general rule in an example, without destroying the specific characteristics of a particular discipline at a given stage of development” (ebd. 276). According to Lewin, this makes Cassirer’s comparative treatment of some branches of mathematics and of the natural sciences exceptionally illuminating for research in the social sciences (cf. ebd. 276).

Lewin’s philosophy of science is concerned with the question how to route and accelerate the advancement of psychology as a scientific discipline. He accepts the Cassirerian categories or – in Lewin’s own language – “modes of scientific thought” that, in turn, imply two qualitatively different styles of research and essentially unequal types of concepts. In his prominent essay The Conflict between Aristotelian and Galilean Modes of Thought in Contemporary Psychology (Der Übergang von der aristothelischen zur galileischen Denkweise, 1931), Lewin applies the comparative method: He uses the example of Western physics (wherein he includes also concepts from chemistry) and biology in order to extract the fundamental traits of the Aristotelian and the Galilean modes of thought, and then apply the extracted principles to the less mature psychology.

Following Cassirer’s reasoning, Lewin argues that the transition from the Aristotelian to the Galilean physics involved a “changed interpretation and classification” [Lewin, 1935c, 4]. “For Aristotle the class defined the essence or essential nature of the object and thus determined its behavior”. This also implies that the way of studying things is above all aimed at revealing the nature of any class of objects or events. By contrast, in modern quantitative physics “dichotomous classifications have been entirely replaced by continuous gradations” (ebd. 4). “The concepts of Aristotelian physics were anthropomorphic and inexact. Modern physics, on the contrary, is quantitatively exact, and pure mathematical, functional relations now occupy the place of former anthropomorphic explanations” (ebd. 2). That means that physics already succeeded to traverse the “Galilean turning point” (Galileische Wendepunkt) and its “substantial concepts have been replaced by functional concepts” (ebd. 4). In the following sections we shall discuss the application of Lewin’s comparative theory of science to psychology.

5.3 Phenomenological vs. conditional-genetic concepts

One of the main characteristics of the transition from the Aristotelian to the Galilean mode of thought is, for Lewin, the generation of a new concept system that evolves from the principle of “causal-genetic” development. As early as in 1919, in the Concept of Genesis (published in 1922), Lewin identifies Genesereihen (conceptual systems that are genetically related to one another) as a desirable scientific logic. He argues that a basic peculiarity of physical objects, namely their existence as objects in the space-time continuum, brought about the habit to label a body existing over a period of time with one and the same concept, i.e. to consider this one and the same object stretched over time. Yet, for instance, a totality of liquids filled in a reaction vessel at one point of time does not have to be the same at a later time point. Accordingly, what we usually consider an object, in fact consists of multiple entities, as it were, the phases of the object at various times. This multiple states of an object are not identical because they have the same properties in common, but because one has developed from the other. Lewin termed this existential relationship underlying the genesis of an object from one moment to the other.

220 In the following, I quote from the English translation, [Lewin, 1935c].
221 Although Lewin creates a reference frame out of Galileo’s work and influence on the transformation in physics at the beginning of the 17th century, it should be noted that he made no effort to reconstruct the details of Aristotle’s or Galileo’s scientific contribution. As he affirms, we shall, in our contrast of Aristotelian and Galilean concept formation, be less concerned with personal nuances of theory in Galileo and Aristotle than with certain ponderable differences in the modes of thought that determined the actual research of the medieval Aristotelians and of the post-Galilean physicists” [Lewin, 1981b, 235]. He then identifies the differences between the two modes as “typical” without, however, explaining how these “typical” differences were determined.
next "genidentity" (*Genidentität*).


This genetical nature of an object has to be framed with "conditional-genetic concepts", as the "phenomenological" ones fail in doing so (s. ebd. 60ff.).

Going from one science to another means to completely change the way of dividing up reality into units.

Thus, each science is a closed unit of systematically connected concepts separated from another sciences through a specific logic of construction; all concepts of one scientific discipline need to be integrated in one joint system; all other concepts have to be excluded. From this, Lewin derives that psychological phenomena must be explained in psychological terms just as physical phenomena have to be explained in physical terms. Accordingly, the crucial difference between the Aristotelian and the Galilean modes of thought lies in the concept formation (*Begriffsbildung*). In the Aristotelian mode of thought this is given through "historico-geographic circumstances" and the connections between different concepts are of "phenomenological" nature. By contrast, the Galilean mode of thought represents constructive approach to concepts, which would fully reflect its substantial genetical relation, i.e. genidentity. Consequently, the young psychological discipline requires a proper system of concepts that cannot be simply transferred from one discipline another, so this captures the discipline-specific causal-genetic relations between objects. The attempt to deliver this constitutes Lewin's specific contribution.

5.4 Rule vs. law

In the landmark paper *Gesetz und Experiment in der Psychologie*, published in 1927, Lewin systematically reviews the distinction between rule and law. In Lewin's understanding a rule is derived upon

222Lewin's concept of "genidentity" (*Genidentität*) as an existential relationship underlying the genesis of an object from one moment to the next is inspired by Cassirer's genetic conceptualization of scientific notions. However, it has to be noted that the roots of the "genetic conception of knowledge" belong not as much to Cassirer as to Cohen and the Marburg School of Philosophy. "In neither the 1902 nor 1906-7 works does Cassirer diverge in any essential way from the fundamentals of Cohen's point of view" [Friedman, 2005, 73].

223All quotations originate from the German source, [Lewin, 1981d, 311], and are verified with the translation by Bill Templer, [Lewin, 1992a].

In this paper Lewin makes reference not only to Cassirer's *Substance and Function* but also to Reichenbach's *Metaphysics and Natural Science* (Metaphysik und Naturwissenschaft, 1925).
phenomenological experience under given historico-geographic conditions, and non exceptionless. By contrast, a law is constructed on the basis of study of the conditional-genetic nature of facts, and it is binding in 100% of all cases. When speaking of laws, Lewin refers to broad empirical laws (“empirical generalizations” or in Cassirer’s language “Invarianzen”) rather than laws of nature seminal to physics.

Historically, in sciences conceived in the Aristotelian way the necessity and universality attributed to laws were based on an inference “from many cases to all cases” (ebd. 286f.). However, given that in reality the apparent functional dependency of several facts on each other can be proved ambiguous, modern science requires the revision of the principle of law induction that conceives lawfulness as a rule with a high probability within a particular “historico-geographical realm”.

“For example, one can observe the buses no. 12 and no. 14 passing by in front of the Berlin Palace and note that whenever bus no. 14 comes from one direction, bus no. 12 comes from the other direction within a certain definite period of time. The regularity of this sequencing can be in complete accordance with all statistical requirements. Under certain circumstances, one can therefore attain a very high first- or second-order statistical probability if the rule is formulated carefully enough. Such a case would be a pure example of a regularity that is not based on a causal connection, but rather on a kind of dependence that can be termed a “historico-geographical connection” “ [Lewin, 1981d, 288].

For Lewin the abandonment of induction in favor of deduction of laws is linked to the transition to the Galilean mode of thought. The binding universality in fundamental terms distinguishes a law from a rule, i.e. a “set” of events located within a “historico-geographical realm” [Lewin, 1981d, 311]. In other words, a law can only be considered as such if it applies to and can be confirmed by any individual case. The invariable validity of a law makes it compulsory to abandon a law at once if even a single exception arises (ebd. 312f.). The inference from the experience of a single instance to the universally valid law corresponds to the inference from an “example” to a "type" — a type that is invariant with respect to historico-geographical space-time coordinates (ebd. 290). Thus, for Lewin to formulate a scientific law means nothing else than to determinate a “conditional-genetic type”. In his pragmatic way Lewin even specifies that “a law and its necessity have meaning only if conceived as the definition of a type” (ebd. 307).

In order to assure such a validity to any individual case, a “homogenization of theories” within a discipline needs to be accomplished.

“The outlook of a Bruno, a Kepler, or a Galileo is determined by the idea of a comprehensive, all-embracing unity of the physical world. The same law governs the courses of the stars, the falling of stones, and the flight of birds. This homogenization of theories in modern physics with respect to the validity of law deprives the division of physical objects into rigid abstractly defined classes of the binding significance it had for Aristotelian physics, in which membership in a certain conceptual class was considered to determine the physical nature of an object” [Lewin, 1935c, 10].

Lewin proceeds by means of a psychological analogy: “Like the distinction between earthly and heav- enly, the no less valuative distinction between ‘normal’, and ‘pathological’ has for a long time sharply differentiated two fields of psychological fact and thus separated the phenomena which are fundamen- tally most nearly related” [Lewin, 1935c, 3]. The integrity of a discipline needs to be preserved both internally and externally. Thus, we cannot use the propositions or laws of one science for those of another as we cannot apply a joint principle of concept formation to different disciplines.

### 5.5 Experiment and the construction of psychological types

A crucial question Lewin was concerned with is: How to determine a conditional-genetic type or to generate a scientific law? The determination of types is Lewin’s first step towards the operationalization of his theory; a second one consists in the revealing of these types through experiments.
Lewin’s approach to experimentation is clearly anti-statistical in nature. To prove a law it is not essential that there be an accumulation of equal cases. In principle, one example is sufficient as a basis for the scientific description of a conditional-genetic type. However, a specific conditional-genetic type can be defined as a type appearing under conditions as phenotype , under conditions as phenotype , etc, so that a superficial observer overlooks the underlying principle (ebd. 293).

“What is important in the experiment is not the realization of the largest possible number of equal cases, but rather a systematic variation—i.e., an analysis of the conditions by means of realization of the structured set of various different cases” [Lewin, 1992a, 391]. Therefore, in reality, in order to arrive at a correct scientific determination of a conditional-genetic type, it will not suffice to rely on one single example in a single situation; rather, it is necessary to examine the range of variations. Accordingly, wherever repetition of an experiment takes place, this is not done because generalizing from a single investigated event to events of the same kind is questionable but rather because an error is possible regarding whether the conditions named in formulating the law really obtained in the concrete instance (cf. ebd.).

The constitution of laws also applies to conditional-genetic event-types (be it physical or mental). This is particularly important for psychology, which has the task of explaining the behavior of a human being, i.e. the task of relating the mental processes in question to specific state-types and event-types, and their interplay (cf. ebd. 307). As objects, events can be “phenotypically uniform” and “genetically nonuniform” at the same time. For instance, two actions might be indistinguishable on the surface, but genotypically one of them might represent the carrying out of an order and the other one the carrying out of a voluntary intention. A person who started a work unit with joy might become bored and listless over the course of the process. In Lewin’s opinion a merely phenomenal description of psychological events is therefore unacceptable. The conditional-genetic determination of an event-type (which also includes the state-types) is precisely what he terms a law (cf. ebd. 311).

5.6 Experiment and the revelation of the “ideal” case

Lewin was inspired by Ernst Cassirer philosophy that wanted to provide a way to overcome the “purely local nature of experimental effects”. Before Cassirer, for instance the phenomenologists, hoped to achieve this inductively by means of an accumulation of experimental data, hoping for consistent results. A major problem of this approach was the question of experimental realism: No matter how many studies were conducted in an artificial laboratory set-up one remained ignorant of the relevance of the results for social conduct in the real life. From Cassirer’s point of view the purpose of experiments lies not in the production of inductive generalizations but in the confrontation of “the complicated factual relations of reality” with the conceptual scheme developed by the researcher.

“Strictly speaking, the experiment never concerns the real case, as it lies before us here and now in all the wealth of its particular determinations, but the experiment rather concerns an ideal case, which we substitute for it. The real beginnings of scientific induction furnish the classic example of this. Galileo did not discover the law of falling bodies by collecting arbitrary

224 Cf. [Lewin, 1981d, e.g. 290, 311].
225 Cf. the German original, [Lewin, 1981d, 287].
226 Cf. [Danziger, 2000, 341].
observations of sensuously real bodies, but by defining hypothetically the concept of uniform acceleration and taking it as a conceptual measure of the facts” [Cassirer 1910].

According to Lewin (1926), the researcher's primary concerns should lay in the theoretical sphere. He will thus aim at shaping this.

“Er [= der Forscher] muß einerseits ganz von der Theorie geleitet werden, ohne die alles experimentelle Tun blind und sinnlos ist und von deren Weite und Kraft die Bedeutung seiner Experimente abhängt. Das Vorwärtschreiten in dieser theoretischen Sphäre zu immer tiefer und zentraler liegenden Punkten, von denen aus prinzipielle, die Totalität des Psychischen umfassende Ansätze möglich werden, bildet die entscheidende Bewegung seines Forschens; diese Sphäre ist die eigentliche Welt, die es zu gestalten gilt [Lewin, 1926b, 295].

Against this background, the “galilean” experiment in psychology is an accurate local reconstruction of a “pure case”, i.e. a concrete illustration of a universal mental structure. Experiments translate the “ideal” or “pure” case into a concrete or real case and reveal the underlying structure of a concrete phenomenon. Thus, a primary goal of the experimental inquiry is the reconstruction of the pure phenomenon building on in-depth theoretical knowledge. Hereby, the wholeness of the structures of the phenomenon should be preserved. Lewin continues:

Andererseits will der experimentelle Forscher die Richtigkeit seiner Theorie am Experiment erweisen, d. h. an einem vollkommen konkreten, in einem bestimmten Zeitmoment, an einem bestimmten Menschen und einer bestimmten Umgebung sich vollziehenden psychischen Ereignis” [Lewin, 1926b, 295f.].

For the purpose of operationalization, events need to be subdivided into a multitude of process units classifiable in terms of various “event types” (Geschehenstypen), which might obey different laws. The experimenter should then describe the manner in which these process units are dependent on one another, and indicate how the various essential properties of an event are interconnected. As sketched, Lewin underlines the theory-driven aim of the experiment while the methodological outline of his “ideal” experimental procedure remains sincerely vague. It should be noticed that despite the strong emphasis on the need Lewin did not delivered any structured account or more precise instructions on how to set up experimental procedures that would lead to the elaboration of ruleful concepts. In Part III we shall discuss the attempt to apply this vague experimental agenda in Lewin’s experimental studies conducted by his students in Berlin.

227Quoted as in the English translation, [Cassirer, 2003, 254].
228 Cf. [Lewin, 1981d, Lewin, 1931b]. Cf. also Cassirer: “The first goal of experimental inquiry is to gain a pure phenomenon” [Cassirer [1910] 1923, 256]. In practice this requires a "technical separation of factors" so that the “picture of the total process appears not merely as a unitary intuition, but as a differentiated conceptual whole” (ebd.).
229 Cf. [Lewin, 1981d, 298-300, 304f.].
5.7 Challenges of Lewin’s philosophy of science

<table>
<thead>
<tr>
<th></th>
<th>Aristotelian</th>
<th>Galilean</th>
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<tbody>
<tr>
<td>1. Type of system</td>
<td>Classifying system based on phenomenological relations</td>
<td>Constructive system based on a group of genetically interrelated concepts</td>
</tr>
<tr>
<td>2. Integrity of the discipline</td>
<td>(a) Psychology is divided into independent fields with different laws (b) Psychological concepts are not separated from those of other disciplines</td>
<td>(a) All psychological phenomena should be treated as one field and governed through the same system of laws (b) Psychological phenomena have to be treated separately from others, e.g. physical phenomena</td>
</tr>
<tr>
<td>3. Concept formation</td>
<td>Through derivation from historico-geographic experience and statistical frequency</td>
<td>Through reconstruction of the pure phenomenon and determination of conditional-genetic types</td>
</tr>
<tr>
<td>4. Nature of lawfulness</td>
<td>(a) Law = rule. Laws do not embrace all individual cases (b) Laws are based upon historico-geographic experience and statistical frequency (c) Laws are used in order to discover the essence of things and the cause behind all occurrence</td>
<td>(a) Law ≠ rule. All states and events are lawful (b) Determination of laws equals the construction of a conditional-genetic event-type (c) Laws allow to predict individual cases</td>
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Table 2: Aristotelian versus Galilean modes of thought

As was explained, Lewin’s philosophical approach is determined by two particular properties, i.e. (a) the extension of philosophical theory to the matters of applied psychology and (b) the close convergence of the theory of science and its applicability to experimental research. Accordingly, Lewin’s philosophy of science strives to meet the following challenges.

(1) First, it is not merely an attempt to develop an analytical view of the historical development of science but is primarily concerned with the vision of its future challenges.

(2) Second, it is above all driven by Lewin’s interest in the *modus operandi* of a scientists working in experimental psychology: How can the contemporary psychologist stimulate and optimize the further development of his discipline? As we have seen, Lewin appropriated Cassirer’s view on a series of philosophical problems without challenging their quintessence by means of critical analysis. However, it would be wrong to attribute this to a lax or negligent attitude from Lewin’s side. He extended Cassirer’s approach to the practice of experimental research and challenged its substance through its application. Cassirer’s theory was useful and worked as part of his own interdisciplinary endeavor that was the most significant issue for his pragmatic philosophical system.

(3) Third, as was outlined, psychology was rooted in a philosophical tradition that had little experience with experimentation as well as with the formal treatment of data. Contrarily to this tradition, and using natural science as a prototype, Lewin’s programmatic goal was to translate the relations between psychological concepts into concrete formal units related to each other. These relations – as he was convinced – could be determined by means of scientific laws. Lewin’s struggle for systematization and a formal framing of the structure and functioning of the human mind was certainly a pioneering effort that emerged out of his philosophical studies.

Summing up, the close convergence of the theory of science and its application to experimental research is a central pillar of Lewin’s methodological approach. As a consequence, he points out the
concern that most frequently the “pure” philosopher does not have the required know-how to get the right insights about science while the natural scientist often does not master epistemic and analytical techniques. Lewin’s own approach suggests a complementary division of responsibilities as research strategy. The philosopher of science is charged with the analysis of the condition and principles of a scientific discipline, as well as with the formulation of laws inherent to this discipline. In contrast, the natural scientist is supposed to approach the specification of scientific laws from the other side, i.e. by means of experimentation and the systematization of his empirical findings in form of a conditional-genetic system of concepts. An optimum is constituted by a multidisciplinary scientist who can combine both functions, such as Lewin himself.
6 Towards a dynamic psychology of human conduct

By the end of the 1910s, a shared doctrine of human conduct did not yet exist. A handful of German-speaking scholars were busy approaching the experimental research on human conduct through the exploration of human will. They worked separately rather than in a joint effort. The associanist psychologist, such as H. Ebbinghaus and E.G. Müller, sought to explain behavioral patterns. Yet, both treated behavior as a consequence of unreflected inner processes and largely disregarded volition as a determining factor. Pioneering work in the theory and experimentation on volition was carried out simultaneously by Ach in Germany (1905, 1910) and by Michotte and Plüm at the Catholic University of Leuven (1910/1911). With the theorists of volition, Otto Selz (1913) and Johannes Lindworsky (1918) the essential picture would be completed.230

Kurt Lewin likewise approached the domain of human conduct starting from experimental investigations on will. In 1926, he formulated the theoretical framework of his psychology of human conduct in the two papers Über die Struktur der Seele and Vorsatz, Wille und Bedürfnis. These key publications represent his first substantial effort to apply his philosophical manifesto to the reality of psychological research. In this chapter we discuss the constitution of Lewin’s early psychology of human conduct. In its substance this includes two different ways of dealing with mental phenomena: On the one side, Lewin derived principles from his philosophical agenda and the principles of Gestalt organization, on the other side, his psychology of human conduct relies on research experience assembled in experimental psychology priorly to Lewin. The chapter closely looks at the psychological roots of Lewin’s psychology of action in the associanist psychology and psychology of volition. We further focus on Lewin’s work of 1926 and discuss how he combined this psychological knowhow with the principles of research drawn from Gestalt (Chapter 3) and from philosophy of science (Chapter 5).

6.1 Associanist psychology

Psychological doctrine forerunning of psychology of will was psychology of association (Assoziationspsychologie) or the so called “associanism” (see section 1.3). The “constellation theory” by Hermann Ebbinghaus believes that each psychic event is related to other events following in direct chronology through associative links. These links increasingly stabilize in a person’s memory the more repetitions take place. Consequently, during listening or reading each already known concept restores images linked by association with previous experiences. The restored images are in turn linked to other images. That is why at times the classical psychology of association represents mental events as a “system of diffuse reproductions”.231

However, the diffusion of associative images alone would not suffice to explain mental activity – soon, various associative links would correlate and create conflicts of associations. In addition, the “constellation theory” introduces a hierachisation: It is the intensity of the link that determines, which of two correlated tendencies to reproduction will be inhibited and which activated. From the perspective of the associanist psychology, the direction of the associations is determined through a hierarchy that underlies all the existing associative links.232 As one can see, the associanist model of the mind faced different logical problems. For instance, this system suggests that a right solution to a cognitive problem would be the strongest associated one. An additional paradox is that the more one learns the less one would be actually capable of solving new reasoning problems.

230In a retroactive assessment, the German historian of psychology Horst Grundlach identifies three major routes of development of psychology of will in the post-war German-speaking Europe. One of these is “psychology of determination” (Determinationspsychologie), which, following Ach, continued the investigation of functionalities and impact of psychological determination. Another one followed by Lindworsky, [Lindworsky, 1921, 2nd ed.]. The last historical pathway of psychology of will is represented by Kurt Lewin’s confrontation of Ach’s approach. Cf. [Gundlach, 1987, 67-85].


232In the words of the early theorist of will Otto Selz: “Die gesetzmäßige Verdrängung der schwächeren Reproduktionsstendenzen durch die jeweils stärkste ist der einzige richtungsbestimmende Faktor im psychischen Geschehen...” [Selz, 1924, 35]
G. E. Müller of the University of Göttingen tried to preserve the associanist approach by introducing the task (Aufgabe) as an additional variable that was to determine which “reproductive tendency” was going to be intensified. In other words, Müller suggested that instead of a widely web-like diffusion of associations a concrete task given to a person steered the association into a specific direction. Yet, Müller did more than that. He was one of the first scholars to contrast associative and voluntary conduct by attributing it to two different temporal realities.

“Die durch den Einfluss von Zielvorstellungen entstehenden Handlungen oder Verhaltensweisen lassen sich in 2 Hauptarten einteilen, in unmittelbare Willenshandlungen und in willkürlich vorbereitete Reaktionen. Bei einer unmittelbaren Willenshandlung hat die Zielvorstellung unmittelbar die auf Erreichung des Zieles gerichtete Tätigkeit zur Folge... Bei einer willkürlich vorbereiteten Reaktion besteht das Ziel in dem Eintreten eines bestimmten Verhaltens V gegenüber einer späterhin sich darbietenden Reaktionsgelegenheit R, und die Vorstellung dieses Zieles bewirkt unmittelbar eine bestimmte Verhaltensweise (z. B. die Stiftung einer Assoziation zwischen R und V), infolge deren dann später bei einem wirklichen Auftreten von R ohne weiteres (d. h. ohne nochmaliges Eingreifen der Zielvorstellung) das gewünschte Verhalten V sich einstellt” [Müller, 1913, 426f.].

Müller distinguished between two types of reaction – “immediate voluntary activity” (unmittelbare Willenshandlung) and “randomly prepared reaction” (willkürlich vorbereitete Reaktion). In the first case intention is directly linked to the idea of its end (Zielvorstellung). For example, a person who is freezing thinks of closing the open window and then implements this idea by closing the window shutter. The performed action is a manifestation of will. By contrast, when dealing with “randomly prepared reactions” a stimulus causes the idea of its end while the opportunity to implement this is not instantly given. As soon as this opportunity appears an association that “revives” the stimulus and links this to the idea of accomplishment is generated. Thus, Müller identifies the following event sequence: stimulus – identification of the goal – (time period x) – opportunity to implement the goal – association with the goal appears – conduct towards the goal. As a result, Müller’s revised associanism granted will the power of immediate impact on human conduct. Yet, only associative conduct could have an immediate as well as an extended temporal reality.

In sum, the associanists derived their early inferences about selected patterns of conduct from psychology of memory. They reasoned that if a regularity was inherent to the relationship between stimulus and its mental reproduction one should be able to find similar regular relations between stimuli and response in human conduct. Associanist psychologists studied human conduct from a purely phenomenological angle.

6.2 Early experimental psychology of will

In the 1910s–1920s, disagreement among psychologists grew about the question of the nature of the act of volition. The shared question of all scholars working in this field was ‘What kind of linkage or steering mechanisms are responsible for (voluntary) human conduct?’ In the early 1920s, there was no consensus about whether the right answer was “will”, “instinct” or another one. As Lewin retrospectively summarized the situation:


233 Cf. [Métraux and Herrmann, 1991, 8f.].
While consensus seems to have existed about the fact that the core of any act of volition was constituted by the connection between the motivation of an activity, the decision to execute the activity and the accomplishment of the intended activity, scholars argued over the nature of the mechanism linking intention with a subsequent action.

Experimental research concerned with the measurement of human will and its impact on conduct emerged in the first decade of the 20th century and was pioneered by Narziss Ach from the Würzburg school (see Section 1.6) and, independently, Albert Michotte (1881–1965) at the University of Leuven. Early experimental psychology transformed the previously qualitative philosophical category of will into an accurately measurable entity and made it subject to laboratory investigations. We proceed by briefly delineating different theoretical and experimental approaches that were relevant in German psychology of will in the 1910s and 1920s.

Ach, a student of Oswald Külpe in Marburg, who obtained his second PhD with G. E. Müller in Göttingen, was one of the first experimentalists to measure and evaluate the effect of volition against the power of acquired habit (association). Both Ach’s predecessors and Ach himself started from the assumption that the linkage operating associative tendencies is for the most part not conscious. For instance, given a sheet of paper with a 5 and a 2 below it. The most usual associates would be 7, 3, and 10. If, however, the subject has been instructed to add, one association will be strengthened so that 7 will almost inevitably occur; or, if the task (“Aufgabe”) has been to subtract, then another association is reinforced and becomes the strongest. However, contradicting the associansists, Ach found out that although unconscious associative thought processes are rather usual, at the moment a particular thinking task is given, a “tendency” will suppress the associations by means of an act of volition.234 Thus, Ach gave the relation between intention and end a reality by naming it “determining tendency”. The determining tendency may be described as the aftereffect of the realization of a defined task by the individual.

Using the Hipp chronoscope Ach reproduced a series of reaction time experiments with nonsense pairs of syllables designed by association psychologists.235 Once the associations were learned, and the first syllable automatically elicited the second syllable of the pair (regularity discovered by Ebbinghaus), Ach asked the subject to produce a syllable that rhymed with the first one, instead of the syllable previously learned. Depending on the number of learned trials, it took the subject more or less volition (Wille) or intention (Vorsatz) to suppress the associated syllable and to produce the rhymed syllable. In his work Über den Willensakt und das Temperament (1910) Ach had suggested that “determining tendencies” stimulated by an experimenter’s instruction (“Aufgabe”) inhibit the subjects’ habit to recall associative connections they had learned earlier (“reproduktiv-determinierende Hemmung”). The resulting delay in carrying out the instruction would, thus, be a measure of employed will power. (“Durch die Berücksichtigung des phänomenologischen Verhaltens erhält vielmehr unsere Annahme, daß die reproduktiv-determinierende Hemmung die Ursache der Verlängerung der Zeitwerte ist, eine weitere Bestätigung” [Ach, 1910b, 94].) Ach thus concluded that associative links could be suppressed by means of volition.236

The study Le Choix Volontaire et ses Antécédents Immédiats (1910) by Michotte’s and Prüm’s at the Catholic University appeared in the same year as Ach’s research on the mechanisms belonging to voluntary conduct (Willenshandlung) and presented similar conclusions. Yet, instead of “determining tendencies” the scholars introduced the so called “active tendencies” arguing that not the “active tendency”, i.e. act of decision-making, linked stimulus to action but the constitution of the set of conditions in which a decision was made. “Dans nos expériences, la décision marquait une fin, le point ultime de tout le processus, tandis que dans les expériences de Ach elle était un début, elle précédait d’ordinaire la réaction,

234 Cf. [Boring, 1929, 397f.]; [Teo, 2000, 24f.].
235 Cf. [Ach, 1905].
236 See Über den Willensakt und das Temperament [Ach, 1910b, 253f.]; see also Über die Willenstätigkeit und das Denken, [Ach, 1905] and Über den Willen, [Ach, 1910a].
dépendante, elle-même, de l’apparition de l’excitant attendu par le sujet.”

In contrast with the “determining tendency” the “active tendency” thus lacked a concrete determination. While Ach defined will as a narrow category (“I want”) Michotte extended the definition of will to its indirect manifestation, such as for instance, to point to or to suggesting an activity. Whether such an indirect expression needed to be considered as an act of will depended on the given context. Nevertheless, Michotte and Prüm maintained: “les résultats de Ach différencent sensiblement des nôtres ; non pas qu’ils se contredisent, loin de là même, mais ils se complètent” [Michotte and Prüm, 1910, 312].

To sum up, psychologists of will, such as Ach and Michotte, contrasted the power of association with the impact of volition. Experiments were largely limited to chronoscopic measurement that is why the spectrum of phenomena that could be studied was essentially limited to thinking processes, memory and association. By and large, studies by Ach and Michotte/Prüm led to corresponding outcome. (1) When it comes to human conduct volition has the means to overplay associative impact. (2) Two different types of links between stimuli and action co-exist: While voluntary activity is, as a rule, conscious, associative conduct, as a rule, is not. (3) Eventually, “mechanistic” theory of will failed explaining the persistence of willful intentions over a long period of time.

6.3 Replacing images through processes

Otto Selz, a psychologist of thought trained under Külpe, employed empirical data from the Würzburg school to contribute seminal impulses to psychology of action. Selz picked up where Müller, Ach and Michotte left off. In short, he introduced a new model of the mind in which thoughts were interconnected through links in a structural network. He substituted the associanist “system of diffuse reproductions” with a “system of specific reactions”. In his model each stimulus could be attributed only one possible reaction. However, while Müller’s theory was limited to the cases where a person could rely on memorized experience Selz diversified the possible types of reactions in reproductive (“specific reactions”, “reproductive problem solving”) and “productive problem solving”. Responses (thoughts) exist within systems that produce the missing links in reproductive thinking and that achieve the assimilation of new responses in productive thinking. The existence of responses demanded a particular completion through the use of anticipatory schemes rather than permitting an arbitrary trial-and-error search in the pool of all possible response tendencies. Thus, the unit of thought became a structured system of responses or thoughts rather than a string of particles.

But most importantly, Selz was one of the first psychologists to deal with mental processes rather than with contents (ideas or images). His theory of thought was the first completely free of images or associations. His process character or dynamics of mental processes got as close to the Gestalt understanding of the mental system that he even engaged in a dispute over priority of ideas with Kurt Koffka.

6.4 From psychology of will to Lewin’s dynamic holism

“Why does a person behave one way and not another, and what motivates it? – that is the one thing Lewin was thinking and speaking about all the time… Once, he took me to a store in order to help choosing a pair of gloves for his wife. And just as he was looking over them a new idea dawned on him. Standing there with a female glove in his hand he immediately started to develop his thought right in front of the astonished saleslady until I intervened – ‘Herr Lewin! We really need to buy the gloves and to leave the store’ – ‘Oh yeah, right’ – he agreed” [Yaroshevsky and Zeigarnik, 1988, 174].

237[Michotte and Prüm, 1910, 314].
238See [Michotte and Prüm, 1910, 314ff.], [Michotte and Prüm, 1910, 193, 310-320]. Cf. also [Lindworsky, 1921, 73].
239See more in [Selz, 1924, 37-61], cf. also [Métraux and Herrmann, 1991, 9-13], [Mandler, 2007, 111-114].
240Cf. [Mandler, 2007, 113ff.].
241The translation from Russian is mine.
This fragment from Lewin’s everyday life vividly illustrates the qualitative difference between his approach to research and that of all the listed predecessors. Lewin’s did not focus on research on will, or association, or thinking but was interested in the psychic whole behind human conduct.

Lewin’s approach was significantly nourished through Gestalt expertise of the 1910s and 1920s. There is to say that Gestalt theory as a whole was obviously not compatible with the mechanistic doctrine built on associanism. While Gestalt experiments were for the largest part designed to grasp perceptual and thinking phenomena some efforts to theorize behavior in terms of Gestalt existed, as well. In 1915, in Zur Grundlegung der Wahrnehmungspsychologie, Kurt Koffka attributes behavior to "structured whole processes" in the brain.

“Dem Erleben von Gestalten können wir sofort das Produzieren von Gestalten an die Seite stellen, das Singen oder Spielen von Melodien, das flotte Hinwerfen von Skizzen, das Schreiben u.v.a. [...] auch hier handelt es sich um einen Akt, einen gestalteten Gesamtprozess; die vielen Einzelbewegungen sind nur als Teile dieses sie umfassenden Vorganges zu verstehen, erst als solche empfangen sie ihre Bestimmtheit” [Koffka, 1915, 37].

This Gestalt extension to matters of human action inevitably consolidates the abandonment of research on will as an isolated category and its inclusion into the study of an interconnected system of processes underlying human conduct. “Dass der Einfluss des Willens ein beschränkter ist, versteht sich sofort, wenn man neben der Abhängigkeit von subjektiven auch die von objektiven Faktoren anerkennt.” [Koffka, 1915, 55]. The objective factors, Koffka stresses refer to the Gestalt laws, which he believes to be not only direct to perception but also to behavior (without, however, indicating how).

Lewin coined his concept of “action wholes” (Handlungsganzheiten), crucial in his papers since 1926, deriving from Koffka’s "structured whole processes". However, his research on psychic processes underlying action began with his doctoral thesis (1911–1916). Taking Ach’s claims of 1910 a starting point Lewin verified these in his dissertation work. He re-constructed the experiment in which Ach asked observers to learn lengthy series of meaningless syllables, then instructing them either to reverse or rhyme the syllables. Lewin’s prediction was that they would either take longer to complete the "heterogeneous" second task or give wrong answers. Yet, the surprising result was that there generally was no “inhibitive delay,” and only a few errors. As the predicted effects failed to occur even under optimal conditions, Lewin argued that an underlying psychical construct—an intention introduced through the experimenter’s instruction—was responsible for the subject’s conduct. By implying that intention can redirect mental energy Lewin credits his psychic system a first dynamic property.

Lewin voiced two methodological points of criticism on the preceding scholarship in the area of will. The first point referred to the atomistic-style study of isolated phenomena. He noted that the psychological concept of will was conceived in a too narrow way to meet the potential research challenge.


242Cf. [Lewin, 1926b, 305, 307, 311, 115f.].
243See [Lewin, 1917, 212-47].
First, in contrast to his predecessor, Lewin argued that will is embedded into an *interrelated system* of other psychic phenomena. It cannot be isolated or studied as an independent phenomenon. The concept of will is not even exactly defined and depends on its context.

“As stated, will can be related to completely different psychological phenomena, such as decisions, intentions, self control, concentration, persistence, action wholes etc. From the Gestalt perspective it is obvious that the implications vary with the context. Thus, Lewin suggested to revise the conceptual construct behind the concept of will. Given that will is related to all other elements it has to be studied not as isolated entity but with respect to this intertwining. Consequently, the conceptual system designed by Lewin implied the transition to an extended research area of human conduct, i.e. psychology of action.”  

Second, Lewin’s other critical interference referred to the *purely phenomenological methods* employed in the foregoing research on will. To respond to this challenge he intended to devote his research to the reconstruction of *covered processes* and the uncovering of “genetic” or “causal-dynamic” properties of the mind.

“Vor allem aber darf man […] nicht erwarten, daß phänotypisch gleichartige Gebilde oder Prozesse auch kausal-dynamisch, d. h. ihren Ursachen und Wirkungen nach, gleichwertig sind. Vielmehr hat die Physik und neuerdings die Biologie gezeigt, daß phänotypische Gleichartigkeit mit kausal-dynamischer Ungleichwertigkeit und andererseits starke phänotypische Verschiedenheit mit enger Verwandtschaft in kausal-dynamischer Hinsicht Hand in Hand gehen können” [Lewin, 1926b, 308].

To this end, a series of specific experiments was conducted by his students (see III).

While the preexisting approaches relied on a rather simple “mechanistic” model Lewin suggested that psychology needed new “dynamic concepts of wholeness” (*dynamische Ganzheitsbegriffe*) to overcome its difficulties. A new conceptual system composed of composed of interrelated concepts (à la Cassirer) needed to be provided. A model of psychological reasoning was supposed to underly this. Lewin discussed variations of the processes underlying human conduct in his publications throughout his entire German career years. Yet, he made a first substantial attempt to provide such a *system in tension* in 1926.

Lewin’s *system in tension* encompasses a set of functionally interlinked concepts. In order to give a conclusive overview, we re-modeled the system of functionally interlinked concepts as it was documented by Lewin by 1926 by (s. fig. 9). *(Quasi-)need and intention* stand at the beginning of Lewin’s basic process chain. Further, he identifies three basic scenarios how an intention may be carried out. (3a) Any intention includes a valence but also a structuring and steering mechanism. Lewin argues that the intention is generally dissolved as soon as the intended activity (*Vornahmehandlung*) can be executed. (3b) If an opportunity to accomplish the intended activity is not given, a replacement of the intended activity through a “substitute activity” (*Ersatzhandlung*) may occur – i.e., “redirection” of the initial intention.

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244 Quoted from a talk given by Lewin in 1928, at the 3d General Medical Congress for Psychotherapy in Baden-Baden.

245 See [Lewin, 1926b, 302], [Lewin, 1929]. Cf. also [Gundlach, 1987, 82].
towards a new (quasi-)need. (3c) What happens if a need cannot be satisfied immediately and cannot be redirected either? In this case the valence inherent to the intention will probably not be fully discharged through the interruption of the intention or its extension over a long period of time. Whether the action is finally accomplished or not depends on the appearing opportunities.

Figure 9: Reconstruction: Mental system composed of psychological concepts [after Lewin 1926]

Thus, Lewin’s process model exhibited new seminal characteristics. As one sees, compared to preceding theories, Lewin first uncovered additional basic mechanisms underlying behavior; he, second, framed these into concepts, and third, he interlinked these concepts in a functional way. Building the process chain for the first time allowed for a descriptive analysis of the whole mental process. But also each key concepts was trusted with a particular function that was not just adopted from former research but newly defined as result of new experimental investigations. The two new seminal concepts Lewin introduced to his process chain are: quasi-need and intention.

Need and quasi-need: In 1926, Lewin introduces the concept of “quasi-need” (Quasibedürfnis) as analogy to Sigmund Freud, who had claimed earlier that needs initiate and steer subconscious human behavior. Lewin suggests that while needs are generated by instincts and steer subconscious human behavior, quasi-needs execute the same function for any willful, i.e. “controlled”, action. As such quasi-needs possess the same level of “psychic reality” as “genuine needs”. This means that both genuine needs and quasi-needs can equally generate intentions.

Intention: Intention (Vorsatz or Vornahme) is a key concept of Lewin’s model of the mind. While previous models preferably assume a direct link between the stimulus and the ensuing action or thought with the concept of intention Lewin introduces an intermediate stage between these. He calls the carrying out intentions voluntary action (Willenshandlung). Performing an act of volition does not categorically imply an intention, though.

246Lewin touches upon this problem in his very first publication, Kriegslandschaft (1917): A man, who wrote a letter to a friend the day before, will perceive a random mailbox in the street in a completely different way than at any other day when he has no such letter in his pocket. Even if hundreds of other actions and thoughts take place in between the finishing of the letter and the moment when the man perceives the mailbox, the original intention will rekindle in this very moment. Cf. [Lewin, 1982d].

247[Lewin, 1982d], [Lewin, 1926c, 338f., 355, 381, 383]

248Cf. [Lewin, 1926b, Lewin, 1926c].
“In einem Gespräch z. B. geht der Antwort auf eine Frage oder dem sonstigen Hin und Her der Rede nur ganz selten ein besonderer Vornahmeakt voraus, im wesentlichen nur dann, wenn man lügen oder etwas verbergen will. Trotzdem wird man die Reden, die Fragen und Antworten dort, wo ein Vornahmeakt fehlt, keineswegs immer triebhaft nennen können, sondern wird ihnen durchaus den Charakter des Willentlichen zu billigen müssen. Das gleiche gilt von sehr vielen Handlungen des täglichen Lebens, etwa Berufshandlungen, die nicht automatisiert sind, und die man ebenfalls nicht als unbeherrschte, triebhafte Handlungen bezeichnen kann, obschon ihnen kein besonderer Vornahmeakt vorausgegangen ist” [Lewin, 1926c, 376].

Direction and valence: Since Ebbinghaus experimental psychologists felt that to determine how an impulse will manifest itself on the psychic level one needs to specify its “direction” and “intensity”. In Lewin’s process model, the intensity of an impulse, i.e. “valence” (Aufforderungscharakter), and its direction become properties of the intention (cf. ebd.).

6.5 Comparative summary and implications

Table 3 contrasts and summarizes the discussed theories. By 1926, Lewin was successful in modeling the psychic dynamics that linked motivations to performed (or not-performed) action. More concretely, this model allowed for a descriptive analysis of psychic processes underlying behavior.

It was shown that Lewin’s system relied on a more complex and flexible process scheme than preceding research in psychology of volition. Lewin, as also his Gestalt colleagues, rejected the idea of explaining all behavior with “mechanistic” links brought forward by associational psychologists or “conditioned reflex” (as a similar approach was called in the behaviorist language). Instead they focuses on the non-observable, as one would say today, “cognitive” processes. While main focus of Gestalt was on processes of perception and thought, Lewin’s personal extension to Gestalt was the elaboration of mechanism responsible for human conduct, as well as the expression of affects.

Drawing on psychoanalysis as well as on psychology of will Lewin’s model was prepared to include controlled and uncontrolled, as well as consciously and unconsciously motivated conduct. Importantly, Lewin’s approach also includes the possibility of persistence of behavioral triggers over an enduring period of time (which is an important factor in Freud’s psychoanalysis, but merely considered by other experimental psychologists).

Lewin’s process model tried to subsume various elements of the different preceding approaches, while it was also able to fill some of their gaps. In other words, it differed from the formerly existing through its integrative and unifying capacity. Lewin’s approach distinguished itself by providing a more sophisticated and detailed conceptual framework for the psychological theory of human conduct. It introduced a fine-grained categorization of basic mechanisms underlying behavior. This, however, was just the outset of a far-reaching research ambition. By demonstrating that intentions and actions may be linked in a variety of ways by 1926 Lewin made the first steps beyond “isolated” research on will towards the conceptualization of a psychology of human conduct. In a broad-based program he intended to further integrate and interconnect different psychological phenomena, i.e. not only will and thinking but, for instance, aspiration and self-confidence, emotions and the degree of acceptance of reality, throughout one single conceptual system. This system was to integrate the whole psychic dimension of human conduct.

The aspired research endeavor was designed according to the set of rules that were made public in his philosophy of science. One of the goals was the integrity of the theoretical system for the whole psychological discipline (which also corresponded to the Gestalt idea of holism). Another principle was to investigate psychological facts beyond their phenomenology. Accordingly, Lewin’s ambition was to build a system of “genetic” and “functionally interlinked concepts for the whole psychological discipline. In the following chapters we shall discuss how these hardly humble academic ambitions were implemented in
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7 Natural-scientific analogies in psychology of human conduct

As established, Lewin’s research efforts aimed at the development of an elastic system of concepts suitable to analyze complex psychological processes. Hereby, natural-scientific analogies, or the so-called “dynamic concepts”, build the core of the elaborated theoretical body. In a congress paper of 1928, Lewin insists that psychologists need to ensure the discipline’s transition to “dynamic concepts of wholeness” (dynamische Ganzeitsbegriffe), such as “forces” and “energies”. In order to do so, Lewin’s system of “dynamic concepts” included theoretical constructs that adopted particular traits or functions of natural-scientific concepts. We shall discuss how Lewin shaped this set of concepts and how he struggled to functionally interrelate the different types of concepts, a goal he set in his philosophical agenda.

The present chapter clarifies the roots, indicates particularities and discusses the function of natural-scientific analogies employed in Lewin’s “field theory”. This means that dynamic concepts in Lewin’s system are most frequently constructed by analogy with physics (however, not as its equivalent).\(^{249}\) For this purpose first we outline the most impactful physiological and physical prototypes of the discussed psychological concepts. Thereafter we trace back Lewin’s field theory (as constituted by 1936) to its basic “quasi-physical” components. In doing so, the chapter discusses, how natural-scientific knowledge was employed in the context of psychology, and in particular, how natural-scientific analogies are used in Lewin’s “quasi-physical” system of concepts. We further contrast Lewin’s theoretical construct with the natural-scientific superstructure of Gestalt theory. The chapter tackles the question: In what way did the Gestalt psychologists, and in particular Kurt Lewin, re-functionalized patterns borrowed from natural science?

7.1 The place of natural-scientific concepts in the psychological theory

A range of (more or less vague) metaphors originating from physiology, mechanical physics and mechanics was introduced into the psychological terminology as early as before the establishment of experimental psychology as an independent branch of research. The rather popular analogies referred to broader concepts in mature disciplines like physics and chemistry, and were partly used as figures of speech—for example, “mechanics of the soul”, “physics of the mind”, “mental chemistry”, just as the already mentioned “psychological atomism”. The more specific ones picked up on concrete process models. For instance, all reaction time experiments operated with a physiological analogy assuming that essential psychological (similarly to neurological) processes take place between the stimulation of senses or nerves and the reaction to it.\(^{250}\) This famous body-soul-analogy owes it emergence to the physiologist and physicist Hermann von Helmholtz (1821–1894), who showed that one could not only

\(^{249}\)Physikalische Analogien können dabei häufig ohne Schaden zur Verdeutlichung herangezogen werden. Andererseits wird man sich z. B. bei der adäquaten Erfassung der psychischen Feldkräfte gewissen, sehr naheliegender Irrgängen gegenüber immer gegenwärtig halten müssen, daß es sich um Kräfte im psychischen Felde und nicht im physikalischen Umfeld handelt” [Lewin, 1926b, 313].

\(^{250}\)Cf. [Gundlach, 1989, 167, 172f.].
measure reaction times on motoric but also on sensory nervous systems, as well as to his Heidelberg assistant Wilhelm Wundt and, for instance, the Utrecht physiologist Fanciscus Cornelis Donders, who translated it into psychology.251

A concept that became central to a range of psychological theories, including Lewin’s, is that of “energy”. The principle of the conservation of energy, and the related transformation of different forms of physical energy into each other was established in physics around 1850. Thereafter, the concept of “mental energy” was invoked in physiology and neurology. The psychological analogy with the transformation of heat into mechanical energy tried to explain the influence of bodily on mental events, and vice versa. Just before mid-century, the Berlin physiologist Emil du Bois-Reymond (1818–1896) had provided the empirical evidence of the electrical nature of the nervous impulse, which legitimized the use of energetic language when speaking of the brain as a physical organ. Reflex processes were since then described in terms of nervous “excitation” and “inhibition”.252 Excitation circumscribed energy that could be conducted, accumulated and discharged. Most late 19th century models of reflex action made use of this kind of “quasi-physical” language, and there was a strong temptation to speak of processes of the mind in the same terms.253 Some, as this early “The Phasis of Force” (1857), also pointed out very specific “correlations” and transformation channels between of physical into mental energy and forces:

“That the state of mental activity which we term the Will call so excite the nerve-force of the central organs as to occasion its transmission to the muscular apparatus, is the only explanation that can be offered of our power of voluntary motion. These two simple facts seem quite adequate to establish a ‘correlation’ between nerve-force and mental energy, which is not less complete than that which has been shown to exist between nerve-force and electricity” [Grove et al., 1857, 392f.].

As it has been mentioned in Part I, most of the early experimental psychologists enjoyed at least some natural scientific and/or medical training. At the beginning of the 20th century, the traces of the mid-19th-century “energeticism” within psychological usage were similarly present in Germany and Britain.254 For instance, Theodor Lipps delivered a pioneering contribution with his Leitfaden der Psychologie (1903). C. G. Jung processed the concept of energy in his “analytical psychology”, particularly in Über psychische Energetik und das Wesen der Träume (1928). Moreover, following Boltzmann he formulates a principle of sustainability of mental energy and a law of mental entropy (Satz der Erhaltung seelischer Energie und ein seelisches Entropiegesetz). In psychoanalysis, energetics appears not only in Sigmund Freud’s instinct theory (Triebtheorie), but also referring to categories that are used descriptively, like cathexis (Besetzung).255 Emil Kraepelin and others extended the idea of energy conservation to human labor, which resulted in the domain named (by Hugo Münsterberg) “psychotechnics”.256

In the history of psychology of will the concept of energy played a seminal role, as well. In the late 18th century, the will had the function to translate ideas in the mind into actions in the world. In the 19th century, this model turned out to be of no more use because the physical organism had its own (physiological) energy, and was perfectly capable of motor activity. However, the idea of an energetic flow anchored in psychology. In order to preserve it the function of physical stimuli was substituted by a set of psychic stimuli, i.e. emotions and feelings. What was still needed in the psychological model was something that would give appropriate direction to the discharge of energy in movement, i.e. a separate control mechanism. Ultimately, with Narziss Ach channelling the flow of mental energy became the new role attributed to will. Ach shaped the concept of energetic volition (energisches Wollen) that interprets

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251 Cf. [Helmholtz, 1850, Helmholtz, 1852] and [Donders, 1868].
252 The term “inhibition” itself in part originated from the operation of regulative devices in machines before it became central in Pavlov’s and Freud’s psychological doctrine. See more in [Smith, 1992].
253 On the metaphor of mental energy cf. [Danziger, 1997, 62ff.].
254 On the situation in Britain see more in [Danziger, 1997, 63].
255 See [Lipps, 1903]; [Jung, 1928]; [Freud, 1954], originally drafted in 1895, in particular “Project for a Scientific Psychology”, pp. 347-445; [Münsterberg, 1914].
256 See more in [Jaeger, 1985, 83-112].
the human will in terms of an energy supplier. Providing the right channels for energy to flow along the will became the main steering organ underlying human conduct.\textsuperscript{257} Yet, this model did not hold up long. As we have seen, Lewin’s process model was pointed to the limits of Ach’s model of volition. The metaphor of an energy flow played a decisive role in the development of Lewin’s model of human conduct.

\textbf{7.2 Lewin’s dynamic model of psychic processes}

In figure 10 the author reconstructed Lewin’s model of psychic processes including both process layers as described by Lewin in his \textit{Vorsatz, Will und Bedürfnis} in 1926.\textsuperscript{258} The model (that equals a conceptual system) consists of at least two overlapping semantic layers. Concepts originating from physics are tightly interwoven with psychological concepts. Elements are organized from left to the right in the order mental processes are described by Lewin. I subdivided those processes in four mental stages plus stage 0, attributed to the state of mental equilibrium. Once an energetic charge is injected through an external stimulus a mental tension is produced, and forces operate its determination; the resultant force determines where the energy will be directed. In psychological language, this means that a need or quasi-need proceeds a certain valence. In case one deals with an act of volition (such as understood by Lewin), the need produces an intention. Further there are three basic options how the need as well as the energy may be proceeded in stage 3. (3a) If the intention corresponds to an opportunity, energy is proceeded directly. (3b) Challenges, i.e. barriers in Lewin’s terms, inhibit a direct transition to action, which means that the energetic charge is being re-directed through forces; a change in the mental structure needs to take place before a compensatory action can be started. (3c) In the last scenario, barriers temporally or permanently reinforce the storage of energy. The initial intention is, however, being as long as any discharge opportunity cannot be used. (4) The accomplishment of an action equally implies the discharge of a mental tension. After this the mental system returns to its initial state, i.e. equilibrium. The resulting system of concepts that integrates all of the discussed “genetic concepts” forms a simple “genetic” process model underlying human action. We shall, however, review how Lewin defined his concepts in more detail.

As pointed out Lewin’s approach employing natural scientific patterns in psychology was not new per se. Yet, the way Lewin employed natural-scientific analogies in his psychological construct is unique. Roughly, Lewin’s “dynamics concepts” comprise all facts referring to mechanisms and conditions of change. Lewin defines “psychic dynamics” on the basis of its constructive properties (without being more concrete than this). These “dynamic properties” are “underlying” conditional-genetic properties of objects and events.\textsuperscript{259}


Energy flow, force, tension, locomotion and equilibrium—the most seminal of Lewin’s physical analogies—assumed a prominent place in his psychology of human conduct. Each of the key concepts was assigned a particular function essentially adopted from concepts original to natural science. Lewin used functional analogies meaning that psychological concepts inherited functional traits from role models in natural science. For example, “dynamics” referred to all mechanisms and conditions of change, “forces” had steering power being themselves determined by the properties “direction” and “strength”, mental

\textsuperscript{257}See [Ach, 1905, Ach, 1910b]. Cf. also [Danziger, 1997, 64].
\textsuperscript{258}Cf. [Lewin, 1926b, Lewin, 1926c].
\textsuperscript{259}Cf. [Lewin, 1936a, 213].
Figure 10: Reconstruction: Integrated dynamic mental system after Lewin

processes, as the physical ones, were intrinsically self-regulating and generally directed towards an “equilibrium”. We shall see how these were integrated with the previously delineated model of mental processing of intentions (Chapter 6).

Energy flows: tensions, storage, equilibrium

Lewin introduced the concept of “mental energy” in his doctoral dissertation and continued operate with it, for instance, in his essays of 1926 and 1929.²⁶⁰ In Lewin’s theory, mental energies, as a rule, can be traced back to tensions initiated through will and genuine needs (“echte Bedürfnissen” and „Wollungen“). Remaining rather vague in the identification of physical origins of mental energies Lewin stated, “Was alles inhaltlich als seelische Energiequellen in Frage kommt, kann hier nicht erörtert werden. Jedenfalls spielen die Bedürfnisse und zentralen Willensziele eine wichtige Rolle” [Lewin, 1926b, 318; italic original]. It is however clear that the release of psychic energy is precondition to and fuel of any mental dynamics. Its impact extends to phenomenological, physic and physiological areas. Yet, according to Lewin psychic tension do not belong to any of these systems directly as the unity of a conceptual system needs to be preserved.²⁶¹

Lewin maintained that all psychical dynamics aimed at the leveling of tensions, i.e. the establishment of a psychic equilibrium. The impact of an intention (Vornahmeakt) generally decreases and dissipates as soon as either the intended activity or an equivalent substitute activity (Ersatzhandlung) takes place.

²⁶⁰ Cf. [Lewin, 1917], [Lewin, 1926c, Lewin, 1926b, Lewin, 1929].
²⁶¹ Cf. [Lewin, 1926b, 311]; cf. also Chapter 5 on Lewin’s philosophy of science.
Punkten gestört ist, und nun ein Geschehen in der Richtung auf einen neuen Gleichgewichtszustand hin einsetzt" [Lewin, 1926b, 323].

In case a released energetic charge does not directly find appropriate output it may be stored up until it is converted into action or re-directed towards another destination. In the terms of field theory, a mental tension exists whenever a psychological need or quasi-needs emerges.\textsuperscript{262} The tension is released when the need or quasi-need is proceeded into action. Thus, all long-term intentions (\textit{Langzeitvornahmen}), such as in Lewin’s example with the letter and the mailbox, correspond to a “storage” of energy in dynamic terms. Energy is stored up until the accomplishment of the intended action. So, in our example, the tension will be discharged in the moment the letters dropped into a mailbox, even if several days and a long series of unrelated events lie in-between.\textsuperscript{263}

**Forces, valence, tension and locomotion**

Lewin’s “dynamic psychology” describes an approach that operates psychological forces. He distinguishes between the concept of energy and the concept of force: “\textit{man wird auch in der Psychologie zu wesentlich differenzierteren Grundbegriffen greifen müssen und nicht wie bisher fast immer z. B. die Begriffe: Kraft und Energie gleichwertig gebrauchen}” [Lewin, 1929, 523]. While energy is the fuel of all psychic dynamics forces govern this dynamics that has its final outcome in human conduct. Consequently, an event can only result from the interaction of mental forces. In turn, any psychological force is determined by the two parameters, direction and strength. Exercised forces are, for their part, always the result of interaction of several psychological facts. The combination of a number of forces acting together at the same point of time is called “resultant force”. Whenever a resultant force exists, there is a locomotion within the mental system of an individual (or “behaving self”\textsuperscript{264}) in the direction of that force.

“Es gilt nicht minder für die Psychologie wie für die Physik, daß dabei keine eindeutige Beziehung zwischen der Größe der auftretenden Kräfte und dem Energiebetrag des Geschehens besteht. Vielmehr können relativ geringe Kräfte bei geeigneter Gestaltung des Gesamtfeldes relativ große Energiebeträge beherrschen und andererseits große Kräfte und Spannungen mit geringen Energien Hand in Hand gehen. So kann eine relativ geringfügige Verschiebung in der Art oder Richtung dieser Kräfte ein Geschehen dauernd in andere Bahnen leiten” [Lewin, 1926b, 314f.].

Whenever an intended action cannot be accomplished, a re-direction of psychic energy towards a substitute activity may take place. The re-direction of energy also aims at the fastest possible re-establishment of the psychic equilibrium.\textsuperscript{265}

In the 1930s and 1940s, Lewin’s “genetic” process model underlying human conduct was significantly extended by Lewin and his collaborators and got widely known under the label “field theory”. The following anticipation of Lewin’s field theory will make obvious the progressively growing importance of natural-scientific analogies in Lewin’s German career.

### 7.3 The field concept

A concept that was introduced into physics of the late 19th century, and profoundly altered the scientific mode of treating physical reality, is that of the field. Yet, the introduction and spread of the physical

\textsuperscript{262}This tendency to maintain or, if disturbed, to restore internal stability, physiologically known as homeostasis [Cannon, 1932], which goes back to Claude Bernard’s "milieu interne", [Bernard, 1859]. Cf. also [Graumann, 1989, 77].

\textsuperscript{263}Cf. [Lewin, 1982d].

\textsuperscript{264}In fact, Lewin’s terminology is not always particularly sharp. The concepts “person” are “individual” are mostly interchangeable in Lewin’s terminology. The notion “behaving self” is applied to Lewin’s theory by M. Deutsch in order to distinguish the physical individual from that existing only on the psychic level; cf. [Deutsch, 1954, 204]. Quoting Lewin’s theory in his \textit{Principles of Gestalt Psychology} (1935), Kurt Koffka uses the term “Ego” instead [Koffka, 1935a, 353].

\textsuperscript{265}Cf. [Lewin, 1926c, 338f.].
field theory also crumbled the foundations of philosophical viewpoints and served as a model for new conceptions in biological and social sciences. As we shall see, Gestalt psychology and Lewin’s psychology of human conduct adopted much of the natural scientific reasoning when constructing their own psychological theories.

Michael Faraday (1791–1867), James Clerk Maxwell (1831–1879) and Albert Einstein (1879–1955) are those, who are most commonly associated with the physical “field theory”. However, it was Newton, who delivered the basis for their discoveries. Newtonian mechanics had asserted that it was possible to explain physical phenomena by assuming that forces were acting between unalterable particles. It followed that if one knew the mass, the velocity, the direction, the location, etc., of material particles one could accurately predict what would occur when a number of them interacted. Every change of motion, according to Newton, was due to a force which arises either through impact or by an attraction exercised mutually by the bodies upon each other, according to his law of gravitation. The gravitational force between bodies (e.g., between the sun and the earth) was assumed to act instantaneously producing “action-at-a-distance” (Fernwirkung). Space and time were treated as the absolute, fixed framework within which the movement of a particle would occur – that is, they were removed from the process itself.

In the minds of physicists up to the middle of the 19th century space remained simply a container of all events, without taking any part in physical occurrences. Since it would have seemed utterly absurd to attribute physical functions or states to space itself, they invented a medium pervading the whole of space, on the model of the ponderable matter — the ether. The picture was, then, as follows: space is filled by the ether, in which the material corpuscles or atoms of ponderable matter swim around.

In the period between 1831 and 1851, prompted by the experiments by Hans Christian Oersted, Michael Faraday challenged the then common idea of simple forces acting instantaneously at a distance on particles in an empty space. Faraday’s experiments showed that progress could be made by thinking of fields (or regions) through which electric and magnetic forces were spread, and by assuming that these forces existed even when there were no material particles present to which the forces were applied. While the mechanical physics sought to explain all natural phenomena through matter and motion the new field theory suggested the existence of a totally new physical entity able to exert forces. In other words, the field had an own ontological reality and was not reducible to the sum of the particles.

"It needed great scientific imagination to realize that it was not the charges nor the particles but the field in the space between the charges and particles which is essential for the description of physical phenomena" [Einstein and Infeld, 1938, 259].

Clerk Maxwell systematized and gave mathematical form to these experimental findings in his field equations. These equations, unlike the equations of Newtonian physics, were structural equations, which excluded the mechanical concept of action-at-a-distance. In the preface to his book, Matter and Motion, Maxwell described the change brought about by field theory in physical concepts in the following words:

"Physical science, which up to the end of the eighteenth century had been fully occupied in forming a conception of natural phenomena as the result of forces acting between one body and another has now fairly entered in the next stage of progress – that in which the energy of a material system is conceived as determined by the configuration, motion of that system, and in which the ideas of configuration, motion, and force are generalised to the utmost extent warranted by their physical definitions" [Maxwell, 1996].

266Cf. [Deutsch, 1954, 181].
267See [Einstein and Infeld, 1938, ch. 3].
268Cf. [Einstein, 1954, The Problem of Space, Ether, and Field in Physics, 237f].
269An extensive account on Faraday's experiments and the formulation of the field theory is given in [Steinle, 2005a].
270See more in [Einstein, 1954, Maxwell’s influence on the evolution of the idea of physical reality, 259-263].
With Albert Einstein’s special theory of relativity (1905) the notion of a space filled with material ether vanished from physics. It was replaced by a notion of space as a definitely distributed system of gravitational and electromagnetic stresses and forces. Descriptions of physical fields were given before the advent of relativity theory and then revised in light of this theory.\textsuperscript{271}

### 7.4 The field in Gestalt and in Lewin’s psychology of human conduct

At the beginning of the 20th century, the field concept has served as a stimulating analogy for scientists in many areas apart from physics. Essentially, all “field theorists” in the non-physical sciences have attempted to consider the phenomena they investigate as occurring in a “field”, i.e. as part of a totality of coexisting forces, which are conceived of as mutually interdependent. One of the most influential adherents of the field approach in psychology was Gestalt.

Personal contacts between the Gestalt psychologists and such prominent physicists as Albert Einstein, Max Planck, Max Born inspired the Gestalt psychologists to extend their doctrine from the psyche to areas of the physical world. For instance, in his book *Die physischen Gestalten* (1920) Köhler suggested that the field theory in physics was actually concerned with the problem of Gestalt, as well. Physical systems, such as for instance electromagnetic fields, could not be conceived as simple collections of isolated events. Instead the whole or the “field” determined the state of the parts. Köhler called the phenomenon “physical Gestalten”.\textsuperscript{272}

By 1931, Lewin developed and started to systematically employ his own concept of the psychological field of forces (see Chapter 9 on page 114). With his field concept Lewin built a loose analogy with the physical field theory by replacing the investigated “object” with a “subject” and the physical with a psychic reality. Lewin’s field consists of the person, its environment and all those factors linking these two that have an eventual impact on human conduct. Hereby, all psychological events (thinking, acting, dreaming, hoping, etc.) are conceived to be a function of the field. In short, Lewin’s field concept suggests that a person’s behavior is best comprehended in terms of the structure and dynamics of its personal field. Its major function is to represent and analyze the manifold of coexisting facts, which determine the behavior of an individual at a certain point of time.\textsuperscript{273}

“In the psychological fields most fundamental to the whole behavior of living things the transition seems inevitable to a Galilean view of dynamics, which derives all its vectors not from single isolated objects, but from the mutual relations of the factors in the concrete whole situation, that is, essentially, from the momentary condition of the individual and the structure of the psychological situation. The dynamics of the processes is always to be derived from the relation of the concrete individual to the concrete situation, and, so far as internal forces are concerned, from the mutual relations of the various functional systems that make up the individual” [Lewin, 1935c, 41; published in German in 1931].

“The field of force indicates which forces would exist at each point in the field if the individual involved were at that point” [Lewin, 1931d, 606f.].

Lewin’s mid-1930s concept of the field represents a multidimensional theoretical construct, whose basic structure, however, consists of his early process model underlying human conduct. The field encompasses and integrates the earlier presented dynamic concepts in order to operate with abstracted psychological processes. We shall exemplify this. For instance, Lewin employs the concept of field force (including its physical properties, i.e. magnitude, direction, and the point of application) to account for a person’s behavior. All behavior results from a given constellation of forces within a psychic field. In turn, he concludes that any force can be derived from the mental state of a person, the nature of its environment, and the person’s position in this environment. A mental tension will occur whenever a

\textsuperscript{271}See [Einstein and Infeld, 1938, ch. 3], cf. also [Deutsch, 1954, 181f].

\textsuperscript{272}Cf. [Köhler, 1920]; see also [Köhler, 1922].

\textsuperscript{273}See in particular Chapters 9 and 10.
valence is perceivable in some “region” of the psychological field. The magnitude of a force is directly
related to the strength of this valence and inversely related to the distance between the valence and the
person. The direction of a force is related to the relative position of the person and the valenced region
in such a manner that it directs the person toward the “path”, which leads him or her toward a “positively
valenced region”. To resolve a field tension an equilibrium between a person and its environment needs
to be reestablished. While individual mechanisms, such as the redirection of energies and the tendency
towards a mental equilibrium were part of the Lewin’s process model in 1926 the model becomes increas-
ingly more complex. By 1936, the “field” construct integrates this early model and enriches it with
further concepts as well as with additional dimensions, i.e. a material and a spacial one (see Chapters
9 and 10).

Obviously, holism is a foundational concept to Lewin’s field. He stresses that “the totality of the forces
present in the psychical field controls the direction of the process”; only by processing “action wholes”
one can determine which parts are psychologically relevant for the work process.274 Moreover, Lewin
made efforts to relate to Köhler’s terminology. For instance, he maintained that the person-environ-
ment relationship consisted of multiple “strong Gestalten” in configuration with others, forming a single, “weak
Gestalt”.

“The recognition that within the mind there are regions of extremely various degrees of co-
herence remains an exceedingly important condition of more penetrating psychological re-
search. We have to do not with a single unitary system but with a great number of such
strong configurations (starken Gestalten), some of which stand in communication with oth-
ers and thus form component parts of a more inclusive weak configurations (schwache Ge-
stalt). Other psychical structures, again, may show no real connection worth mentioning”
[Lewin, 1935a, 57].275

For Lewin, a manifestation of a “strong Gestalt” was what he called the “valence of objects”, be it a ready-
to-send letter that triggers the search for a mail box, or an observed piece of chocolate that intrigues a
child.

Furthermore, Köhler insisted that psychic systems, like their counterparts in psychology and biology, are
self-regulating, i.e. tending to return to a state of equilibrium after their disturbance.

“Falls an irgendeinem Ort ein (makroskopischer) Vorgang einsetzte, der an sich oder durch
seine Folgen im Ganzen dieser Richtung zuwider wäre, würden dadurch selbst im System
Gegenwirkungen wachgerufen werden, welche die angedeutete Abweichung sofort aufhe-
ben. Diese Selbstregulierung mag wunderbar erscheinen, [...] aber jedes in sich zusam-
menhängende System der unorganischen Welt verhält sich ebenso, die Gruppierung seiner
inneren Kräfte ist stets auf Gleichgewicht im ganzen und für die gegebenen Bedingungen
gerichtet, und sofern nicht Trägheitswirkungen das System wieder über diese ausgezeichne-
te Lage hinausschießen lassen, erreichen die Verschiebungen in der Gleichgewichtsstruktur
ihren Abschluß” [Köhler, 1922, 532f.].

Lewin not only accepted this claim but gave Köhler’s process model of self-regulation a concrete shape
i.e. the mental system’s “tendency towards the equilibrium”.

The disagreement

Nevertheless, Lewin’s so-called “field theory” cannot be fully subsumed under the framework of Köhler’s
and Wertheimer’s Gestalt theory and their understanding of psychological fields. While Lewin’s field the-
ory and the Gestalt theory both employed natural-scientific analogies a significant difference consisted

274 “Was eine Handlung ihrer psychologischen Existenz nach ist, hängt davon ab, in was für einer Geschehensgan
zheit die einzelne Handlung steht” [Lewin, 1982b, 103, italics original].
275 “Eine entscheidende Voraussetzung für eine eindringendere psychologische Forschung bleibt die Einsicht, daß innerhalb
der Seele Bereiche von außerordentlich verschieden enem Zusammenhang bestehen. Nicht ein einziges einheitliches System,
sondern eine große Anzahl solcher ‘starken Gestalten’ sind vorhanden, die zum Teil in Kommunikation miteinander stehen, al-
so Bestandteile einer umfassenderen ’schwachen Gestalt’ bilden. Andere seelische Gebilde wiederum zeigen keinen irgendwie
nennenswerten realen Zusammenhang” [Lewin, 1926b, 322].
in the way of implementation of these concepts. A particular difference between the Gestalt theory and Lewin’s field theory consisted in their different treatment of the physic reality. Ash (1995) notes that by treating physical phenomena as “releasers” or “activators for processes within the psychical organism” Lewin keeps with the trend prevailing in German psychology of the 1920s, and at the same time significantly deviates from the Gestalt theory.276 The contrast between the two theoretical approaches is best understood in terms of Köhler’s and Wertheimer’s extension of the Gestalt theory to the physical world, i.e. the “Gestalt isomorphism”. In recollections of the beginnings of the Gestalt theory the “idea about the function of a physiological theory in psychology” is attributed to Wertheimer’s mind.

“What he said amounted to this: let us think of the physiological processes not as molecular, but as molar phenomena. If we do that, all the difficulties of the old theory disappear. For if they are molar, their molar properties will be the same as those of the conscious processes which they are supposed to underlie. And if that is so, our two realms, instead of being separated by an impassable gulf, are brought as closely together as possible with the consequence that we can use our observations of the behavioral environment and of behavior as data for the concrete elaboration of physiological hypotheses” [Koffka, 1935a, 56, cf. also 53, 57].

Nevertheless, by 1920, Köhler picked up on the idea and developed it into a comprehensive framework to which he was busy finding real-life examples. His was the elaboration of the principle of “psychological isomorphism” that comprised the transferability of psychological principles, i.e. Gestalten, onto physiological, biological and physical phenomena. The principle could be inverted, so physiological hypotheses applied as guides to psychological research. He argued that “the most essential traits of experimental or perceptual contexts are the same as those of their physical counterparts. With respect to these traits the perceptual and the physical structures are isomorphic”.277 Köhler persists:

“It is really structure in which the world of precepts and the physical world have so much in common. Resemblance as to the demarcation of definite objects, and therefore to their number, means in fact similarity in the gross structure of the two worlds. And then inside such particular objects there is again structural resemblance between the perceptual and the physical world” [Köhler, 1938, 166, italic original].

Apart from physics, Köhler searched for examples of isomorphism in physiology. He argued that brain events that underlie perceived Gestalten could obey the same laws as phenomenal structures do. He further maintained that Gestalt characteristics could be found in brain processes and that the whole “somatic field” (somatisches Feld) of the brain could be treated as a single physical system. He felt that science would ultimately show that every psychological Gestalt mapped isomorphically onto a physical Gestalt within the brain.278


Together with his disciples Köhler studied successive comparisons, learning and memory. Therefore he developed and tried to test models of brain events that were presumed to cause specific perceptual phenomena and cognitive links. In this way Köhler hoped to confirm that psychological facts could become triggers to brain events or processes presumed to underlie them: “denn irgendwo im Gehirn...

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276 Cf. [Ash, 1995, 269f.].
277 Although the isomorphism concept played a role in Köhler’s work since the 1920s it is as late as in 1938 that he gives an extensive account on its meaning in The Place of Value in a World of Facts; [Köhler, 1938, 162, Italics original].
278 Cf. [Köhler, 1920].
müssen ja die einzelnen Elementargebiete (z. B. für das Tintenfaß) beieinander liegen, deren Summe die Erregungsgesamtheit für die betreffende Gestalt bilden soll" [Köhler, 1922, 115].

Lewin clearly kept his distance from Köhler's isomorphism, and defined the link between the psychic and the physic reality in a different way. For instance, in his *Principles of Topological Psychology* (1936) he writes in the section entitled *Physiological Theories of Psychological Processes*:

“We have to determine more and more exactly the properties of [...] dynamic systems which have full psycho-biological reality. It is therefore meaningless to duplicate these dynamic systems by coordinatig physiological systems to them, since the properties of the dynamic systems which are known by means of psychological technique are already the properties of the real psycho-biological systems themselves. It would not be correct to apply the concept of isomorphism” [Lewin, 1936a, 80, see 79-81].

It seems meaningless to Lewin to apply concepts pertaining to other disciplines onto psychological phenomena. This would contradict his philosophical agenda by destroying the unity of concepts of just one discipline, and by disregarding their functional correlations (cf. Chapter 5 on Lewin's philosophy of science). By contrast, in his field theory Lewin distinguished between the physical setting and the way this setting appears to the individual, concentrating on the latter. In other words, the phenomenal properties were to be distinguished from the conditional-genetic characteristics of objects and events. Consequently, Lewin insisted that physical concepts could be used in psychology as analogies only. The field theory was the purely psychological description of the structure and dynamics of the life-space and its components.

Lewin's field theory further states physical stimuli act as “activators” for processes within the psychical organism, which then result in actions or emotions. According to this principle, a stimulus is effective “not according to its physical intensity but according to its psychological reality”, its valence towards the actor. And the psychological reality is determined by forces having impact upon the situation within the life space. The postulated field theoretical ground rule of the psychic reality, thus, reads as follows: “What is real is what has effects” within the psychological field (cf. ebd. 19). Köhler, for his part, remained skeptical in this respect:

“Ich bezweifele ernsthaft, daß die Fragen jemals befriedigend beantwortet werden können, wenn unser Denken streng auf psychologische Begriffe beschränkt bleibt” [Köhler and Meili-Dworetzki, 1958, 41].

**Lewin's field theory as part of Gestalt**

After having sketched how Lewin dealt with the natural-scientific implications of the Gestalt theory in his own field theory we now need to have a quick look at the reverse side, i.e. at the extent to which Lewin's concepts have been accepted and integrated in the Gestalt theory. In his landmark work *Principles of Gestalt Psychology* (1935), published in the emigration, Koffka suggested to introduce a field concept into psychology, “meaning by it a system of stresses and strains which will determine real behavior” [Koffka, 1935a, 42]. Although the text has been published about a year before Lewin's *Principles of Topological Psychology* (1936), in which he gives the first rather systematic and extensive written account of his field theory, we can show that the primacy of many concepts and ideas counted to the “principles of Gestalt psychology” no later than by 1935 belonged to Lewin.

Various references to Lewin's work include individual concepts as well as more complex process models. Looking at the concepts, for instance, *The Principles* employ “quasi-needs” as a counterpart to...
“real needs”; they suggest the acceptance of the “reciprocity of a need and a demand character” (in some translations equivalent of the valence, i.e. Aufforderungscharakter). The Principles further integrate the psychological “forces” and “tensions”, “tension systems” and “sub-systems”, but first and foremost they operate with the notion of the psychological “field”.  

Logically, the use of terminology that has been first introduced by Lewin is nothing but a part of the implementation of his theory of mental processes underlying action. Conceptual borrowings are coupled with several explanation Lewin suggested for mental phenomena. For instance, The Principles include the “dynamic function” of objects that stimulates the person’s intention (examples are given below). The dynamic concept of a “triggering object” was first suggested in Lewin’s Kriegslandschaft paper (1917). Second, Koffka’s suggestion to “treat the problem of will by the methods introduced by Lewin” then quoting results of Lewin’s investigations on intention, will and needs. Third, The Principles accept the psychological nature of the person as a “multi-layered system”. “Our modern psychology owes this conception of the complex character of the Ego to Lewin (1926),” admits Koffka. By 1927, Lewin had suggested that the psychical person itself is a complex, "layered” (geschichtet) whole, meaning that different layers can be part of a person’s interaction with the perceived environment. Equally, the expression of a person's emotions is determined through multiple layers of meaning (Bedeutungsschichten).

In the experimental study by Lewin’s student Bluma Zeigarnik (1927) the refined sub-structure of the field was first laid dawn in detail.

Lewin's psychology of human conduct as part of Gestalt psychology?

In sum, Lewin’s approach certainly respected the holistic principles but went beyond the treatment of perception phenomena and focussed on the investigation of human conduct. As shown, Lewin’s psychology of human conduct was more than a part of the Gestalt doctrine as early as by 1926. The central theoretical disagreement between Gestalt theory and Lewin’s field theory consisted in their different treatment of the psychic reality. While the first claimed psychic Gestalten to obey the same set of rules as the psychological Gestalten, the latter insisted on leaving the physical dimension aside (cf. Chapter 5); it translated physical stimuli into psychological forces that operated exclusively within the realms of the psychological field. On the other side, some of Lewin’s independently derived (quasi-physical) concepts were later employed by fellow Gestalt psychologists and became part of Gestalt theory. For instance, the Gestalt-psychological "behavioral environment as a psychological field" that exists for a person at a

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283 Cf. [Koffka, 1935a, 342, 354f., 417-421].
284 See [Lewin, 1982d]; cf. also Section 6.4.
285 Cf. [Koffka, 1935a, 417-21; esp. 417].
286 Cf. [Koffka, 1935a, 333-42; esp. 333]. Koffka obviously refers to [Lewin, 1926b] and [Lewin, 1926c]. What Koffka terms the “Ego” or the “Self” is equivalent to what Lewin subsumed under the psychological properties of the individual (e.g. his needs, beliefs and values, perceptual and motive systems), which are in interaction among themselves and the objective environment, and in sum constitute the individual life space; cf. [Deutsch, 1954, 190].
287 Cf. [Zeigarnik, 1927]. A detailed analysis of Zeigarnik’s study is presented in Part III.
time, is mainly inspired by Lewin’s field concept.\textsuperscript{288} The following part explores how Lewin, together with a group of doctoral students, set up an independent research program to develop his theoretical system step by step.

\textsuperscript{288} Cf. [Koffka, 1935a, 43ff.].
Part II Conclusion Interdisciplinary roots of Lewin’s theory of human conduct

Lewin shaped the analytical framework for the experimental program leaning on Gestalt theory, his epistemic agenda, as well as experience collected in the early psychology of will and experience incorporated in physical, biological, physiological theory that he adopted through natural-scientific analogies (Part II on page 50). Other influences were encounters of the Weimar academic culture as well as the structure of research at the Psychological Institute of Berlin.

Extending the epistemic frame

Being a young scholar of marginal origins, whose philosophical-psychological blueprints seemed not entirely in the specializing Weimar academia, Kurt Lewin found his academic niche with the Gestalt psychologists in Berlin. His scholarly ambitions—holistic views, an integrative interdisciplinary attitude and an attempt to restructure knowledge in order to create a doctrine that would overcome the frame of his own discipline—seemed to be well compatible with the Gestalt principles of psychology. It is under the Gestalt auspices that he developed his theory of human conduct.

A driving force urging Lewin to challenge old psychological models certainly consisted in his epistemo-
logical ambitions. Like his Gestalt colleagues, in particular Max Wertheimer, Lewin felt in the need to review the framework of psychology in terms of a new epistemological agenda. However, holistic prin-
ciples were not the single influence behind Lewin’s philosophical-epistemic agenda. Cassirer’s, and to some extent Reichenbach’s, philosophical work delivered important impulses.

Lewin’s transition from the Aristotelian to the Galilean or from the “mechanistic” to the “dynamic” psy-
chological paradigm in Cassirer’s terms corresponds to the transition from “substance” to “function”. The “functional” organization of psychological concepts was a constitutional principle of Lewin’s psychological approach. Furthermore, in his philosophical agenda, Lewin stated that psychological phenomena had to be treated separately from others, e.g. physical, phenomena. Importantly for Lewin’s approach, “psychological reality” implied that mental events (at least theoretically) were not subordinate to the phys-
ical ones but existed in their own self-contained psychological microcosm. The preservation of the unity and integrity of the psychological microcosm had to be ensured. Developing and refining this specifically psychological microcosm was in Lewin’s view the actual purpose of the scientific work.

The systematic implementation of these theoretical principles in the psychological practice called for new psychological concepts as well as revised links between those concepts. By 1926, interlinked concept chains evolved in the peculiar dynamic model, described above. Nevertheless, the model or concept chain, presented by Lewin in 1926, constitute but a single shred or an early harbinger of the significantly more complex theoretical system to be developed in the succeeding decades.

Psychological roots

Lewin approached the domain of behavior building on the preceding experimental research on will (Chapter 6). In the early 1920s, most German-speaking psychologists agreed that a series of non-
phenomenologically observable psychic processes was taking place somewhere between stimulus and an observable response. While Ebbinghaus’ and Müller’s theory about a physiologically conditioned link between stimulus and response did not seem to sufficiently explain voluntary action, no consensus about its nature existed, though. The most committed experimentalists of will, such as Ach at Würzburg and Michotte and Prüm at the University of Leuven pointed to a certain determination of behavior through a set-up, in particular an established task. Yet, this process model was still too unilateral and vague to
fully explain all observed variations in behavior. Thus, the demand for more versatile and at the same
time concrete explanations remained unsatisfied.

By 1926 Lewin presented a new system of concepts connected to a novel reasoning. He suggested
to substitute a “mechanistic” model with a “dynamic” one. The essence of this dynamic model looked
as following. There are co-existing forces originating from different sources of energy and underlying
human behavior. These forces are exercised simultaneously and combine in a way that a resulting force
is created. These constitute altogether an entire interconnected system of tension that is substantial to
the human mental system. The crucial elements of this system are: A stimulus that triggers a need or
quasi-need incorporating a certain valence. The (quasi-)need has an impact on a person’s intention,
which leads to one of the following scenarios: the translation of the stored energy into (physical) action
i.e. the accomplishment of the preconceived action, a (temporary) retention of the energy until an
opportunity for its discharge is found, or a re-direction and discharge of the energy towards the so-called
substitute activity. After the discharge of the tension a mental equilibrium is re-established.289

In order to reflect the “flexibilization” of the process infrastructure underlying human conduct, Lewin’s
1926 psychological model included new concepts. At once, one dealt with “tension systems” instead
of Ach’s “determining tendencies”; “intention” (Vorsatz, Vornahme) and “quasi-need” (Quasi-Bedürfnis)
were integrated into the scheme resulting in a possible “tendency towards retention” of an interrupted ac-
tivity (Wiederaufnahmetendenz). “Storage” and “re-direction” of energy pointed to “substitute activities”
and “substitute accomplishments”. Finally, Lewin argued that there was not one but many “intercon-
nected mental systems”.

As shown in Chapter 6, Lewin’s theory of action differed from the formerly existing ones through its
integrative and unifying capacity. It integrated elements of the preceding theories, as well as introduced
a fine-grained distinction between basic mechanisms underlying behavior. By restructuring preexisting
knowledge, Lewin developed a new model of mental activity, which he and his group then systematically
revised and extended through a variety of experiments (Part III).

Function of natural-scientific analogies

As outlined in Chapter 7, in the 1920s, adopting selected physical concepts as psychological analogies
was a common practice; the fairly established physical discipline served as a source of inspiration for
many psychological theorists. To the Gestalt psychologists, physics became a major source of inspira-
tion in matters of psychological theory, but not only that, however. Köhler and Wertheimer extended
Gestalt theory from the psyche to the physical world while physiological and neurological studies con-
ducted, for instance, by Kurt Goldstein and Adhémar Gelb, provided examples of “good Gestalten” in
brain activity.

Like others, Lewin’s investigation of the human mental system relied upon expertise adapted from
physics. Yet, differently from other contemporary psychologists, who occasionally employed natural-
scientific analogies, Lewin systematically employed these in his conceptual system. He laid emphasis
on the re-conceptualization of all employed concepts originating from natural science specifically for the
psychological use, i.e. applied exclusively to processes of the mental life. However, he maintained the
original functions of the concepts, i.e used functional analogies meaning that psychological concepts
inherited functional traits from role models in different disciplines. For example, “dynamics” referred to
all mechanisms and conditions of change, “forces” had steering power being themselves determined
by the properties “direction” and “strength”, mental processes, as the physical ones, were intrinsically
self-regulating and generally directed towards an “equilibrium”. Finally, psychological events determined
through mutual relations among the totality of coexisting facts constituted the psychological “field”. One
can say that Lewin re-conceptualized natural-scientific concepts without re-functionalizing most of them.

289Cf. [Lewin, 1926b; Lewin, 1926c]; see also Chapters 6 and 7 of this dissertation.
Part III

Berlin Experimental Program

“Research is the art of taking the next step” [Lewin, 1949, 274].

In Part II we reconstructed Lewin’s model of interrelated concepts developed by 1926. Altogether these concepts form a conceptual system allowing to build up a limited variety of psychic processes. While the process model we reconstructed in the previous part offers a way to analyze the mental processes of one single individual (Lewin’s terms: a “single mental system”), his 1936 topological theory enables the researcher to build up processes accounting for the psychic interaction of the individual with its environment, or in Lewin’s terms, the “interrelation of different mental systems and subsystems”. By 1936, the integrated system termed “field theory” with its topological extension grew up to a multidimensional construct with spatial and formal (quasi-mathematical) layers equipped to encompass a nearly endless variety of psychic processes. Compared to the process model Lewin had developed by 1926, the “field theory” is an overarching and distinctly more sophisticated theoretical construct.

The evolution of Lewin’s psychological model over ten years is striking. Given the additional scarcity of Lewin’s publications from the decade here discussed, it is not obvious how a theory of such high degree of complexity seems to just be there by 1936. The intrigue of this part thus consists in the disclosure of the “big knowledge leap forward”, i.e. the conditions and mechanisms triggering the evolution of the knowledge system developed by Kurt Lewin and his colleagues over roughly a decade. In the present part of the work we will clarify, how Lewin’s and his colleagues’ empirical work brought about the development of a new system of knowledge.

Lewin is – probably erroneously – recalled having coined the famous saying “there is nothing as practical as a good theory”. Nonetheless, he did stand by the position that theory is of little use if it cannot be applied to resolve an existing problem. Lewin’s conceptual system for psychology, i.e. the topological field theory, does not represent purely theoretical but application-oriented knowledge.

“What he tried to do was conceptualize phenomena and connect them with other facts. He never produced a theory and then looked for facts to fit it. However, if you asked him, ‘How can one do this topologically?’ he would reply, ‘What’s the problem? Let’s first look at the problem and see whether any of this is possible?’ Those were the terms he thought in,” Tamara Dembo, quoted in [Marrow, 1969, 40].

In other words, the investigations conducted by Lewin and his disciples always started at the concrete problem or challenge; departing from this, one would choose an appropriate experimental method. Most Gestalt psychologists saw themselves making their contribution to the fundamental questions of psychology on empirical grounds. By carrying out a broad variety of experiments they challenged established views on the nature of scientific method. Empirical work was vital to the constitution of the

290Lewin’s main theory-centered writings were published in 1926 and 1935/1936. These are, on the one hand, the two programmatic papers—Vorbemerkungen über die psychischen Kräfte und Energien und über die Struktur der Seele und Vorsatz, Wille und Bedürfnis (1926), which represent the official kick off of Lewin’s research program on action and the emotions. On the other hand, there is his consolidating and evaluating work—A Dynamic Theory of Personality (1935) and Principles of Topological Psychology (1936) that appeared about ten years later in English, after Lewin had already settled in the United States. Apart from these four main theoretical works and the philosophical ones only minor writings (mostly talks and short summative articles) by Lewin saw the light in this period. A directory of published and unpublished writings focussing on matters of experimental psychology can be found in the Appendix A.

291This aphorism is often attributed to Lewin. He, however, mentioned having heard it from a businessman, and there is evidence that the expression was used long before Lewin, e.g. by the German pedagogue Friedrich Wilhelm Dörpfeld (1824–1893). See [Langfeldt, 2002, 96].


293Cf. amongst others, [Feest, 2007, 8].
many facets of the Gestalt theory, including Lewin's particular approach. The main challenge of this part is thus to illuminate and evaluate interactive and analytical efforts behind the elaboration of new knowledge throughout Gestalt and Lewin's German work in particular.

During the period discussed, Lewin headed an experimental program on action and emotions, which we refer to as the Berlin Experimental Program (BEP). To identify and evaluate the triggers of theoretical change we thus focus on the different facets of the BEP as well as the relevant aspects of Gestalt-style experiments. Additionally, to draw conclusions on the impact of experiments we need to systematically reconstruct the whole period of experimental research. With the words of the Polish immunologist and philosopher of science Ludwik Fleck:


Scholars widely agree that Lewin's experimental program constituted a joint collaborative effort with his student circle, who jointly developed and implemented ideas. It was the student circle that performed the largest part of his experimental research agenda. Starting from 1926, Lewin edited the series *Publikationschronologie zur Handlungs- und Affektpsychologie* in the *Psychologische Forschung*, in which research results were made public. Apart from his two papers in 1926, he edited 18 contributions by 16 of his doctoral students submitted between 1927 and 1936 (Appendix 4).

In the present part of the dissertation, I link experimental practices and the formation of new concepts in Kurt Lewin's German work. To this end, various facets, such as the socio-academic dynamics at the Berlin Institute, experimental styles and practices designed by Lewin and other Gestalt psychologists, as well as the conceptual development and the extension of knowledge throughout the BEP, are extensively discussed. Throughout these we illustrate the gradual development of Lewin's topological psychology. We show that Lewin's particular approach to experimentation consisted of a strong interactive and analytical part. Further, we elaborate the different applied functions of Lewin's theory, which we used as part of the experimental procedure. Finally, we correlate Lewin's aspiration towards the experimental practice in psychology, presented in his philosophical agenda, with their actual implementation in his experimental program in Berlin.

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295 An exception was the work by S. Forer, *Eine Untersuchung zur Lese-Lern-Methode Decroly*, that appeared in the *Zeitschrift für Kinderforschung*, i.e. [Forer, 1934].
In Chapter 3 we have demonstrated that the Berlin/Frankfurt/Giessen school of Gestalt put forward a strong and autonomous theoretical agenda. However, one must not forget that empirical work was vital to the constitution of the many facets of the Gestalt theory, as it was in particular in Lewin's research program. Perhaps the most popular domains of Gestalt research were perception of structures, perception of motion, hearing perception, organization of thought processes, learning and memory, psychophysics. The main purpose of most Gestalt experiments was to enable observers to perceive the interdependency among parts or dimensions of a phenomenon rather than to create situations in which only atomistic sensations were possible. Therefore the Gestalt psychologists advocated specific modifications in then-standard laboratory procedures trying to create situations in which “whole phenomena” could be experienced without obstacles. In Wertheimer's terms the purpose of their experiments was to construct “good” or “pure” phenomena, those which most clearly and impressively exemplified the structure of experience in a given situation.296

“Im ganzen wird es anschaulich bald klar, worauf es ankommt; [...] es kommt auf die ‘gute’ Fortsetzung an, auf die ‘kurvengerechte’, auf das ‘innere Zusammengehören’, auf das Resultieren in ‘guter Gestalt’, die ihre bestimmten ‘inneren Notwendigkeiten’ zeigt” [Wertheimer, 1923, 324].

In rigorous empirical studies the Gestalt psychologists varied conditions of observation, thereby trying to determine the objective circumstances under which “good phenomena” could be experienced. One could maintain, what most Gestalt experiments in the 1920s and 1930s did was to demonstrate the applicability of one of Wertheimer's principles of perceptual organization to an increasingly wide variety of phenomena, i.e. in one way or another experiments were designed to demonstrate the accuracy of the laws of Gestalt.297

Three kinds of Gestalt experiments are distinguished by Ash (1995). Experiments of the first, predominant, type represent demonstrations of Wertheimer's organizational principles, i.e. “good phenomena”. Experiments of the second type were designed as scientific verifications of invariant relationships within and across sense modalities. Another group of experiments was psycho-physiological in nature; these intended to show that the perception of Gestalten could posses neurological correlates (as suggested particularly by Köhler).298 We shall instance a range of experimental designs to get an idea of the experimentation that was conducted by Gestalt psychologists.

The intellectual micro-culture of the Berlin Institute, in which close collaboration between students and staff was practiced, was vital to the experimental endeavor of Gestalt. In Danziger’s words, the Gestalt style of experimentation to some extent conformed to the "Leipzig model". Despite the obvious theoretical differences between the Gestalt theory and Wundt's psychology the socio-academic structure behind the experimental design did not differ much from Wundt's Leipzig. Both Wundt's investigative practice in Leipzig as well as Köhler's Berlin involved small numbers of psychologists, who shared a common research agenda and often served as subjects for one another. Those who belonged to the small group of experimenters were considered an intellectual elite.299 The academic culture created in Berlin was replicated in other Gestalt institutes, i.e. Frankfurt and Giessen.300

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296Cf. [Wertheimer, 1923].
297Cf. also [Ash, 1995, 245].
298Cf. [Ash, 1995, 223].
299On the "Leipzig model" of experimentation see [Danziger, 1985b, 136], [Danziger, 1987, 16] and Sections 1.2.
300See more in [Ash, 1995, 203-216].
8.1 The Berlin micro-culture

As stated earlier, the Berlin Institute under Köhler’s leadership was the center of the institutionalized Gestalt movement. In 1922, Wolfgang Köhler succeeded Stumpf as head of the department. Wertheimer and Lewin were appointed as fellows of the department in the same year (Chapter 3). Pursuing the question of how new knowledge was elaborated in the framework of the Gestalt research we need to consider the impact of the socio-academic micro-culture in Berlin (Frankfurt and Giessen). Transfer of know-how and training of disciples are crucial properties of any research school. "Personal influences and styles have the most powerful effects on people working in physical proximity to one another" [Holmes, 1988, 180]. There are two types of knowledge to be transmitted within the framework of a school, i.e. the “hard skills”, such as scientific styles and experimental methodology, and the so-called “tacit knowledge”. While hard skills or techniques constitute but a small part of what masters transmit to their disciples tacit knowledge turns out to be far more significant.301 The informal "enculturation" of experimental techniques, practices, and skills through direct personal interaction in research schools is more important than the transmission of "impersonal" knowledge through textbooks or other relatively distant forms of communication.302 One could also draw on a broader concept, such as Ludwik Fleck’s “thought collectives” (Denkkollektive) unified by a commitment to joint “styles of thinking” (Denkstile).303 Köhler’s tenure, from 1922 to 1935, occurred in a time when German universities accepted more students than before from the so-called new middle classes (middle-level employees) and even from the lower middle classes. In other words, the academic milieu was seemed multifaceted and vivid than ever before. In the same period, psychology in Germany began to develop into a professional domain, which helped its legitimization in the academic world (see Chapter 2).

In the Weimar time the dominant self-concept of the Psychological Institute of Berlin was that of a social and scientific elite. Those admitted to the rank of doctoral candidate could count on excellent facilities. Every doctoral candidate had one to two rooms for his or field research. Anitra Karsten, who earned her degree in this period remarked that psychology in Berlin was not a “bread subject” (Brotfach), but “a luxury subject” (Luxusfach). An atmosphere of privilege radiated even from the building itself that was a part of the emperor’s family’s palace.304

33 dissertations were completed in the 13 years under Köhler; this more than doubled Stumpf’s annual productivity. Of the 31 students for whom data is available, 25 came from the upper middle class—they said their fathers were merchants, officers, higher officials, physicians, lawyers, engineers, or Gymnasium and university teachers. One reason that the student cluster mostly consisted of the upper middle-class is that the study duration was above-average. The completion of the psychological faculty took about 9 years from completion of secondary school to the doctorate, a period when the students had to privately assure their material existence. Given that no diploma degree in psychology existed studies had to be accomplished with a dissertation.305 Those who were able to engage in psychological studies with the required persistence found themselves in a rather elitist environment, as hinted in a commentary by Von Restorff, then-assistant at the Institute.

"Das Psychologische Institut hat den Charakter eines Forschungsinstituts; der Lehrbetrieb, ist klein, ein Brotstudium ist Psychologie nicht. Wer also von den Studenten zu uns kommt, muss er besonderes Interesse haben, besonders befähigt sein und wissen, daß die Art zu arbeiten von den strengen Anforderungen der wissenschaftlichen Forschung her bestimmt [...]. Wer sich bewährt und bei uns bleibt, findet sich in einer kleinen, sehr engen Gemeinschaft von Menschen, die in der Tradition des Berliner Instituts erzogen worden sind, und die

301 Cf. [Servos, 1993]; see also [Olesko, 1993, Geison, 1993].
302 See [Holmes, 1988, 179-210].
303 Cf. [Fleck, 1994, espec. chap. 4].
304 Interview with Lewin’s student Anitra Karsten in Frankfurt am Main, 22 February 1978, in [Ash, 1995, 467]. See also [Heider, 1984, 44ff.] and [Ash, 1985a, 59].
305 See [Ash, 1995, 421f, 467] and [Jaeger, 2003, 284].
In contrast to Stumpf’s supervision style a few years earlier, supervision of doctoral research by Köhler’s staff was closer and more dynamic. Work on the final write-up of the dissertation could be so intensive that the product was essentially cooperative. Embedded into the Berlin Institute the students seem to have experienced rather a unified atmosphere than isolated influence of a particular agent. Work of Lewin’s and Köhler’s students was discussed in Wertheimer’s classes. He suggested variations, asked questions, suggested methods to study some of these problems in the context of Lewin’s concepts, and gave counter-examples, which in turn raised new research problems. For instance, Dembo and Zeigarnik acknowledge that Lewin’s students worked with him on their dissertations, but they felt “strongly influenced by Wertheimer through his lectures, the experimental courses, and with informal contacts in the Psychological Institute” (Dembo in ebd. 12). Thus, instead of a collection of cut and dried procedures to be learned by rote, students apparently got from such teaching the feeling for science as an active process of discovery in which they, too, could participate.

In addition to the close mentorship in a committed group, the students could profit from the subtle atmosphere of the institute, often described as exciting and motivating.

“Man spürte sofort, hier war der Versuch im Gange, eine von Grund auf neue Psychologie aufzubauen, keine Chemie konstruierter seelischer Elemente, keine Lehre von starren ad hoc entwickelten Mechanismen, keine Seelen-Philosophie, die einem unbekannten X, Subjekt genannt, als Hauptaufgabe die fortgesetzte Korrektur und Ergänzung alles dessen zu schreiben, was bei der Summation der angenommenen Elementarvorgänge und bei der Wirk samkeit von neuronalen Apparaten, wie man sie sich damals vorstellte, anders ausfiel, als die alltägliche Erfahrung es forderte” [Metzger, 1986, 99f.].

In other words, a particular awareness of being involved in important developments in the field was feeding Gestalt research and training style.

“In some ways psychology was alive. Psychology meant real things and not abstractions, in the psychological demonstrations or in the lectures of Wertheimer [and in] Wertheimer's Gestalt theoretical process” (Dembo as quoted in [Luchins and Luchins, 1986, 13]).

Between 1921 and 1929, the staff of the Psychological Institute offered 37 percent of all courses listed in the university catalogue under the heading “philosophical disciplines” (philosophy, psychology, pedagogy). It seems that Köhler (unlike Lewin) preferred to widely exclude innovative currents in psychological sub-disciplines, such as the psychology of individual and psychoanalysis from his curricula. And he favored the problems of general psychology before the applied one. Köhler taught philosophy (until 1930, together with the emeritus Stumpf). Wertheimer specialized in logic and psychology of thinking: between 1919 and 1929, he taught most courses in the area of thinking; nearly as often as that, he taught experimental psychology and courses in the field of philosophy. Between 1921 and 1932, Lewin had offered a total of 70 courses of which 20 had addressed topics related to philosophy or theory of science and 50 themes pertaining to experimental psychology, in particular in psychology of action and emotion, and developmental psychology.

Through the prism of recollected memories of Wertheimer’s and Lewin’s former students one can see that the teaching styles were in many respects akin. Whether their classes were seminars, lectures, or introductions their shared method of teaching was that of a dialogue. Their courses were to a great extent thoughtful and driven by questions, not by rote learning. The atmosphere was one of inquiry and exploration, where students were encouraged to think critically and creatively.

306Quoted as in [Ash, 1985b, 125f.], i.e. with adapted spelling.
307Cf. [Luchins and Luchins, 1986, 9-14].
308Cf. also [Yaroshevsky and Zeigarnik, 1988, 174].
309Cf. [Ash, 1995, 208].
310Cf. [Jaeger, 2003, 286].
extent problem-solving seminars in which both tried to stimulate the students to think about certain theses, doctrines, experiments, demonstrations; both did not remain within the boundary of a topic or a field of a discipline, and allowed the discussion in class to be shaped by emerging questions and arguments. Usually both used to kindle the students’ interest by their enthusiastic and passionate way of teaching. Students recall both to be personally “more open” than Köhler. Both were told to be “highly informal and warm”.\(^3\) Whereas Wertheimer apparently was a rather reserved person (who spent most of his time at home) Lewin was most visible and had the most students and direct followers.\(^3\)

To sum up, comparing with the distance and hierarchy between teacher and the student that were traditional at German universities, the Berlin micro-culture was much of an exception. The informal democratic infrastructure supported collaboration and animated the exchange of both concrete techniques as well as tacit knowledge. At the end, this constituted one of the pillars of the well-rounded research program.

8.2 Types of experiments

8.2.1 Perception

Paper-and-pencil experiments on Gestalt perception

The largest group of Gestalt experiments was designed as structured phenomenological observations. Predominantly, these were carefully constructed attempts to grasp the principles of self-organization of the so-called “good phenomena”. Observers were allowed to experience a “whole situation” instead of being asked to fixate on a single point or stimulus array, as in experiments conducted by other psychological schools. A range of uncomplicated paper-and-pencil studies was devised under the instruction of Wertheimer to demonstrate the perception of “good phenomena”. The observers’ perception of lines, dots and filled regions on a page of paper was tested (exemplary studies were outlined in section 3.2). To mention one example, an experimental study of the brightness contrast was devised by Wertheimer and pursued by Wilhelm Benary, a former collaborator of Kurt Goldstein and Köhler’s assistant since 1923, and Wolfgang Metzger in Berlin. Benary’s “cross-triangle experiment” combined two identical gray triangles with a bigger black cross. Both triangles were surrounded by one black and two white sides (fig. 11). However, observers identified the triangle located inside the larger black figure as brighter than the one outside the cross. The Gestalt interpretation was that the two gray triangles are perceived differently because one appeared to belong to the cross and the other did not (“law of belongingness”).\(^3\)

Figure 11: Benary cross after [Benary, 1924, 131]

Experiments on the “whole field”

One of the most spectacular demonstrations of perceptual organization resembled to an impressive light installation and came from research that the Berlin associates Willy Engel, Wolfgang Metzger and Walter Jablonski published in 1930. A projector with a specially designed set of lenses was set up in one of the

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\(^3\) Cf. [Benary, 1924, esp. 131f.], see also [Metzger, 1931, 374-386].
institute’s high-ceilinged rooms. This casted light at an 80° angle from a high tower toward a white wall surface of four meters squared. Screens extending from the wall were lit so that their edges would not be seen. Another screen reached from the top of the wall above up to a zone behind the proband (see fig. 12).\(^{315}\) As the illumination gradually faded, observers saw first a somewhat concave surface, then a fog, which after some time became a foggy mass approaching them through space. In Metzger’s words, the observer’s experience was that of a total disappearance of space around her or him.

“It is an extremely unpleasant experience, similar to dizziness. The room literally sucks itself around the observer; a kind of disappearance of the environment is experienced, not just an indifferent reformation. The eyes automatically seek something solid, a resting point that could prevent the disappearance” [Metzger 1930].\(^{316}\)

![Figure 12: Sketch of the projection technique [Engel 1930, 2]](image)

The Gestalt psychologists called this special environment a “whole field” (Ganzfeld), in which, Metzger argued, color and illumination could not be clearly separated.\(^{317}\) In a variation of the Ganzfeld-experiment Jablonski attempted to grasp the conditions under which complementary after-images appeared in short-term color projections.\(^{318}\) The perception experiments in the Ganzfeld seemed to document holistic experience in its most pure shape. Perception experiences that deviated from those documented in a “field segment” (Teilfeld) were of particular interest. The Gestalt psychologists used their observations from experiments on the whole field to confirm and extend Wertheimer’s original principles of Gestalt organization.

### 8.2.2 Quantifiable invariant relations

Another type of experiments came close to natural science, i.e. its substance consisted in the identification of quantifiable invariant relations in the mental realm. The existence of such invariant relations within and across sense modalities was considered the essence of Wertheimer’s laws. Experiments set up to provide evidence employed then-standard experimental techniques as well as quantitative inferences from parametric or threshold measurements.

\(^{315}\)Engel presents a detailed documentation of the experimental scenery, [Engel, 1930, 1-5].

\(^{316}\)“Die Raumbegrenzung plötzlich ganz anschaulich sich auflösen zu sehen, ist ein ausgesprochen unangenehmes Erlebnis, schwindelartig: Der Raum saugt sich förmlich um den Beobachter; eine Art Schwund der Umwelt wird erlebt, nicht eine gleichgültige Umformung. Die Augen suchen unwillkürlich nach etwas Festem, einem Haltepunkt, der den Schwund verhindert” [Metzger, 1930, 9].

\(^{317}\)Cf. [Metzger, 1930, 61].

\(^{318}\)See [Jablonski, 1930, 145-197].
Sound localization

For instance, Max Wertheimer and Erich von Hornbostel re-utilized the instrument they had invented to predict the direction of artillery and torpedo fire for studies of sound localization (*akustische Richtungswahrnehmung*). They challenged widely held views that sound localization was derived from the intensity of the perceived sounds or from phase differences in acoustic stimulation.\(^{319}\) Hornbostel's and Wertheimer's experiment set up knock sounds that were intensified and steered by means of two microphones or funnels as time intervals and directions were modified. At the end they found that "the angle at which a sound is heard is lawfully dependent on the time difference with which the same stimulus impacts each of the ears".\(^{320}\) Specifically, the angle of subjective localization increased with the deviation from simultaneity, reaching 90° at 630 microseconds; just noticeable differences are greatest near the median, and decrease as the angle approaches 90° (cf. ebd. 389). This experimental study meant to show that such phenomena as the localization of sound were determined in a centralized physiological process (cf. ebd. esp. 395f.).

8.2.3 Psycho-physiological Gestalt correlates

Successive comparisons across sense modalities

The third type of experiments was part of Köhler's and Goldstein's search for physiological Gestalten. Experiments intended to show that the physiological correlates of Gestalten could underlie brain events. For instance, Köhler attempted to create a new model of experimental procedures to prove his theory of brain processes (i.e. the existence of physiological correlates to psychological phenomena).\(^{321}\) He studied the judgement of the loudness of sounds in ascending and descending sequences. Using a double sound pendulum (*Schallpendell*) he made his probands listen to pairs of clicks of slightly different intensity (see fig. 13).\(^{322}\) He then found that objectively equal tones are more often perceived to be different in ascending than in descending series of clicks. Similar observations (that seemed to have inspired Köhler) have been made by J. Borak. His study of lifted weights showed that probands noted minor differences between weights more easily when they lifted the lighter of the two weights first.\(^{323}\) Additionally, corresponding observations on successive comparisons were made in the framework of the early investigations in psychophysics.\(^{324}\) Invoking the strikingly correspondent observation across different sense modalities Köhler suggested that they are of a general nature, and that only processes in the nervous system could do justice to the dynamics at work. His hypothesis was that initial impressions of sound, light, weight and so forth leave "quiet pictures" (*stille Bilder*) in the form of energy or electrochemical distributions in the specific region of the cortex, which undergo structural changes as the comparison proceeds. While the contemporary knowledge of the brain was not sufficient to conclusively verify the hypothesis the Gestalt psychologists suggested to approach the neurological investigation from the side of the psychological facts.\(^{325}\)

\(^{319}\) These theories were advanced e.g. by Myers and Wilson, [Myers and Wilson, 1908, 260-66].

\(^{320}\) "Alle bisher mitgeteilten Versuchsergebnisse sprechen dafür, daß der Seitenwinkel, in dem ein Schall gehört wird, gesetzmäßig abhängig ist von dem Zeitunterschied, mit dem der gleiche Reiz auf das eine und andere Ohr wirkt." [von Hornbostel and Wertheimer, 1920, 391].

\(^{321}\) Remarkably, while psychology of the 1920s lacked the instruments to prove or disprove the existence of neural correlates of subjective phenomena modern neuroscience verify Köhler's theory. In the late 1930s, working at Swarthmore College in the laboratory of his own design, Köhler eventually received the opportunity to use the newly developed EEG equipment (electroencephalograph), by means of which he was able to verify the existence of his anticipated brain correlates. Cf [Köhler, 1940, 193]; see Chapter 11.

\(^{322}\) The illustration of the double sound pendulum (*Schallpendell*) originates from [Hoyer and Spindler, 1908, 0104]. It was reproduced in the Max Planck Virtual Laboratory: http://vlp.mpiwg-berlin.mpg.de/library/data/lit24062/index_html?pn=109, 23 June 2014.

\(^{323}\) See [Borak, 1922, 374-389].

\(^{324}\) Results similar to Köhler's have been published: amongst others, on sound intensity, cf. [Starke and Paul, 1886, Starke, 1889, Angell, 1892]. On pressure intensity, cf. [Stratton, 1896].

\(^{325}\) Cf. [Köhler, 1923, espec. 120, 148f., 168ff.]; cf. also [von Hornbostel and Wertheimer, 1920, 396].
8.3 Experimental principles

Despite of the obviously high bandwidth of experimental styles that were involved in the Gestalt program a set of shared features can be identified. Together with the commitment to Wertheimer's theoretical agenda the joint experimental principles hold the research endeavor of Gestalt together and provided it with an amount of consistency.

Person-oriented approach

Atomistic psychology, eager to imitate the “objective” methodology of natural scientists as closely as possible, considered the subject's behavior merely in an accidental relationship with the investigative situation (e.g. Ebbinghaus, Müller). As the objects of natural scientific research cannot “answer back” or give an intentional account of themselves, similar options were not included in the atomist experimental practice. In the course of the experiment only immediate reaction to the prearranged experimental triggers were to be taken into account.326 In contrast, Gestalt psychology suggested a person-oriented rather than data-centered approach to the study of mental life. The isolated object-like treated individual was replaced by a person in a context (now called “subject”). The relationship of investigator and subject, thus, become less hierarchical.327

Small samples and the request for a 100% consistency of results

Another feature of the Gestalt-style experimentation was Wertheimer's request for a high (if not complete) congruence of experimental results. Each experiment was conducted with small experimental samples of generally no more than 10 probands. As one of Wertheimer's students in Frankfurt put it:

“A Gestalt theoretical experiment was geared up so that it would work in 100 percent of the cases, and if it did not work, well throw it out the window. If only eight out of ten subjects would do it - I don’t think Wertheimer used more than ten subjects, and he certainly told us to use ten subjects - and it doesn’t work in at least nine, forget about it. That was the methodology” (interview with Erika Oppenheimer Fromm, 15.11.82, quoted in [Ash, 1995, 222]).

Not all Berlin Gestalt school studies involved that few subjects. This statement nonetheless captures the heart of the matter. Wertheimer and his followers were highly resolved to proceed according to the

326 Cf. [Danziger, 1985b, 136].
327 See [Ash, 1995, 220ff].
principle of deduction, i.e. from the law to its exemplary demonstration rather than from the particular case to the induction of lawful patterns behind it. The experimentation goal was to “achieve something like the crucial or decisive demonstration” (cf. ebd.) To emphasize this point Gestalt psychologists rhetorically employed plenty of exemplifications of invariant, universal laws of nature that were produced in experiments of canonic scientists, such as Galileo and Newton.

Quantitative results

The Gestalt theorists did not eschew quantitative research even though most of their work was devoted to uncovering the structures inherent to the individual case. However, dissertations from the Berlin Institute frequently included quantitative results, usually in tabular form, sometimes including statistical curves. But the quantitative data were not the kind that would refute a basic principle. Included tables and curves almost always referred to variances of perceptions within an experimental sequence, not among individual subjects.\textsuperscript{328} Averaged results taken together in order to represent a trend were unacceptable in terms of Wertheimer’s insistence on the absolute character of the Gestalt laws. Thus, not the presence or absence, but the type of a quantification was decisive. Not a classification of cases but the qualification of the individual cases was to be achieved in the experiment. That is why the precise conditions of the individual case has been an experimental priority.\textsuperscript{329} Ash points out that Gestalt “opposed the classifying style of knowing expressed in the search for covering laws and individual differences and embodied in intelligence and personality testing—a style of knowing that was already becoming increasingly characteristic of psychology in America at the time” [Ash, 1995, 223].

8.4 Implications of the Gestalt experiments

In summary, as could be specified and exemplified, the Gestalt experimentation was in fact not limited to just one specific set of procedures. Instead, despite a clear predominance of experimental demonstrations of Wertheimer’s “good” Gestalten, a variety of stiles and approaches were characteristic of the experimental procedures in Berlin, Frankfurt and Giessen. In some cases the experimental set-up could be complex and costly (like the \textit{Ganzfeld} experiments) but in many cases simple paper and pencil requisites were considered sufficient to prove the point of Gestalt organization of phenomena. In several experiments the Gestalt psychologists employed then-common (sometimes slightly modified) psycho-physiological apparatus; yet, not to measure the isolated sensational appearances but to grasp the supposedly invariant psycho-physiological functions. Seminal shared features were small experimental samples and the request for a 100% consistency of the outcome, which naturally gave the qualitative experiments a predominance over the quantitative ones. Yet, the “humanization” of the experimental subject, that built the most distinctive contrast with the elsewhere flourishing behaviorism, qualified Gestalt procedures not only as an experimental but as a social research endeavor.

Nevertheless, one should not conclude from this that the Gestalt agenda was as linear and as structured as it might appear. Ash points out that the extraordinary growth of the doctrine and influence of the Gestalt school in the Weimar years substantially succeeded due to the simultaneous advancement of different research units. The Gestalt psychologists “worked through the rich possibilities of complex models of theory-laden procedure, often developed initially before 1920”. These different but related theory-laden models were implemented in open-ended research programs. In addition, research was conducted in a large variety of psychological and psycho-physiological subdomains at the same time.\textsuperscript{330}

\textsuperscript{328}Cf. [Ash, 1995, 222f].
\textsuperscript{329}For instance, Danziger found that the Gestalt journal \textit{Psychologische Forschung} had the lowest proportion of studies with data referring to groups rather than to individual performance of major German psychology journals for the years 1920 to 1935. See [Danziger, 1987, 28].
\textsuperscript{330}Cf. [Ash, 1995, 223f. and 245].
The informal democratic structure of the Berlin Institut supported collaboration and animated the exchange of both concrete techniques as well as tacit knowledge. This way it consisted a substantial pillar of the Gestalt research.

The reality of the Berlin Psychological Institute exhibited certain parallels with procedures conducted by Külpe’s Würzburg school of psychology, such as, first of all, the importance given to qualitative investigation. Further, both the Berlin and the Würzburg school attributed a high value to the participant’s subjective reports on their observations, reasoning and (specifically in Lewin’s case) feelings in the course of the experiment. Probands were asked to comment while solving their tasks; in many cases semi-structured interviews were conducted after the task-solving was finished. Given the vivid exchange of expertise between psychologists of the Weimar academia these commonalities are, of course, not accidental or surprising. Another example is discussed in Chapter 6; the psychology of thought introduced by Otto Selz strikes through its similarities with the model of mental processes suggested by Gestalt psychologists (e.g. Wertheimer).

8.5 “One long discussion”: Lewin’s student circle in Berlin

Previously, we have identified Lewin’s position at the Berlin Institute as twofold, integrated on the large scale of the Weimar scholarly landscape as well as peripheral and self-dynamical at the scale of the Gestalt-scholarly micro-culture. The Gestalt group at the Berlin University offered Lewin a protecting umbrella, i.e. a combination of infrastructure, research resources and substantial work liberty which he needed to develop and implement his proper agenda, and which he had lacked as student under Stumpf. Lewin’s formal belonging to the Berlin Institute, where the core of Gestalt was established, was supported by Köhler over years. In these years, he essentially contributed to the publishing and teaching endeavor of the institute (see Chapter 4).

While Gestalt gave Lewin the infrastructural stability and a nurturing intellectual framework it also granted him the needed liberty to carry out his own increasingly independent research program. In 1926, Lewin set up an individual research program on “Psychology of Action and Emotion” as a part of which he assembled and headed a proper student circle and installed an own publication series in the Psychologische Forschung. In this way, a partly autonomous research infrastructure was established within the Gestalt framework. We now turn the perspective from Lewin’s arising out of the social and scholarly culture of his time, over his positioning within the Gestalt network to his designing of his own micro-universe.

As delineated in Chapter 5, the forming force of Kurt Lewin’s experiments consisted in his philosophical ideas. Obviously, the aim of Lewin’s and his group’s experiments is the winning of knew psychological insights, which are best observed in “pure phenomena”. Thus, the primary challenge of an experimental inquiry should be the reconstruction of such “pure phenomena” (i.e. strong Gestalten in a wider sense) building on in-depth theoretical knowledge. According to Lewin’s philosophical theory the type of experiment characterized as “Galilean” does concern the “ideal” or “pure” case rather than the “real” one. The experimentally constructed local events need to re-build this or, put differently, the experiment is always a concrete example of the ideal case.

Even in the overly unconventional and a-hierarchical of Köhler’s Psychological Institute Lewin’s style of interaction with his students was rather exceptional. He and his students met regularly for vigorous discussions of all sorts of issues, usually in the Schwedische Café across the Schlossplatz from the Psychological Institute. At first they gathered on Saturday mornings, then more often. Eventually, the group got a name, the Quasselstrippe (chatter line). Very much in contrast to Lewin’s own doctoral time under Stumpf, nearly all of the studies from Lewin’s group illustrated the importance of interpersonal interaction in their experimental work, and so did the group’s own dynamics. The discussion had a brain-storming style in which disagreement was intense. Lewin is recalled to be always full of ideas. He
would take students home with him to dinner and talk late into the night. One of the first students in this group, Anitra Karsten, recalls that working with Lewin in Berlin was "one long discussion".331 “His school became a sort of family he took care of. But the most important thing distinguishing Kurt Lewin was his huge and devoted love for psychology. This is why everybody liked him. Then he was speaking about science for hours in any possible situation [...]. He stopped to remark his surrounding” [Yaroshevsky and Zeigarnik, 1988, 175f.].332

Who were Lewin’s students?

Appendix 4 gives an account of students’ contribution to the BEP, as well as on their published and unpublished work.333 It is remarkable that 11 of the 16 students who completed and published their doctoral work with Lewin were female, i.e. an exceptionally high share of women achieving a postgraduate degree against the backdrop of both the given quota at German universities overall and the Berlin University in particular. Given that in the first third of the 20th century, women in various senses occupied a marginal position within the German academic system this was exceptional.334 Another striking fact is that 8 of the 11 female students who completed and published their dissertations were of foreign origins (including 6 from Eastern Europe). Some were also Jewish. Of the remaining 6 male students 5 were Germans and one American.

Sprung argues that the democratic work organization and Lewin's liberal style of leadership likely attracted the female students.335 Yet, since the democratic leadership was then-prevailing in the whole Psychological Institute, this argument would rather explain that the particular student group was attracted to the institute as a whole. However, the exceptionally high percentage of female students appeared exclusively in Lewin's group. He carried on a similar work style with his students in the US but the women's share was not equally significant.336

It is also conceivable that Lewin’s interest in the dynamic origins of human behavior and the research linked to life realities attracted the (female) students.337 According to Lewin’s student Bluma Zeigarnik, “neither Wertheimer nor Köhler were engaged in personality research but it was exactly what interested me the most. Lewin was all the time thinking and speaking about one single thing: Why does a person behave one way and not another, and what are its motives?” [Yaroshevsky and Zeigarnik, 1988, 174].338 Lewin’s mentioned democratic attitude obviously included a high acceptance of marginalized groups to which belonged many of his doctoral students. Zeigarnik confessed:

“I have had difficulty with employment for two reasons. For the university I was a foreigner, and foreigners were not admitted but reluctantly. Our embassy, in turn, didn’t allow its employees’ wives to work. So I became Lewin’s external staff member” (ebd. 177).

332From an interview with Bluma Zeigarnik. The translation from Russian is mine.
333Up until now, a small number of historians published research on the socio-academic constitution of Lewin’s Berlin students network. Brauns (1992, 2007) gave a reflexive account on the interconnections of the 20 publications in Lewin’s journal series. Sprung (1992, 2007) discussed in particular the work of the 11 women out of the 16 mentioned students. Wittmann (1998) complemented the list with another 4 names of students who completed most of their dissertation work under Lewin’s direction but did not get the chance to publish their work in his series because of the political turmoil that did not miss out the institute around 1933. Cf. [Wittmann, 1998, 29f., 179f.]. [Brauns, 2007, 125]. [Sprung, 2007]. Further remarks are made in [Lewin, 1935a, 261] and [Ash, 1995, app. 2, 421f.].
334In 1901, Baden was the first German federal state (Bundesland) to accept women to higher education. Bavaria followed in 1903. Wuerttemberg in 1904, Saxony and Thuringia in 1906, Prussia in 1908. But also the decree of 18 August 1908 from the Preußische Kultusministerium couldn’t inhibit unwilling professorate to exclude female students from their lectures appealing to § 3 of the decree: “Aus besonderen Gründen können mit Genehmigung des Ministers Frauen von der Teilnahme an einzelnen Vorlesungen ausgeschlossen werden”. In fact, female students were in distinct minority for a long period. Even after the World War I women’s higher education was by no means standard and was aggravated by various factors within academia, such as non-acceptance on the part of the male teaching staff, obstacles concerning student living facilities and the access to textbooks. Cf. [Jank, 1990, 7-11].
335Cf. [Sprung, 2007, 152f.].
336Cf. [Wittmann, 1998, 32].
337Cf. [Sprung, 2007].
338From an interview with Bluma Zeigarnik. The translation from Russian is mine.
From a certain perspective Lewin’s situation was not much different from the one of the majority of his students. He was an originally rural Jew who moved to Berlin. As Jew in Prussia his chances to become a full professor were somewhat limited, although in fact, half-established disciplines, such as psychology and social sciences, represented niche disciplines, in which Jewish scholars and scientists achieved higher academic statuses, such as full professorships, more frequently than in others.\(^{339}\) However, he did not have Köhler’s aristocratic manners. The young age and appearance made him a rather untypical professor, as illustrated by Wera Mahler’s memory of her first encounter with her teacher: “How great was my astonishment when the professor appeared: in came a young man with a round, red-cheeked, apple-like face, very unlike the dignified picture of a German professor” [Mahler, 1996, 268]. Additionally, as mentioned, Lewin was not entirely on a par with the three founders of Gestalt. Wittmann (1998) goes as far as to label the matter of facts “symbiosis of outsiders” provided in consequence of “outsider sympathy”\(^{340}\)

Despite all the possible socio-demographic indications academic excellence was certainly a seminal selection criteria. Not only was the Institute an elitist place (see below) but also Lewin was highly selective with his doctoral students as there were too many candidates. Zeigarnik indicates that his choice followed the students’ performance in his seminars and personal encounters rather than academic grades, and he picked students with autonomous and creative work ability.\(^ {341}\) Excellent evaluations of the doctoral dissertations completed under Lewin support this thesis. Moreover, Sprung’s analysis of non-linear curricula vitae of Lewin’s female students suggests their high level of steadiness and persistence.\(^ {342}\) In the later course of events this seems confirmed by several successful academic careers amongst Lewin’s students (e.g. Dembo, Zeigarnik, Karsten, Brown).

Importantly, it was the student circle that performed the largest part of his experimental research agenda and essentially shaped the conceptual system, which we expounded in Chapter 9. One may conclude that Lewin’s particular achievement consisted in the successful translation of the students’ motivation and the informal atmosphere of the Berlin Institute into a collective research dynamics that showed fruitful within a short time. The described group dynamics of Lewin’s intellectual circle resulted in a research agenda in which single contributions were (implicitly and explicitly) interlinked. Lewin’s students’ work had a twofold relationship with Lewin’s own research. For one thing, the student circle was implementing Lewin’s concepts and employing these in the own experimentation all along its development.\(^ {343}\) Yet, Lewin also made use of the students’ experimental findings to back up his own (theoretical) work.

### 8.6 Lewin’s experiments on human conduct

Both theoretical and methodological foundations of Gestalt gave significant impulses to Lewin’s experimental program in Berlin. Particularly the holistic attitude towards experimental observations was respected by all of them. An emphasis on the priority of whole situations as objects of investigation: specific observations had little significance in their own right. Furthermore, equally to Wertheimer, Köhler and Koffka Lewin gave priority to the qualitative over the quantitative style of experimentation. All of them honored the principle of a 100% consistency of the experimental outcome which meant to prove a psychological law in each and every individual case. As a consequence, the attention to the detail and to the single case was equally seminal to Gestalt experimentation and to Lewin’s extension of it. Additionally, both experimental programs included some quantitative analysis, for instance, studies of variations within certain phenomena.

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\(^{339}\) Ash points out that, in 1932, 29 of altogether 308 members of the German Society of Psychology (or 9.4%) held professorships and were of Jewish origins, see [Ash, 2004, esp. 252f.].

\(^{340}\) Cf. [Wittmann, 1998, 33f.].

\(^{341}\) Cf. [Yaroshevsky and Zeigarnik, 1988, 175].

\(^{342}\) Cf. [Sprung, 2007, 152].

However, Lewin's experimental style deviated from Wertheimer's Koffka's and Köhler's style of experimentation, as well as from that of other colleagues. One could well say that Lewin delivered a rather far-reaching extension to the Gestalt style of experimentation. He pushed forward the “humanization” of the experimental subject, which was initiated by his elder colleagues, up to its possible extreme. Many of Lewin's experiments is that these were staged as social situations, in which the integration between two or more people (excluding the observer) was of central interest. In this context the psychologists Fritz Heider recalls an episode from the year 1926:

“Ich erinnere mich eines Seminars bei Lewin, in dem er über Verlegenheit sprach. Er erbat die freiwillige Teilnahme einer Studentin und eines Studenten an einem kurzen Experiment. Diese beiden sollten vor dem Auditorium tanzen; nachdem sie das fünf oder zehn Minuten lang getan haben, fragte er zunächst nach ihren Selbstbeobachtungen und bezog dann die Gruppe in die Diskussion ein” [Heider, 1984, 74].

While the majority of psychologists associated with Gestalt practiced an interview-like way of questioning that made the subject's experience during the experiment more accessible to the investigator Lewin and his disciples put interaction to work as part of the experimental procedure itself. The passive Gestalt observer was substituted by an active “participant” of the experiment. This was asked to perform motoric and/or intellectual activities rather than being merely exposed to neutral external conditions. We shall elaborate the features of the Berlin experiments conducted under Lewin in some more detail.

8.6.1 Experiment as a social situation

Since the outset of the BEP the experiment was understood as a social situation, in which experimenter and subject were together. Lewin's group did not follow the directive of distanced objectivity that persisted in the Gestalt theorists’ experiments. The investigative situation, recognized as intrinsically social, was as such part of research. It implies that the experimenter himself is always part of own experiment, and as such a variable that has to be taken into account. In quite a few cases the Berlin experiments preprogrammed interaction between experimenters and subjects. Lewin will later extrapolate thin principle in his interactive “action research”.

8.6.2 Deception methods

Once in a while Lewin's experimenters resorted to outright deception to elicit certain behaviors. The so-called “deception methods” (Täuschungsmethoden), including the hiding of the experimental purpose, was applied for instance in the experiments by Ovsiankina and Birenbaum. In fact, whether the experimental subject has to know about the purpose of the investigation was already debated by the pioneers of the discipline. About this, for instance, Wundt argued that the subject should be “knowing” only in the case he or she is the experimenter itself, i.e. when the experimental purpose is “apperception” or “internal perception”. In case the investigator and the subject are different people confiding the purpose would be more disturbing than helpful. Furthermore, in his Grundzüge der Psychologie also

344 The principle view that a researcher cannot conduct an experiment without manipulating this in a way is also known from physics. According to the so-called Copenhagen Interpretation of quantum mechanics, the experimenter is an unavoidable part of the experiment; what one actually measures is, thus, the result of an interference between experimenter and nature. Niels Bohr has been the most outspoken upholder of the Copenhagen Interpretation.

345 Cf. [Ovsiankina, 1929, 305] and [Birenbaum, 1930, 223].

346 Unter den Fragen der Methodik, die mit den oben erörterten psychologischen Beeinflussungen in Verbindung stehen, hat besonders die, ob ‘wissentlich oder unwissentlich’, mehrfach die Psychologen beschäftigt; und nicht wenige unter ihnen haben sich, im Gegensatze zu den oben ausgesprochenen Erfahrungen, für ein unter allen Umständen einzuhaltenes unwissentliches Verfahren ausgesprochen. Dieses Urteil, das ich für ein Vorurteil halte, gründet sich aber wohl weniger auf eigene Versuchserfahrungen als auf allgemeine Erwägungen a priori. Man sagt etwa: wenn jemand weiß, in welcher Richtung eine Abstufung vorgenommen oder überhaupt eine Variation des Reizes erfolgen werde, so ist er vorvornehere geneigt, in der gleichen Richtung einen Unterschied in die Empfindung hineinzuhören, auch wenn ein solcher gar nicht da is; oder er wird sogar, wenn die Reizabstufung schon mehrmals in der gleichen Richtung erfolgt ist, allmählich ungeduldig und gibt schließlich das ihm im voraus
Ebbinghaus pointed out that the hiding of the experimental purpose is more “practical” (zweckmäßig). However, while a certain bias may be avoided another risks appear instead.\textsuperscript{347} Importantly for us, the principle of honesty between subject and experimenter was rejected in the BEP. It is, however, remarkable that such “deception methods” were strictly refused by the young Lewin at the outset of the BEP. In his paper \textit{On the Training of Subjects in Self-observation and the Controlled Psychological Description (Die Erziehung der Versuchsperson zur richtigen Selbstbeobachtung und die Kontrolle psychologischer Beschreibungsangaben)}, that was backdated by Métraux to 1918 and did not appeared but in 1981, Lewin suggests that mutual honesty between the investigator and the subject be the basic principle of an experimental set-up.\textsuperscript{348} In fact, his experimenter-subject conception (described in 1918) resembles a psychoanalytical experience. Beyond the direct therapist-client interaction this normally requires the awareness and honest communication of the therapist’s perception of the “here and now”. If one compares Lewin’s conception of the experiment of 1918 of the one he and his students implemented in the late 1920s, one gets the impression that Lewin went through a change of mindset in the early 1920s.

8.6.3 Experimenting with different hierarchies

The social character of experiments in the BEP was given also beyond interactivity. In some cases, social hierarchy was employed as an experimental tool. For instance, in Sliosberg’s study, only those kids with whom the investigator succeeded to establish a “comradely relationship”, precondition to a rather uninhibited conduct, eventually participated in the experiments.

“Da sich aus Annahme oder Ablehnung des Ersatzes nur dann Schlüsse ziehen lassen, wenn sie wirklich vom Kinde ausgehen, so kommt es in unseren Versuchen ganz besonders darauf an, \textit{eine möglichst freie Situation zu schaffen}. Wir haben die Versuche daher nur an solchen Kindern durchgeführt, die mit dem VI. auf Grund früherer gemeinsamer Beschäftigungen gut vertraut waren. Es wurde Gewicht darauf gelegt, daß \textit{kein autoritäres, sondern ein durchaus kameradschaftliches Verhältnis zwischen VI. und Kind bestand}.” [Sliosberg, 1934, 125]

That is why experiments with children involved a fair familiarization period. By contrast, in Tamara Dembo’s study of anger the experimenter-subject relationship was radically reversed. Its setting shifted from one of social equals to one based on power; it involved an actual struggle between subject and experimenter, who deliberately frustrated subjects’ efforts to complete the assigned task, then prevented them from leaving the room.\textsuperscript{349}

It is likely that the Berlin experiments involving variations of hierarchical settings were the origin of Lewin’s comparative study of the democratic and authoritarian classrooms he conducted in the United States — a remarkable continuity of research style that will be discussed in Chapter 11.

\textsuperscript{347}See [Ebbinghaus, 1897, 92-94].

\textsuperscript{348}See [Lewin, 1981c, 204], first published in [Graumann, 1981]. Therein cf. also the commentary by Métraux, in particular (a) on p. 204, and (f) on p. 207.

\textsuperscript{349}See [Dembo, 1931].
8.6.4 Open research design, context-dependent conduct and preprogrammed interactivity

In addition to the varying hierarchies, the methodological guidelines were not specific in every detail but left room for context-dependent conduct in the experimenter-subjects-interaction. The adaptation of the experimenter's behavior to the (type of) subject behavior was considered indispensable to increase the potential of a discovery of new insights. A few techniques were chosen for the implementation of the open research design. In one of the first works of the series, Zeigarnik outlined this technique in a very explicit way.

“Bei psychologischen Versuchen wird meist vorgeschrieben, daß der VI. gewisse ein für allemal (womöglich wörtlich) festgelegte Instruktionen erteilt und sich im übrigen möglichst passiv verhält. Das ‘passive Verhalten’ des VI. kann aber in Wirklichkeit ebenso einschneidend wirken wie ein ‘aktives’ […] Kurz, das ‘passive Verhalten’ des VI. tendiert dahin, dem Versuch einen unnatürlichen Charakter zu verleihen und die Einstellung der Vp. umzubiegen und zu verwischen. Es kann somit einen starken, bisweilen recht unerwünschten Eingriff bedeuten [Zeigarnik, 1927, 18f.].

The assumption at the origin of the Berlin experiments was that passive and not-reactive conduct of the experimenter would distort the experimental process no less than the experimenter's interventions. Therefore, the experiments were semi-structured. The experimenter's conduct is not uniform but context-dependent. Concretely, this means that the experimenter tries to anticipate possible types of subjects' reactions to the the experimental assignment and to develop a protocol for each one of these. However, a relative comparability of the different case studies needs to be secured. The following example, depicted by Zeigarnik, makes this directive more concrete.


Thus, as a rule, investigators varied their conduct with different types of subjects. Furthermore, they were instructed to give semi-spontaneous comments. These were essential to the applied experimentation type and aimed at the initiation of the proband’s semi-spontaneous statements. The were then used to understand the “conditional-genetic” dimension of the subject's conduct.


350"Der VI. benimmt sich also nicht auf eine im voraus vorgeschriebene Weise, sondern sein Benehmen ist von der Einstellung der Vp. bedingt und ihr angepaßt" [Zeigarnik, 1927, 18f.].
The concluding interactive part of the experiment was, as a rule, a semi-structured interview. After the proband referred his/her own self-observations he or she was asked to particularly describe details that are seminal to the experiment (as in Zeigarnik's case, interruptions and preferences for completing certain tasks).351

It is usually handed down that the idea to instrumentals “feedback” as a tool in the middle of the experimental process was made explicit by Lewin in the late 1930s. However, as shown, processes of similar kind were part of the experiments of the Berlin context. The open research design and the experimenter’s context-dependent conduct were in fact structural elements that stimulated the proband’s feedback. The functionalized feedback of the socio-psychological studies of the 1940s was nothing else than a product of experimental continuity build up in the Berlin period and extended beyond it.

8.6.5 Qualitative vs. quantitative research

Unlike often assumed in research literature, Lewin’s Berlin group did not completely reject quantitative experimentation. Lewin’s research program began with a longer sequence of predominantly qualita
tive experiments, and gradually drifted towards an approach combining qualitative and quantitative experimental procedures.

At the outset of the BEP the group gave preference to open experiments. It was argued that in particular the qualitative approach was useful to identify “relevant types of dynamic processes” and hinted at new concepts. To identify relevant “dynamic processes”, as requested by Lewin’s philosophy of science, an in-depth investigation of a few selected cases would be more helpful than that of a sample substantial from the point of view of statistics.

“[Es] ist vor Beginn einer quantitativen Untersuchung zunächst festzustellen, welche Arten dynamischer Prozesse eine Rolle spielen und welche Begriffe für ihre adäquate Darstellung heranzuziehen sind. Dafür aber erweist sich eine möglichst in die Tiefe dringende Untersu-
chung weniger Einzelfälle in der Regel als fruchtbarer als eine breite statistische Häufung” [Hoppe, 1931, 2].

Thus, particularly when exploring a new field, the research perspective must not be narrowed down too early in order to avoid errors when determining the basic conditions or “rough facts” underlying this field.

“Fragen der quantitativen Exaktheit sind schließlich nur Gradfragen, und gemäß dem Grund-
satze, daß bei Untersuchungen eines neuen Gebietes der qualitativen Untersuchung der Vor
tag vor der quantitativen einzuräumen ist, haben wir uns von vornherein in quantitativer Hinsicht darauf beschränken wollen, nur relativ grobe Fakten festzustellen” [Karsten, 1928, 150].

Nevertheless, quantitative methods come into play in most of the dissertations, in particular in the rather mature stage of the research program (since the 1930s). Nearly all dissertations contained at least a brief quantitative account, usually in tabular form, sometimes including statistical curves.353 However, the same principle as for the overall Berlin research applied here: quantitative data were not the kind that would refute a basic principle. Included tables and curves almost always referred to variances


352Others, for instance Dembo and Hoppe, adhere to the principle stated by Karsten: “Wenn man, wie beim Ärger, einem Urwald von Geschehnissen gegenübersteht, ist quantitative Exaktheit zunächst nicht am Platze. Wir beschränken uns auf das Qualitative” [Dembo, 1931, 5]. “Es erwies sich als notwendig, den Schwerpunkt der Untersuchung auf die qualitative Erforschung der in Frage kommenden Geschehensformen zu legen; auf quantitative Resultate kam es uns zunächst weniger an” [Hoppe, 1931, 2].

353Cf. e.g. [Ovsiankina, 1929, 343f], [Birenbaum, 1930, 226], [Karsten, 1928, 147].
within an observed phenomenon, not among different phenomena or principles. This very same type of a quantification is easy to explain: averaged results were as few accepted by Lewin as by Wertheimer. They agreed that not a classification of cases but the qualification of the individual cases was to be achieved through experiment.

8.6.6 Exemplary experimental design: Dembo’s study of anger

In order to explore contact points between experiment and theory in the BEP we look at a particular empirical study, namely Tamara Dembo’s PhD work that explores the Dembo’s experiments focused on the exploration of conditional-genetic properties and manifestations of the anger affect. This work occupies a particular place in the whole research program. The over 140 pages long dissertation is the longest one in the experimental series. The work is based on an experimental period of over three years. Furthermore, it is probably the most interlinked work of the entire program (and it certainly is by 1931), which demonstrates a capacity to integrate and interlink precedent research, on the one side, and to anticipate and produce new insights, on the other side. Yet, the main reason why it was chosen to illustrate the points of contact of theory and practice in the BEP is that besides the empirical investigation it contains more reflections on the theory of experimental psychology than any other contribution by students.

Dembo carried out an experimental procedure consisting of two different design set-ups.

Experimental design 1: “Ring throwing”. The experimental subject is asked to get 10 wooden rings onto bottles by means of throwing these from a distance of 3.5 meters. The subject has to repeat the task until he or she succeeds 10 times in a row. Despite the first impression the task is very unlikely to be successfully accomplished. As a rule, the experiment was not interrupted until the subject expressed the desired amount of anger.

Experimental design 2: The break, during which the 10 rings were picked up, is used to conduct a second, short experiment - the “flower experiment”. A square field is marked on the room floor. The subject has to reach out and pick a flowerpot, while “keeping his feet in the square space”. The flower is intendedly situated too far away from the de-marked square border. The task has two rather obvious solutions – in order to reach the flower the subject may use a chair or stretch himself out on the floor with his feet still located in the square space. Once these two solutions are figured out the experimenter keeps insisting that one more solution (which does not actually exist) needs to be found. The subject is told that the experiment cannot be successfully completed unless three different solutions are presented.

Experimental designs, such as that implemented by Dembo under Lewin’s supervision, left a lot of room to variations of the subjects’ conduct; it did not impose the proband a strict frame to its behavior. The exploration of anger caused through experienced failure was meant to give an overview over a barely explored subdomain of psychology of anger.

8.6.7 Lewin’s experiments in context

We have seen that unlike other Gestalt experiments, Lewin’s groups’ studies had a particular design (e.g. they included interactive elements) and a different research focus. These specialized in processes and motivations of human conduct, which prepared Lewin’s latter real life experiments. It is worth mentioning, thought, that Lewin expressed interest in applied research even before starting his collaboration with the Gestalt group. As early as in 1920, he published the essay “The Socialization of the Taylor System”

354 Cf. [Dembo, 1931, 10ff.].
(Die Sozialisierung des Taylorsystems) with the subtitle A Fundamental Investigation of Industrial and Work Psychology (Eine grundsätzliche Untersuchung zur Arbeits- und Berufspychologie), in which he presented his ideas on how applied psychology could be of use to improve industrial labor processes. In modern terminology, he suggested to improve economic efficiency and labor productivity through the optimization of workflows, for instance, by means of increasing the workers’ participation in the labor management. (“Jedenfalls muß der Arbeitskonsument in irgendeiner Form mitbestimmen können, ob eine Veränderung des Arbeitsprozesses einzuführen ist oder nicht” [Lewin, 1920, 19].) One may thus conclude that it was Lewin's initial and persistent interest in the social involvement of (psychological) research that predefined his experimental engagement in applied (e.g. industrial) psychology in the US. The fair bandwidth of experimental styles subsumed and integrated under the auspices of Gestalt allowed to integrate Lewin's independent and cross-disciplinary research style between 1922 and 1933. Due to the considerable freedom of research that existed at the Berlin Psychological Institute Lewin's extensions of the experimental practices were appreciated rather that criticized.


Despite Lewin’s close association with the Gestalt school in the Berlin years, eventually the original and applied character of his research alongside his talent to attract like-minded collaborators played a major role in the “branding” of a separate research branch, i.e. “social psychology” (see Chapter 11).

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355 On Lewin’s essay on Taylorism see also [John et al., 1989].
“[ Unsere Arbeit] soll jene Begriffe systematisch darstellen, die sich in unseren experimen-
tellen Arbeiten zur Dynamik der Person und der psychischen Umwelt bewährt haben. Ein 
Hauptziel dieser Arbeitsweise und Begriffsbildung ist es, an Stelle vager Bezeichnungen 
wirkliche Begriffe für die Darstellung von Person und Umwelt zu entwickeln. Diese Begrif-
fe müssen streng sein, so daß sie als Konstruktionselemente in die psychischen Gesetze 
und in logisch saubere Ableitungszusammenhänge eingehen können, und sie müssen zu-
gleich fähig sein, die psychologischen Sachverhalte hinreichend adäquat wiederzugeben” 
[Lewin, 1934, 249, emphasis original].

As Lewin states in 1934, the key to the development of the psychological discipline consists in the 
elaboration of “strict” concepts for the representation of the person and the environment. These concepts 
have to relate to each other in a “functional” manner and reflect psychological laws. Lewin attempted to 
implement these idea(l)s, that were as clearly pointed to in his philosophical papers some years earlier 
(Chapter 5), through his experiments at the Berlin institute. As delineated earlier, Lewin assembled 
his own circle of PhD students at the Psychological Institute of Berlin shortly after his appointment 
in 1922. The groups’ experimental investigations were probably kicked off in the late 1923 by Georg 
Schwarz’ studies on the alteration of habits (Über Rücksättigung bei Umgewöhnung) and endured 
until Gleichschaltung of the Institute in 1935. Some publications appeared a few years after that, i.e. 
Margarete Jucknat’s work that was submitted to the university in 1936 and published in 1938. The 
last publications appeared under considerable difficulties, as becomes clear from Köhler’s letters to 
Wertheimer:

"Fräulein v. Restorff, die mich drüben in Psyfo Sachen vertritt, schreibt mir soeben, dass der 
Verlag nicht mehr in der Lage ist, über eine Berliner Arbeit von Jucknat, die noch von Lewin 
stammt und schon zum Druck vorgesehen wurde, das Sinussüberschrift (Untersuchungen... 
erausg. von K.L.) zu setzen. Es stellte sich zugleich heraus, dass eine Arbeit von Wallach 
[Student Köhlers, nach 1933 ebenfalls in die USA emigriert und war dort als Assistent Köh-
lers in Swarthmore tätig] überhaupt nicht angenommen werden kann. Das ist [ein] Eingriff 
[der] den Inhalt der Zeitschrift betrifft. Ich nehme an, dass Du einverstanden bist, wenn ich 
die Herausgeberschaft niederlege" (W. Köhler, 2 June 1937).

At least three presumably nearly completed dissertations remained unpublished but are cross-referenced 
in other publications.

In the present chapter we show that the basic model of psychic activity presented by Lewin in 1926 
was expanded through the experimental contributions of Lewin’s students. Most of the student studies 
resulted in the formation of new concepts. These concepts extended the preexisting conceptual system 
block by block building upon each other. Accordingly, the elaboration of the conceptual system paralleled 
the structure of the experimental program. This chapter tackles the question: How do experiments—their 
analytical part—shape concept formation? Or more concretely: How did the experiments conducted by 
Lewin’s students in Berlin extended his early system knowledge (discussed in the Chapters 6 and 7)?

As pointed out earlier, Lewin’s philosophy of science advocated a theory-driven style of experiments. 
This implies that the experiments outlined in the previous chapter supplied the ground work for the 
generation of new knowledge. However, after the interactive part of the experimental procedure this 
needed to be extracted and framed into concepts. First of all, we shall discuss Lewin’s and his circle’s 
analytical strategy applied in this matter.

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357 Cf. [Schwarz, 1927].
358 See [Jucknat, 1937].
359 Köhler’s letter to Wertheimer, quoted as in [Wittmann, 1998, 29]. The original can be looked at in the Max Wertheimer 
Heritage, Boulder, Colorado.
360 Appendix A gives a chronological overview of the contributions in Lewin’s experimental program while appendix 4 includes all 
the accessible information on the students’ experimental periods.
Secondly, we reconstruct the conceptual development of the Lewin’s Berlin Experimental Program. While a few reconstructions of the program already exist these do not focus on the developmental aspects as much as we do. In his *Dynamic Theory of Personality* (1935) Lewin pointed to systematic cluster-like, and in his research article *Lewins Berliner Experimentalprogramm* (1992, 2007) Horst-Peter Brauns argued in favor of a network-like interconnections of works in the BEP. Both structural suggestions are, however, derived from the major psychological research themes that were tackled in the program.\(^{361}\) By contrast, we split the BEP research into three qualitatively different development stages work with respect to both its systematic and chronological order. A visualization, i.e. a tree-like “roadmap”, reflects the conceptual development of the BEP. The diagram in figure 14 illustrates the order and co-dependancies in which research themes gradually emerge throughout Lewin’s research program. It will serve as basis of the further discussion.

Due to the gradual evolvement of the research program I subdivided the BEP into three stages. The experimental stages roughly correspond to three subsequent (but somewhat overlapping) periods of time.

1. Constitutive stage (up to 1926): Elaboration of basics
2. Expansion stage (1926 to 1931): Branching out
3. Maturity stage (1931 to 1936): Diversification

On the left side of the diagram in figure 14 one will find a timeline, on which the individual stages are separated from each other. As our investigation shall show, these periods differ in terms of (a) the quantity of conceptual and experimental output, (b) the complexity of research themes and elaborated concept types (involved knowledge resources), (c) the type of concepts. Overarching research themes are framed black and marked in blue letters. Dynamic concepts have a white, topological concepts a yellow background. Seminal research themes of the BEP, such as the resumption and accomplishment of interrupted activities, the level of aspiration, substitutions, the anger affect, person-environment-interaction and social conflicts, are linked to the appropriate program development stages. The emergence of most crucial concepts is referred to the stages and, in some cases, the research themes.

\(^{361}\) Other structural suggestions to the BEP have been made earlier. In 1935, Lewin writes a “systematic survey” of his Berlin group’s work for the American reader. Therein he suggests the conceptualization of the experimental investigations along its research foci framed as “on the structure and dynamics of the personality and of the psychological environment”. He groups the accomplished student investigations into *thematic clusters* relative to their research themes; cf. [Lewin, 1935a, ch. 8; espec. p. 240]. Brauns offers another structuring approach to the BEP. In the short article *Lewins Berliner Experimentalprogramm* (1992, 2007) he structures the program into “first order theoretical contributions”, which are barely based on other students’ work, and (subsequent) investigations of “second” and “third theoretical order” that build upon earlier research. Brauns suggests a network-like rather than chronological understanding of the program structure; cf. [Brauns, 2007, 141]. Both Lewin’s clusters and Brauns’ network point to seminal links between the single works of the experimental program, yet, rather neglecting the evolvement of the conceptual system underneath over the duration of the program.
Figure 14: Reconstruction: Development of concepts over the duration of the BEP
9.1 The analytical challenge of Lewin’s experiments

We shall briefly elaborate the individual steps of the analytical procedure Lewin’s group tried to implement. The first analytical challenge in the BEP experiments was to grasp the whole variety of different behavioral processes that probands exhibit in the experimental situation. This was followed by the subdivision of processes into genetically different event units. In a next step of the experiment real events were to be “decoded”. In other words, “genetic event types” needed to be carefully derived from the observed behavior. At times this led to the embodiment of observation into (new) concepts.

According to Lewin, the primary challenge of the concept formation is the “correct” description of the observed actions in experimental observations (protocols). The experimenter needs to identify “stages and phases of the entire process”; in other words, he or she was to subdivide the observed conduct into homogeneous process units, starting at the phenomenological level, further digging into the complex in-depth motives and the mental correlations hidden at the genetic level (cf. Chapter 5). Amongst others, Karsten employed this experimental strategy in her research on mental satiation:

“Eine experimentelle Untersuchung der psychischen Sättigung wird zunächst zu fragen haben, was für Phänomene als Sättigungserscheinungen auftreten, welche Stadien und Phasen im Gesamtverlaufe des Sättigungsprozesses zu beobachten sind. Eine solche zunächst auf Beschreibung eingestellte experimentelle Untersuchung mag dann die Grundlage abgeben für die Erörterung kausal-dynamischer Probleme des Sättigungsprozesses […] überhaupt die Erörterung der Bedingungen, unter denen es zum Sättigungsprozeß bzw. zu den speziellen Sättigungsphasen kommt” [Karsten, 1928, 145].

When subdividing investigated processes into process units the combination different scales might be of use.

“Die Protokolle, die öfters eine beträchtliche Länge erreichen (ein Versuch umfaßt bis zu 15 Schreibmaschinenseiten), müssen auf verschiedene Weise ausgewertet werden. Bisweilen werden größere Verlaufsschnitte als Einheit zugrunde gelegt, bisweilen kleinere. Zerlegt man den Verlauf in lauter kleine Abschnitte, die man gleichmäßig behandelt, so geht häufig der allgemeine Verlauscharakter, z. B. das Schwunghafte oder Träge des Verlaufs, verloren. Es gibt wiederum andere Fälle, wo nur das Vorwärtschreiten in kleinen Schritten aufschlußreich ist und die konkrete Entwicklung des Falles aufdeckt. So kann man nicht allgemein angeben, wie groß die Schritte zweckmäßig erweise gewählt werden müssen. Einerseits soll möglichst wenig von der phänomenalen Art des Verlaufs verlorengehen, andererseits gilt es, die konkreten Einzelerlebnisse möglichst zufriedenstellend in ihrer Eigenart zu erklären” [Dembo, 1931, 7f.].

The challenging question is thus how to subdivide the total process into homogeneous units. In our example, i.e. Dembo’s experiment, all acting “directed towards the task” (in Richtung der Aufgabe) was subdivided into the following process types: thinking, acting, discussing, trying, imaginative solutions to the experimental task, reinterpretation of this task.

In a next step a skilled observer needs to decode every action sequence up to its “dynamic” or “conditional-genetic” structure. For instance, phenomenologically identical actions may turn out to be “genetically” intentional and goal-oriented or, in contrast, affect-guided.

“Will man die affektiven Prozesse ihrem dynamischen Aufbau nach wirklich verstehen, so darf man sich, wie erwähnt, keineswegs nur an die Höhepunkte affektiver Ausbrüche halten, sondern muß eingehend auch die ‘schwächeren’ Äußerungen berücksichtigen […] Manchmal verraten gewisse Wünsche, Voraussagen oder bloße Gedanken eine starke und tiefe, äußerlich aber noch beherrschte affektive Spannung. Endlich muß man gewisse Handlungen in Betracht ziehen, die zunächst wie zweckhafte, zielgerichtete Aktionen aussehen, aber bei genauerer Analyse doch eine affektive Komponente zeigen. Wir nennen sie affektiv getönte Handlungen” [Dembo, 1931, 16].

362 Cf. [Dembo, 1931].
In the case of Dembo’s study of the anger affect the “decoding” of “genetic event types” consisted in the determination of every process unit’s affective charge. Dembo’s experiments showed that the probands’ actions were at times re-directed towards a “phantastic” solution, i.e. a solution that did not resolve the original problem but annulled the proband’s intention to do so. This was the case if, the experimental participant increasingly experienced the original goal as impossible to achieve. As will have demonstrated in section 9.4, Dembo and Lewin coined the concept of “irreal solutions” upon these experimental observations; they subdivided the proband’s behavior (or observed process units) into two categories, i.e. directed towards the “real” and the “irreal” solution to the assigned task. Dembo’s elaboration of the duality of “real” and “irreal” activities represented a refinement of the pre-existing system of concepts.

Truth be told, there was merely another experimental psychologist, who could have competed with Lewin’s meticulous efforts to systematically analyze each and any minor step of his experimental procedure. Thus, not surprisingly, did his first biographer and friend Alfred Marrow give Lewin the label “practical theorist”, and others attributed to him the famous saying “nothing is as practical as a good theory” (as was instanced above). Nonetheless, the described segmentation and decoding of observed processes represented but a part of Lewin’s analysis of experimental data. With the assistance of his disciples he developed a specialized tool to analyze particular psychological processes with even more focus and precision. This be elaborated in the following chapters.

### 9.2 Resumption of interrupted activities

In the Chapters 6 and 7 we reconstructed Lewin’s model of interrelated processes developed by 1926, which altogether form a conceptual system allowing to build up a limited variety of psychic processes. Thus, seminal concepts of the constitutive stage have already been named and allocated within the system. However, one needs to add that large segments of Lewin’s system in tension can be traced back to his students’ experimental work. As one can see, from the experimental periods indicated in Appendix 4, the year 1926 does not mark the actual start of the Berlin Experimental Program but the successful accomplishment of its launch (or its constitutive stage). When Lewin published Über die Struktur der Seele and Vorsatz, Wille und Bedürfnis he could already rely on some of his own experimental findings, i.e. his individual experimental research on associations documented in his dissertation (1917) and Habilitation (1922) but also on Freud’s psychoanalysis, the Gestalt theory and some publications on psychology of will. But more importantly, by 1926 some of his students’ experimental studies were already in an advanced state (although not yet published). Zeigarnik, Schwarz, Karsten, Ovsiankina, Birenbaum, Dembo, as well as probably also Freund and Hoppe have already delivered work in progress.

In 1926, the essence of Lewin’s theory of human conduct looked as following. There are co-existing forces originating from different sources of energy and underlying human behavior. These forces are exercised simultaneously and combine in a way that a joint resulting force is created. Altogether these constitute an entire interconnected system of tension that is substantial to the human mental system. The crucial elements of this system are: (1) A stimulus that triggers a need or quasi-need incorporating a certain valence (2) The (quasi-)need has an impact on a person’s intention, which leads to one of the following scenarios: (3a) the translation of the stored energy into (physical) action, i.e. the accomplishment of the preconceived action, (3b) a (temporary) retention of the energy until an opportunity for its discharge is found, or (3c) a re-direction and discharge of the energy towards the so-called substitute activity. (4) After the discharge of the tension a mental equilibrium is re-established. I offer two illustrations of this process in fig. 15 and fig. 16.

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363 See [Lewin, 1917, Lewin, 1922a, Lewin, 1922b].
364 Table 4 in the appendix indicates several experimentation time spans; cf. also [Brauns, 2007].
365 Cf. [Lewin, 1926b, Lewin, 1926c]; see also the chapters 6 and 7 of this dissertation.
One of the first research problems that were tackled by Lewin's students was the retention of intentions and resumption of interrupted activities. Experimental studies conducted up to 1929 by Zeigarnik (1927), Ovsiankina (1928) and Birenbaum (1930) had the most fruitful results. Zeigarnik's research focus was the connection between the interruption of an activity and its memorization. Ovsiankina investigated factors determining the intensity of the forces that drive the accomplishment of an action. The question how do the forces that steer an activity correlate with other mental structures was tackled by Ovsiankina, and in particular Birenbaum. Crucial concepts were developed throughout this work.

- **Tension system instead of determining tendency**: Ovsiankina rejects the old theory of will stating that there is no direct link between cause and accomplishment of an activity (such as association), as research on will claims until then. She observes that an intention first of all implies a vague urge for resumption of an activity, while a clear direction of energy does not need to be generated immediately. Only in a second step, the concrete activity crystallizes. She concludes that the psychic is structured not simply through specific vectors but as a rather complex tension system.  

- **Storage and redirection of energy**: When actions are interrupted, this leads to a temporary storage of energy. The stored energy tends to find an output in the inner redirection, i.e. a redirection inside the mental system towards a different focus (Ovsiankina and Zeigarnik).

- **Substitute activity and substitute accomplishment**: Ovsiankina and Zeigarnik have shown that the accomplishment of a “substitute activity” can have “the same effect” as that of an intended task and lead to a release of tensions and the relaxation of the mental system. In case a (quasi-)need cannot be satisfied through an immediate accomplishment the tension is redirected.

- **Interconnected mental systems**: The co-existence of multiple interconnected mental systems is subject of investigation in all three dissertations. For instance, the intensity of any tendency towards the resumption of an interrupted activity depends on the intensity and the degree of embedding of such a system (i.e. its correlation with a genuine need).  

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366 Cf. [Ovsiankina, 1929, 321, 376f.].
367 Cf. [Ovsiankina, 1929, 377], [Birenbaum, 1930, 261-263].
368 Cf. [Ovsiankina, 1929, 378] and [Birenbaum, 1930].
even more concretely that (a) the retention of uncompleted tasks is stronger, i.e. completed activities are better remembered than uncompleted ones only when the single psychological systems are sufficiently separated (Zeigarnik); (b) in case of interruption, main needs are almost never forgotten; secondary purposes are not forgotten if they are well-embedded into the main system (Birenbaum).

As one can conclude, the presented research sequence was basically consolidated in Lewin’s 1926 papers. Yet, the individual concepts were developed one-by-one in his students’ (experimental) works. All works conducted in the constitutive stage were densely interlinked and focused on the same group of problems (retention and completion of tasks).

Importantly, the process model was designed exclusively for the analysis of simple sequences of (intended) action. The degree of complexity will be significantly increased in the following stages of the BEP.

### 9.3 Level of aspiration

**Satisfaction, satiation, over-satiation and the level of aspiration**

Karsten (1928), Hoppe (1930), Fajans (1931), Dembo (1931), Jucknat (1938) and possibly Rosenfeld (unpublished) all studied conditional-genetic affect structures in performance-minded actions. Karsten answers the question, whether the quality of a repeated process or the number of its repetitions has impact on motivation. Hoppe follows with an investigation on which impact the experience of success and failure may have on the repetition of performance-minded actions (leistungsorientierte Handlungen)—or more concretely—how does the subject experience (and express) the own failure. Simultaneously, Dembo studies failure in performance-minded activities as stimulus of the anger affect. Additionally, Fajans (1933) studies the success and failure experience of infants and nurslings. In this

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stage of the research program, the Berlin group developed extensions of the basic process model, i.e. several concepts are reviewed and extended or substituted by a more fine-grained conceptual groups. We should elaborate the core extensions in some detail.

A particular example of the extension of the basic process model represents the conditional-genetic nature of the concept of “equilibrium”. Experiments with the repetition of uniform action sequences led to the *diversification* of the unifying concepts into different types of mental equilibria. These were: satisfaction (*Befriedigung*), psychic satiation (*Sättigung*) and over-satiation (*Übersättigung*) of needs. We modeled the diversification in figure 17.

**Mental system as a functional chain**

![Diagram of mental system as a functional chain](image)

Lewin’s students established that the so called satiation phenomenon occurs when an activity that is originally perceives as enjoyable or neutral is increasingly experienced as unpleasant or even unbearable after a number of repetitions. Translated into dynamic terms, the satiation phenomenon describes the transformation of a positive into a negative valence, i.e. a complete reversion of forces.


In addition to Lewin’s 1926 scheme, Karsten suggests that the translation of an intention into action does not always bring about the release of the tension with a positive valence (satisfaction) but sometimes it additionally leads to a build-up of a new tension with a negative valence (over-satiation). Thus, satiation is different from satisfaction. When dealing with plural repetition sequences of the same activity

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370Cf. [Karsten, 1928, 235].
whenever satiation with an activity takes place no positive valence that would trigger the repetition of the same activity can be created. An over-satiation will be the result in case the activity has to be repeated anyway.

“Sättigung ist etwas anderes als Befriedigung. Dynamisch gesprochen handelt es sich also nicht, wie z. B. beim Problem der erledigten und unerledigten Handlung (vgl. Zeigarnik a. a. O.), darum, wie sich ein einmal abgespaltenes Spannungssystem bis zur Entspannung auswirkt, sondern eher um die Frage, ob nach Entspannung eines solchen Systems die Vp. in der Lage ist, fortlaußend neue Spannungssysteme für die gleichartige Handlung zu erzeugen” [Karsten, 1928, 237].

It follows that, first, the psychic equilibrium may be diversified on the conditional-genetic level. Second, different types of equilibria impose different valences onto subsequent activities.

Karsten's distinction of equilibria with different valences implies the extension of the research span over time and suggests the analysis of successive sequences.

Formation and transformation of intentions

As a follow-up Hoppe’s work (1931) studies the generation of quasi-needs in follow-up activities tackling the question 'Which types of activities succeed the different conditional-genetic types of the equilibrium?'. He observed that the different conditional-genetic types of equilibria imply different stimuli, and thus variations of subsequent actions, such as the repetition of the same activity, introduction of a new activity of another type, an interruption or a break-up (reflected in figure 17). A psychic satiation is a neutralized tendency towards a goal. The tendency can be redirected towards new goals. By contrast, a satisfaction corresponds to a complete relaxation (i.e. neutralization of the tension) and does not generate any further intentions (i.e. forces and tensions).

Hoppe finds out that the individual experience of success or failure triggers shifts in the succeeding goal setting process. Consequently, the individual goal setting scheme depends on the changing expectations towards the own performance. This discovery leads to further conceptual extensions—the “formation of an intention” (Zielbildung) and the “transformation of on intention” (Zielwandlung)—resulting into a certain “level of aspiration” (Anspruchsniveau).372

372 I decided to translate the German Zielbildung and Zielwandlung as formation and transformation of intentions, i.e. not literally. However, given that intention—a key mechanism of Lewin’s mental system—predefines the goal of an activity, this translation is perceived as the most suitable one.
“Die Frage danach, welchen Handlungen oder welchen Zielen sich jemand nach Beendigung einer Handlung zuwendet, nennen wir eine Frage der Zielbildung. Wir sprechen also von Zielbildung sowohl beim Übergang zu einer gleichartigen Wiederholung als auch beim Übergang zu einer neuen Handlung (einer Zielwandlung)” [Hoppe, 1931, 4].

“Die Gesamtheit dieser mit jeder Leistung sich verschiebenden, bald unbestimmteren, bald präzisierenden Erwartungen, Zielsetzungen oder Ansprüche an die zukünftige eigene Leistung wollen wir das Anspruchsniveau der Vp. nennen” [Hoppe, 1931, 10].

A follow-up study by Fajans (1933) shows that even nurslings and little children are subjected to the after-effects of positive and negative experiences, in other words, successes and failures. She finds that even in the youngest nursling age success has rather activating impact on the continuation of tasks while failure turns into passivity and loss of interest on the side of subjects.

“Auf dem Juniorthemafest 1937”

“Erfolg und Mißerfolg der Aktionen zeigen sowohl beim Säugling wie beim Kleinkind eine starke Nachwirkung. Der Mißerfolg äußert sich in einer starken Passivierung, Einschüchterung, die sich vor allem in der Abnahme der Dauer und Stärke der Zuwendungsaktionen und dem Umkippen der ‘sachlichen’ Situation in eine soziale äußert (Verlegenheit). Erfolg führt demgegenüber zu einer Aktivierung, die sich vor allem in ausdauernder, aktiverer Zuwendung und einem sehr viel freieren Gesamtverhalten äußert” [Fajans, 1933b, 305].

A follow-up study by Jucknat (1938)—submitted to the Berlin University in October 1936—delivers a pool of empirical data proving that success and failure experience have transforming impact on the goal setting procedure, i.e. on the intentions that emerge subsequently to this experience.373

“Im ganzen haben wir es also bei den Verschiebungsgesetzen des Anspruchsniveaus mit einem bestimmten Aufbau in sich zusammenhängender Systeme bzw. Bereiche zu tun, bei dem eine Entspannung […] entsprechend dem Schwierigkeitsgrad der Leistung eintritt” [Lissner, 1933, 247].

9.4 Substitution

Real accomplishment, ideal accomplishment, substitute accomplishment

Substitution (Ersatz) is a central concept of the BEP. It implies that in case of a blockade of the direct “energy flow” the energy can be redirected in new routs (cf. figure 15). In the explorative stage the concept of a substitute satisfaction is central in particular to the contributions by Ovsiankina and Birnbaum. In the mature stage a new sequence significantly extends the former substitution concept. Besides Lewin’s own publications Environmental Forces in Child Behavior (1931) and Development and Die psychologische Situation bei Lohn und Strafe (1931) works by Dembo (1931), Hoppe (1931), Mahler (1933), Brown (1933) and Forer (1933) need to be mentioned. Dembo’s work represents the impetus of a new sequence of research that branches off from the rather wide concept of substitution. She suggests that the energy of a need may be directed towards a “real” or an “irreal” goal. This diversification of the conceptual brick “redirection of energy towards a “substitution” elaborated by Dembo and Lewin is illustrated in figure 18. The irreal goal does not represent an actual solution to the faced challenge; it is generated in case a “real solution” is not perceived as accomplishable (any more). Dembo observes that the transition from the real to the irreal dimension happens, as a rule, gradually and involuntarily.


373 Cf. [Jucknat, 1937].
das Erreichen der Blume auf dem Ersatzbock ohne Schwierigkeiten vor sich gehen kann, sagt sie: ‘Ich werde erst diese Blume zu nehmen probieren und dann die andere.’ Das sieht aus wie ein Sich-Einüben, ist es aber natürlich nicht” [Dembo, 1931, 56].

Figure 18: Reconstruction: Real vs. irreal accomplishments [after Dembo 1931]

However, despite what it looks like on the phenomenological level, “substitute activities” represent an activity type directed towards a “substitute goal” (Ersatzziel). This is qualitatively different from the original goal and does not equal its approximation. 374 In contrast to this, an “ideal goal” (Idealziel)—a concept introduced by Hoppe—represents a contrast to the substitute goal. According to Hoppe’s and Lewin’s definition, when a person meets a real goal this is at the same time a step towards her or his ideal goal. Thus, the ideal goal is defined as the best possible (and/or most complete) accomplishment of a task.

“Dieses übergreifende Ziel, das zwar im Augenblick nicht akut ist, aber doch ‘hinter’ dem jeweiligen Einzelziel steht und das Gesamtvorhalten der Vp. leitet, wollen wir Idealziel nennen, zum Unterschied vom Realziel, das dem Anspruchsniveau für die jeweilige einzelne Leistung entspricht [...]. Das Idealziel pflegt die Stellung eines Extremwertes anzunehmen, der gewöhnlich dem ‘natürlichen Maximum’ der Aufgabe entspricht” [Hoppe, 1931, 28].

9.5 Material properties of the field

Around 1931, Lewin and some of his disciples introduce a structurally new group of concepts, which is accompanied by a new way of visual modeling. These new concepts are spatial and material in nature.

Fluid and solid medium

Real and irreal spheres of the life space can be qualitatively distinguished from one another. While barriers in the sphere of irreality are “soft” and “permeable” barriers in the reality sphere are “permanent”, i.e. “non-permeable”, and can only be crossed when broken. Interestingly, the metaphor of permeability, non-permeability and semi-permeability of borders probably was borrowed by Lewin from the biological discourse about cell membranes.


Figure 19 illustrates the dichotomy of the psychic reality and irreality.

Figure 19: Illustration: Psychological reality vs. irreality [Dembo 1931]

Lewin elaborates the concept of “psychological reality” and “irreality” in two 1931 publications, a German one and an English one—*Psychologische Situation bei Lohn und Strafe* and *Environmental forces in child behavior and development*:

“...The more unreal planes are those of hopes and dreams, often of ideology. A stratum of greater unreality is dynamically characterized as a more fluid medium. Limits and barriers in such a stratum are less firm. The boundary between the self and the environment is also more fluid. In a plane of unreality ‘one can do what he pleases’ ”[Lewin, 1931d, 617].

In his critical reading of Dostoevsky’s *Crime and Punishment*, Lewin explicitly introduces the distinction between a reality and an irreality level from the psychological point of view. He extensively discusses how the “irreal” substitution of reality manifests itself on the topological level. The “real” psychological space of the child in Dostoevsky’s novel is described as follows:

“In dynamischer Hinsicht ist die Situation des Kindes (K) etwa wie folgt zu charakterisieren: Die Kraftfelder, die den Lebensraum des Kindes beherrschen, sind vor allem die des Vaters (V), der Großmutter (G) und des Lehrers St. Jérôme (J). Das Machtfeld St. Jérômes empfindet der Knabe dauernd als feindlich. Nun aber besitzt für den Knaben dank der eigenen Schuld auch das Feld des Vaters und der Großmutter einen Vektor gegen das Kind. Es sind dies die Personen, mit denen das Kind sich eng verbunden fühlt, die zugleich die Herrschaft

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375 Cf. [Dembo, 1931, 111f.].
376 Illustration from [Dembo, 1931, 38, fig. 11].
im Hause haben und von denen letzten Endes auch der Machtbereich des Lehrers St. Jérôme abhängt. Nun haben alle diese Felder eine drohende Bedeutung für das Kind bekommen" [Lewin, 1931c, 144].

The topological situation of Dostoevsky’s child is graphically reflected in figure 20 (original drawing by Lewin). In reality, the space of Dostoevsky’s child is restricted by field forces of the three dominating adults (his father, grandmother and the scary teacher). In the child’s mental world all three fields have a rather threatening character. Yet, the irreal situation—wishful thinking or dreaming—is a completely different one:


In the reality dimension the child is isolated and the dynamics of the three supervising adults is directed away from it. The child’s dream area, in return, it is reunited with its father, whose force field is organized in a supportive way, while the scary teacher Mr. Jérôme finds himself in an isolated position at a distance from the child (cf. figure 20).

A clear-cut definition of the gradation of reality and its inverse side, the irreality, is presented by Mahler in 1933. The distinction of different reality levels of the individual’s mental world is central to the developed model of the psychic space. In this framework the “real” space is that of facts, while dreams and hopes, as well as wishful thinking belong to the less real degrees of of the psychic world. The latter reality levels consist of a softer material than the factual space.

“Das Wort ’Irrealität’ wird in der Psychologie seit langem gebraucht, ohne daß mit ihm ein sehr scharfer Begriff verbunden würde. Man geht von dem erkenntnistheoretischen Begriff

**Transition from a solid to a fluid tension system**

Follow-up works by Brown and Forer, both published in 1933, examine the link between the degree of reality and the retention of facts. While Brown experiments with adults Forer conducts comparable investigations with nurslings and kids up to the age of 6. After instructing their subjects to memorize the real and irreal action both observe that actions of a higher degree of reality are memorized better than actions of a lower degree of fluidity. Both works show that the memorization of real events is more consistent and sustainable than that of dreams or stories, i.e.—in dynamic terms—less real events. Thus, both studies distinguish the different degrees of “fluidity” the “real” and “irreal layer” are made from. In terms of mental energy, both studies show that “solid” tension systems based onto real events are harder to dissolve than “fluid” tension systems built upon irreal events.378

"Wir hatten die Frage aufgeworfen, ob eine Schicht geringerer psychischer Realität auch dynamisch als weicher, flüssiger zu kennzeichnen ist. Unsere Ergebnisse über die Wirkung der Zwischenzeit auf das Behalten relativ realer und irrealer Handlungen sprechen dafür, daß die Irrealitätsschicht in der Tat als weniger fest anzusehen ist" [Brown, 1933, 21].


As we have seen, Lewin employs the metaphor of (partial) permeability of borders to describe “irreal” psychic spheres. He borrowed this concept from the biological discourse about cell membranes. Different types of processes are possible in different material environments. Accordingly, in Lewin’s system the materiality of spatial constructs is another resource ensuring that psychic processes are grasped exactly, a metaphor used to build up a particular milieu, in which psychic events take place following a set of specified rules.

**Value of a substitution**

The particular degree to which it is possible to replace an initially intended accomplishment by another one and, thus, to given the person an emotional substitute for the original accomplishment is named “value of a substitution” (Ersatzwert). From Brown’s and Forer’s research, which showed that a substitution of the real accomplishment with an irreal one succeeds when a transition from the real to the irreal sphere is accomplished, follows that the value of a substitution depends on the feasibility of the transition from the real to the irreal sphere. In Lewin’s topological language this means that the regions have to be “related to each other”. It is the “closeness of the regions” that allows for a transition meaning that the “interconnectedness of mental systems”—a concept established in the constitute phase of the BEP—is precondition to a successful substitution.

378Cf. [Forer, 1934, 40f.] and [Brown, 1933, 21ff.].

Follow-up research by Fajans (1933), Mahler (1933) and Lissner (1933) to identify variables responsible for the transition, and try to determine a method to calculate the substitute value. They derived the following regularities.

(1) **Degree of relatedness**: “Relatedness of the content” (inhaltliche Verwandtschaft) of the “basic activity” and the “substitute” activity is one factor determining the transition. In other words, the more similar the “inherent action goals” (Verwandtschaft des inneren Handlungsziels) of the “basic activity” and the “substitute activity” turn out to be the more likely a substitution may be accepted.

(2) **Degree of complexity**: The conducted experiments show that the substitute value of a complex performance to be higher than the substitute value of a more simple performances.

(3) Moreover, differences in the children’s and adults’s transition from the real to irreal dimension are identified. Lewin notes: “it is characteristic of the child’s psychological environment (a) that the differentiation of various degrees of reality is, much less marked, and (b) that transitions between the levels of reality and unreality occur much more easily than in adults” [Lewin, 1931d, 617].

(4) A quantification attempt: An attempt to calculate the value of substitution was introduced in the studies on retention of interrupted intentions. Ovsiankina’s work had previously shown that in case an activity is unwillingly interrupted, the individual maintains a strong tendency towards its accomplishment. Lissner set up an experiment in which she interrupted an activity by another one that fulfilled the criteria substitute activity. Her hypothesis was: If the presumed substitute activity possessed an actual substitute value, it would lead to a release of the original tension, which would

379 Cf. [Fajans, 1933a, Lissner, 1933, Mahler, 1933]. Most probably Köpke’s unpublished dissertation *Ersatzbefriedigung bei normalen und schwachsinnigen Kindern*, too, explored the problem of the value of substitute activities as well. The doctoral study is quoted by Lewin and in several BEP papers of the mature period, e.g. in [Lewin, 1982a, 232f.].

380 Cf. also [Lewin, 1931e, 382] and [Lewin, 1935a, 247].
decrease the resumption of the original (interrupted) activities. Accordingly, the substitute value correlated with the percentage of resumptions of the original activities: the more resumptions, the lower the substitute value.\footnote{Cf. [Lissner, 1933, 220].}

“Je höher der funktionelle Ersatzwert der Ersatzhandlung ist, um so mehr wird mit der Beendigung der Ersatzhandlung zugleich auch das Bedürfnis nach Beendigung der Grundhandlung beseitigt, also das der Grundhandlung entsprechende Spannungssystem entspannt. Den Ersatzwert kann man also dadurch prüfen, daß man feststellt, wieviel seltener die Versuchsperson nach Einfügen einer Ersatzhandlung zur Grundhandlung zurückkehrt als nach Einfügen einer vollkommen heterogenen Handlung” [Lewin, 1982a, 233].

“Wir können im Anschluß an Mahler den Ersatzwert definieren als den Quotienten: WU/W-Ers, wobei WU die Häufigkeit der Wiederaufnahmen nach Unterbrechung ohne Ersatzhandlung bedeutet, W-Ers die Wiederaufnahmehäufigkeit nach Unterbrechung mit Ersatzhandlung. Eine Ersatzhandlung besitzt Ersatzwert, wenn dieser Quotient größer als 1 ist; der Ersatzwert ist um so höher, je größer der Quotient ist” [Lissner, 1933, 226ff.].\footnote{Cf. also [Mahler, 1933, 38].}

Also in other kinds of studies, for instance investigating the shift of the level of aspiration after the experience of success or failure, the calculation of the substitute value was attempted. Working with children Fajans (1933) carries out four experimental designs, in which children get to complete tasks. After a first “neutral” task solving experience each child is confronted with one of the following four psychological experiences, i.e. (a) the experience of success with encouragement, (b) success, (c) failure with consolation (as a substitution of success) and (d) the “pure” failure experience. Fajans takes the children's readiness to repeat an activity a higher or lower number of times as a an indicator of a substitute value. The study shows that (a) the experience of real success combined with encouragement increases the willingness to perform (i.e. the persistence) to 48% compared to the original persistence; (b) the increase after a simple performance corresponds to 25%; (c) after a failure with a substitute consolation the readiness to perform decreases to 6%; eventually, (d) the “pure” failure experience without any consolation introduces a decrease of 47%.\footnote{Cf. [Fajans, 1933b, 290].} Thus, in this case rather than a concrete measurement a scaling of substitute values of different actions is elaborated: “Es ergibt sich eine gradweise abgestufte Wirkung von: Erfolg mit Ermunterung, Erfolg, Tröstung, Mißerfolg” [Fajans, 1933b, 305].

**Substitute objects**

Sliosberg’s work (1934) contributes a refinement of the concepts of substitution and psychic irreality. Her and Lewin assume that the children’s play represents a type of in-between dimension between the psychological reality and irreality. Having noted that the dimension of the children’s play and the psychological irreality are similar in their nature the work studies the transition from one to another.\footnote{Die Vorgänge in der Spielsituation sind dynamisch den Vorgängen in irrealen Schichten verwandt und hängen von der jeweiligen Struktur dieser Schichten ab; aber Spiel und Irrealität sind nicht identisch” [Sliosberg, 1934, 180f.].}

The experimenter proceeded as following: Children of two different age groups, 0 to 3 and 6 to 8, were presented different objects to be played with. In the moment a kid chose its toy of preference the investigator suggested a substitution. She offered another object that would “represent” the primary object of choice, thus, offering an irreal substitute satisfaction for the now inflamed need. In this way, the satisfaction of needs with substitute objects was comparatively tested in a “serious” situation and during a play (cf. ebd. 124ff.). In sum, Sliosberg’s work introduced the concept of a “substitute object” and studied its properties. She narrowed down the child’s willingness to accept a “substitute object” to a range of features, i.e. the nature of the given situation, the relationships of the real object and a substitute objects and the nature of the need a child experienced towards this object (cf. ebd. 181).
9.6 Topological extensions towards person-environment-interaction

In the present section we look at the appearance of spatial concepts in Lewin’s system. Topological or structural concepts start appearing in the writings of the Berlin psychologists around 1931. This new system, termed as “topological theory”, was inspired by mathematics and comprised linguistic and geometric conceptual counterparts in the same time. This group of concepts qualitatively differs from the previously discussed dynamic concepts, i.e. they possess spatial properties. While Chapter 10 in detail elaborates the functions of Kurt Lewin’s topological psychology we may generalize that the function of topological concepts is to allow the researcher to determine which events are possible in a given “life space” and which are not. Dynamic concepts are employed in addition in order to deduce which of the possible events will actually occur in a given case. Topology was employed as a tool to map and analyze mutual relations of the individual and the environment, as well as changes in this relationship. The specification of functional interrelations of the three fundamental concepts “person”, “environment” and “behavior” indicated an attempt to formalize of the psychological system.

By contrast with the previously addressed “material space” Lewin’s topological space is characterized by mathematical properties. Tamara Dembo’s study Der Ärger als dynamisches Problem (1931), being amongst the first works applying topology in psychology, pointed this out.

“Zur Darstellung der Topologie benutzen wir die Begriffe der allgemeinen mathematischen Topologie bzw. Mengenlehre, also Begriffe wie Zusammenhängend, getrennt, Grenze. (Abstände haben also prinzipiell keine metrische Bedeutung.) Wir benutzen ferner den mathematischen Begriff der Richtung und den des Zwischen” [Dembo, 1931, 18].

Other topological concepts, i.e. sub-entities of the life space, started emerging in the publications of the Berlin group around 1931. The most basic ones are exemplified below.

- **Region and position**: A region is one of the basic topological concepts that may be defined as any distinguishable part of the life space. To give an example, a child who is using the back porch as a stage and a chair as a throne is in the “region of play acting”. In turn, the position of a person is defined in terms of topology by the activity region in which this person is located.

- **Locomotion**: Any change of position the person undertakes within the life space is defined as locomotion. For instance, when a person considers different options on how to spend the evening, the different topological regions corresponding to the considered options—e.g. going to the movies, visiting a friend, playing hockey—he or she might move from one region to another when preferences are shifting.

- **Path**: A path is given if the person is able to transit from one region to another neighboring region. For example, there might be a direct path between “considering how to spend the evening” and “visiting a friend”. Yet, there no direct path can be paved between “considering how to spend the evening” and “winning the lottery”.

385 The papers with the most elaborated explanations are: Environmental forces in child behavior and development, (1931), Die psychologische Situation bei Lohn und Strafe (1931) and the essay focussing on philosophy of science Der Übergang von der aristotelischen zur galileischen Denkweise in Biologie und Psychologie (1931). Amongst the disciples’ work of the early maturity period Dembo’s paper Der Ärger als dynamisches Problem (1931) is the one to most extensively reflect and apply topological concepts. Before 1931, we can find singular mentions of a “topology of the situation” in conjunction with the idea of the psychological field; cf. e.g. [Lewin, 1929, 531]. The appearance of topological notions before 1931 is, however, episodical while the concepts themselves are used without being properly defined.

386 The questions, how and why Lewin’s group arrived at the generation of the so called “topological” concepts for psychology and which problems the emergence of the topological theory was supposed to solve, are extensively discussed in Chapter 10.

388 Although the concepts have been employed since the beginning of the 1930s they have not always been properly defined as to them. To offer the reader working definitions we are forced to look at the employment of these concepts at other moments of the course of Lewin’s career. Some of the illustrating examples are suggested by Lewin’s colleague M. Deutsch, cf. [Deutsch, 1954, 196].
• Barriers are boundaries of a region, which correspond to obstacles on a person’s way. For instance a man decides to drive over to his friends house but then he is not able find his car key. The disappearance of the key represents a barrier on his way towards the accomplishment of his intention.

The field or life space became the major tool of the Berlin research for the analysis of a person-environment-interaction. In Environmental forces in child behavior and development (1931) Lewin first defines an individual’s behavior \((B)\) as the function of the “momentary structure and state of the person \((P)\) and of the psychological environment \((E)\)”\(^{389}\); a definition that the group takes as a starting point to systematically analyze the psychological relationship between the person and its environment.

“To understand or predict the psychological behavior \((B)\) one has to determine for every kind of psychological event (actions, emotions, expressions, etc.) the momentary whole situation, that is, the momentary structure and state of the person \((P)\) and of the psychological environment \((E)\). Every fact which exists psycho-biologically must have a position in this field and only facts which have such position have dynamic effects (are causes of events). The environment is, for all of its properties (directions, distances, etc.), to be defined not physically but psychobiologically, that is, according to its quasi-physical, and quasi-social, and quasi-mental structure” [Lewin, 1931d, 598].

Thus, the field or life space corresponds to “the momentary whole situation” defined through the structure and state of the person and its interaction with the psychological environment. A person’s behavior, in turn, is a function of these two variables. For instance, the study by Sarah Fajans’ study of the impact of psychic valence on nurslings largely completed in 1931 (experimental period in 1928/29), employs this construct.

“Das Verhalten des Menschen wird vom Zustand der Person und der Umwelt bestimmt. Unter den Umweltfaktoren haben Gebilde und Ereignisse mit Aufforderungscharakter und die von ihnen ausgehenden Feldvektoren eine grundlegende Bedeutung” [Fajans, 1933a, 216].

The formalization of the relationships between individual concepts seems to be key to the actual implementation of Lewin’s goal, i.e. to establish a conceptual system suitable to deal with the whole discipline instead of dealing with selected sub-domains, such as volition, associations or memory (cf. Chapter 5). Having but pointed to the analytical function of topology in Lewin’s psychological research we shall attentively discuss this in the following chapter.

### 9.7 From experiment to concept formation

In the present chapter we have shown how the basic process of psychic activity presented by Lewin in 1926 was transformed into an extended system through the experimental contributions of his students. Most of the student studies resulted in the formation of new concepts. The student contributions extended the preexisting conceptual system block by block building upon each other. Yet, it was Lewin’s effort for a substantial theoretical underpinning that finally integrated all concepts and related them to each other. In the few publications Lewin published in the investigated period he consolidated the students’ experimental results and made theoretical assumptions on its basis. For instance, the work of the constitutive stage was consolidated in Lewin’s Über die Struktur der Seele and Vorsatz, Wille und Bedürfnis (1926). 1931 was a particularly productive year, in which Lewin published amongst others Ersatzhandlung und Ersatzbefriedigung, Die psychologische Situation bei Lohn und Strafe, Environmental forces in child behavior and development. In these publications he not only theoretically framed the preceding research but also introduced the central themes of his later research, which is the person-environment-interaction. He elaborated a range of topological concepts in this way operationalizing

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389 For a more detailed elaboration of the concepts “behavior”, “person”, and “environment” in Lewin’s work see [Deutsch, 1954, 189f.].
the concept of the field. Finally, *A Dynamic Theory of Personality* (1935) is Lewin's stock taking and evaluating work that organizes and interrelates the significant results of the BEP while the *Principles of Topological Psychology* (1936) gives the most complete and theoretically sustained account on his topological theory (s. appendix A).

In the present chapter we investigated how experiments - their analytical part - shape concept formation. More concretely we observed how experiments conducted by Lewin's students in Berlin extended his early system knowledge (discussed in the Chapters 6 and 7). As depicted, the interactive part of the experimental procedure was followed by the analytical one, in which the researcher had to translate the experimental experience into new knowledge, i.e. new or more elaborate concepts. To this end he or she needed to identify exact “genetic types” of processes observed in the course of the experiment. Furthermore, the experimenter had to subdivide the whole construct into process units, whose wholeness needed to be preserved. He or she then “decoded” these units by getting to their “genetic” type, and identifying their “functional” interrelation with each other. This way - according to Lewin’s theory - the researcher arrives from the real to the pure type of psychic event, which then has to be framed into a concept. However, although the discussed experimental protocols give us certain hints on the implementation of this heuristic procedure, the links between theory and practice of the BEP remain fairly loose. The specifics of concept formation, central announced aim of Lewin's empirical work, are actually not very well documented. Nonetheless, in the students’ dissertations much attention was given to concepts that emerged as result of experimental investigations.

**Expansion and diversification of knowledge resources**

The conceptual evolvement of Lewin's Berlin Experimental Program over the course of about 12 years of its run is reflected below. All works conducted in the *constitutive stage* were densely interlinked and focused on the same group of problems, i.e. resumption and accomplishment of interrupted activities. In the *expansion stage* several new research themes emerged (e.g. success vs. failure and the level of aspiration, types of substitution and the exploration of the dynamics of the anger affect). Besides the by then elaborated concepts (e.g. mental equilibrium and substitution) were diversified into more narrowly defined sub-concepts. In the *maturity stage* an even more substantial diversification of concepts and research themes took place. Eventually, the experimental program incorporated such themes as the duality of psychic reality and irreality and the person-environment-interaction. In this period that most students were involved in the program and most submitted dissertations went to press. In sum, we observe a remarkable expansion and diversification of knowledge resources over the course of the BEP.

**Principles of continuity and diversification**

As illustrated in figure 14 the central development traits of the program are those of continuity and diversification. At first roughly defined conceptual structure presented in Lewin's early publications is increasingly refined, i.e. the original concepts are diversified into more concrete and honed ones. Conceptual substructures are elaborated in more and more details (not only up to the end of Lewin's German career but to the end of his life). Furthermore, in the maturity stage of the BEP, a *qualitative diversification* of concepts took place. This diversification entails the perceptible *increase of complexity of the individual concepts and of Lewin's theoretical system as a whole*. We illustrated this for instance at the example of the concept of “substitution”. While in the early 1920s this concept corresponded to a rather generally defined idea of a replacement of one thing by another, by the middle of 1930s, a whole variety of implementation scenarios was associated with this concept. At the outset, Lewin’s circle used the concept of substitution at different places of Lewin’s model of psychic activity—e.g. to denote a “substitute activity”, “goal” or “satisfaction”. In the maturity stage the concept was applied to physically existing things—“substitute objects”. Attempts to quantify the value of a substitution were made, which
in turn led to the exploration of its qualities. Eventually, different topological dimensions of this concept were differentiated and specified, i.e. “degrees of reality of a substitution” (cf. figure 14 on page 116). New concepts were integrated into the theoretical system with respect to the correlations linking these to other variables within the system. Another reviewed example was the diversification of types of psychological equilibria. Speaking of the bigger picture, in the roughly twelve years of experimental research the basic conceptual system evolved to a densely interlinked and complex entity.

**Interdisciplinary conceptual layers**

The conceptual system we observe being constituted throughout the BEP is a multi-layered one. At the beginning of the constitutive stage we deal with a *dynamic* model useful for the analysis of a limited number of psychic processes (in particular, dealing with retained intentions). Starting with the expansion stage the model is complemented with other *dynamic* concepts expanding and diversifying its analytical capacity. Lewin’s spatial concepts point with their topological characteristics back to geometry. Finally, in the maturity stage, concepts with material, topological and metrical properties are included. Finally, Lewin employs the metaphor of (partial) permeability of borders, which he borrowed from the biological discourse about cell membranes, to describe psychic irreality. Using this Lewin’s distinguishes between different material properties of space, which he attributes to different “levels of reality”. Different types of processes are possible in different material environments. Accordingly, in Lewin’s system the materiality of spatial constructs is another resource ensuring that psychic processes are grasped exactly, a metaphor used to build up a particular framework, in which psychic events take place following a set of specified rules.

As we have observed, Lewin adopted *thought patterns* constituted in other disciplines. In sum, every conceptual layer incorporates an own analytical function that is akin to the function of the set of concepts in the original discipline. The analytical challenges of this complex system are closer discussed in the following chapter.
10 The analytical challenge of topology

A central particularity of Lewin’s experimental approach is that this laid strong emphasis on the analytical procedure, which was part of the experiments. Topology played a central role in this analytical procedure. Lewin gave an extended overview over the device for the representation of psychic activity in two publications in 1934 and 1936. Lewin’s topological representations translated psychological processes into a spatial dimension. By 1936, the conceptual system (at times termed “field theory” and at times as “topological theory”) employed features originating from mathematics, i.e. topological and metrical spatial constructs, and consolidated these with the quasi-physical (i.e. “dynamic”) model underlying the principles of human conduct, which Lewin had presented a couple of years earlier.

Lewin’s topological psychology represents one, but by no means the only, example of a “stormy love affair” between the “young” experimental psychology and mathematics. Back notes that mathematical systems have been the preferred language of scientists, because they have few emotional connotations and therefore seems to allow a most neutral confrontation of the subject. Use of a mathematical form confers scientific legitimacy on a statement in the eyes of many readers. This view is expressed by calling mathematics the universal language. Sciences that fight over scientific legitimacy while lacking a strong theoretical superstructure often exhibit a pressure for some mathematical formulation. In Lewin’s psychology, too, new mathematics was intended to give it a scientific underpinning.

A peculiarity of Lewin’s topology is its double nature. On the one side, Lewin’s topological system of concepts represents the crowning layer of his theoretical work, the theoretical result of the BEP (also known as “field theory”). On the other side, Lewin and his group conceived topology as an analytical tool that was to be used for the abstraction and analysis of knowledge gained from experiments. This double nature urges us to subdivide the analysis in two parts: first, we elaborate the constitution of the topological ontology, to thereafter explore the functional use, i.e. the experimental application of the topological system. In Lewin’s philosophical agenda “the determination of topological relationships is the fundamental task in all psychological problems” [Lewin, 1936a, 87]. Lewin’s topology is thus a tool helping to grasp these relationships.

With his topological theory Lewin attempted to offer psychology a new dimension and a wider range of topics to explore, such as behavior in terms of social psychology. In the present chapter we shall discuss the design and functions of Lewin’s topology, as well as the perspectives it opened in terms of the construction of psychological knowledge.

10.1 From geometry to psychology

The concept of “topology” suggests that we are dealing with qualitative spacial relations, which can be characterized without the concept of measure. No distances are defined in the topological space. A drop of water and the earth are, from a topological point of view, fully equivalent. A cube and a sphere are not distinguishable. In terms of topology only separated and connected spaces are of relevance. Such is the representation of topology in the mathematical research of the early 1930s, for instance by the Austrian Karl Menger (1902–1985) and American Philip Franklin (1898–1965). Lewin attentively studied their research reports.

When in the early 1930s Lewin introduced topology in psychology, it held the reputation of a peripheral branch of mathematics with uncertain boundaries, cultivated by few. Writing by well-known mathematicians describe topology as a handicapped branch of their discipline, in view of having no metrics, no
relevance of exact shapes and no infinite subdivision of space. In the 1930s the picture began to
turn when topology found legitimation through various mathematical applications. For instance, set the-
ory came to be seen as a fundamental basis of mathematics, and topology—as the theory of point
sets—became the source of much mathematical understanding. Still in up to the late 1940s, the im-
age of topology was still ambiguous. Nevertheless, by the late 1930s, Lewin had firmly established
topology as a key to psychology's transition to the “Galilean mode of thought”.

In Lewin’s philosophy of science mathematical representations were understood as an integral part of
any organized science. As early as 1931, Lewin sketches out the concept of topology in two publications,
one of which is, not by chance, his philosophical key work, *The conflict between Aristotelian and Galilean
modes of thought in contemporary psychology*. For the first time he brings forward the idea that topology
is the instrument to establish functional correlations between psychological entities.

“One can characterize [...] psychodynamic locomotions (quasi-bodily, quasi-social, quasi-
mental locomotions) at every point of the environment with the help of the concept of topol-
yogy, which is a non-quantitative discipline about the possible kinds of connections between
’spaces’ and their parts” [Lewin, 1931d, 598].

As the nature of things is entirely irrelevant for modern mathematics – Lewin argues – there is no funda-
mental objection to applying the mathematical concept of space to psychological facts. It does not matter
whether one thinks of them as physical objects, temperatures, numbers, colors, events, or anything else.
Only certain relationships and the possibility of certain operations are relevant. These define space in
the topological sense. Thus, there is no reason why topology should not be applied to psychological
problems. Additionally, the functionally interrelated nature of topological spaces much corresponds to
the Cassirer-Lewin ideal of functional correlations in scientific systems. Therefore the translation from
the mathematical into psychological topology seems almost natural. Lewin argues that psychology could
accomplish the transition to the Galilean mode of thought by “providing a workable representation of a
crude psychological situation according to its individual characteristics and its associated functional
properties, and of the concrete structure of the psychological person and its internal dynamic facts”
[Lewin, 1935c, 41 (published in German in 1931 and in English in 1935)].

“Perhaps the circumstance that a technique for such a concrete representation, not simply
of the physical but of the psychological situation, cannot be accomplished without the help
of topology, the youngest branch of mathematics, has contributed to keeping psychological
dynamics, in the most important fields of psychology, in the Aristotelian mode of thought”
(ebd.).

Approximately from 1931 to 1936, the crucial concept of Lewin’s field theory, i.e. “life space” (*Lebens-
raum*) was granted a topological extension. As we have seen in Chapter 9, also other topological con-
cepts, such as “region”, “position”, “locomotion”, “barrier” and “path”, found its way into the correlational
system that grew increasingly more detailed. Since 1931, topological representations were employed by
Lewin and some of his disciples; these complemented the verbal manifestation of most topological con-
cepts. For instance, Dembo presented a graphic realization of psychological reality and irreality layers.
The most substantial work on the techniques of construction and application of topology, as well as the
nature of the topological space did not appear but in *Principles of Topological Psychology* in 1936.

Yet, the essence of the topological theory elaborated in the *Principles* was already brought to paper in
the few-known German-language paper *Der Richtungsbegriff in der Psychologie* (1934).
“Dear Köhler:

This book is the result of a very slow growth.

I remember the moment when — more than ten years ago — it occurred to me that the figures on the blackboard which were to illustrate some problems for a group in psychology might after all be not merely illustrations but representations of real concepts. Much interested in the theory of science, I had already in 1912 as a student defended the thesis (against a then fully accepted philosophical dictum) that psychology, dealing with manifolds of coexisting facts, would be finally forced to use not only the concept of time but that of space too” [Lewin, 1936a, vii].

These introducing words of Lewin’s *Principles* both bring his early career work to a conclusion and point to the firm theoretical foundations of his later work. *Principles* in many ways represent Lewin’s transitional work. This includes the transition to a new country, work language and environment, new socio-academic conditions as much as the transition to an evolution of the research focus towards social aspects of life, increasing formalization of the theoretical basis of the system on the one side and the visualization of concepts on the other, and, finally, the focus on the immediate application of research. He leaves behind his philosophical investigations and the dense Gestalt circle grounded in the Weimar academic culture.

### 10.2 The analytical procedure: Abstraction, representation, topological space

The essential idea of Lewin’s topological psychology—at times referred to as “topological theory”, “dynamic theory”, “field theory” or “vector psychology”—is to represent psychic events by means of topological images. These images or visual representations of psychic events constitute a semantic structure complementing mental processes with corresponding spatial ones (mostly manifested in a linguistic description and drawing). For Lewin the task of representing concrete situations is one side of the tasks of explaining mental life. This task has to be accomplished in such a way that the underlying genetic “event type” can be derived from the representation. Lewin therefore strives to “build up a framework for the constructive representation and derivation of psychological processes which is logically consistent” [Lewin, 1936a, 6].

Lewin argues that in order to understand a psychological event we must not reduce it neither to the subject nor the environment. The spatial extension of the psychological field, i.e. life space, helps to build up and analyze the interrelation of the individual and its environment, as well as changes in their relationship (see Chapter 9). The characteristics of Lewin’s life space (or person) are derived from observed behavior in an observed environment. The represented life space is thus the total of possibilities not only for the behavior of the person within the situation but also for the possible changes of the situation and the person itself. According to Lewin, topological or structural concepts are of use to determine the realm of possible psychic activities while dynamic concepts indicate, which of the possible events will actually occur in a given “life space”.


In other words, the life space encompasses the totality of possible and non-possible experiences.\footnote{Cf. [Lewin, 1936a, 15f.]} When constructing a topological abstraction the scientific observer needs to take into account everything that affects the person’s behavior at a given moment of time. In general,
“the representation of the life space has to indicate the ‘position’ of persons and objects in certain ‘regions’. It has to take into account locomotions […]; neighborhood relationships of regions; boundaries; approaches and withdrawals; expansion and contraction; and finally movements and forces in certain directions” [Lewin, 1936a, 51].

In other words, the topological life space represents an event’s space of potential. One of Lewin’s most frequently employed topological constructs is the so-called “Jordan curve”.400 For example, one wants to represent the “unattainability” of a goal (G+) in a topologically adequate way. This means that one has to be sure that person (P) and goal (G+) do not belong to a connected region. The Jordan curve represents a barrier dividing the field into two unconnected regions. We can do this in two ways: either the goal (G+) lies in the inner region (J) and the person (P) in the outer region (O): \((G+ < J; P < O)\) (fig. 21); or the person lies in the inner region and the goal in the outer: \((G+ < O; P < J)\) (fig. 22). The “space of free movement” is defined as the sum of all the moves (actions) the person can take at the represented moment of time.401 With the aid of the Jordan curve relevant concepts, such as “path”, “region”, “barrier”, “closed”, “open”, “connected” and “separated”, are visually specified.

![Figure 21: Person outside and goal inside the Jordan curve, [Lewin, 1936a, 143.]](image1)

![Figure 22: Person inside and goal outside the Jordan curve, [Lewin, 1936a, 143.]](image2)

“We are describing a ‘tool,’ a set of concepts by means of which one can represent psychological reality” [Lewin, 1936a, 6]. The developed concepts need to be “ ‘operational’ in so far as a univocal relation between concepts and observable data is consistently maintained” (ebd.). In Chapter 7 we have discussed the “dynamic” characteristics of the nucleus of Lewin’s theoretical approach, i.e. the concept

400In mathematical topology, a Jordan curve is a non-self-intersecting continuous loop in the plane. The Jordan curve is named after the mathematician Camille Jordan, who first found the proved that every Jordan curve divides the plane into an interior region bounded by the curve and an exterior region containing all of the nearby and far away exterior points, so that any continuous path connecting a point of one region to a point of the other intersects with that loop somewhere.

401Cf. [Lewin, 1936a, 141ff.].
of the psychological “field”. Around 1931 the concept of the “field” was complimented with a topological counterpart, i.e. the “life space”, as well as the “dynamic” conceptual system was was organically extended through topological concepts.

“The basis for the coordination between mathematical and psychodynamic concepts so far as environmental questions are concerned is the coordination of topological path and psychodynamic locomotion. The topological description determines which points the different paths lead to and which regions these paths cross […]. To determine not only which locomotions (paths) are possible but which of the possible locomotions will occur at a given moment one has to use the concept of force […]. Dynamically the force is correlated with psychobiological locomotions in a one-to-one correspondence” [Lewin, 1931d, 598ff.].

In general terms, while structural topological concepts are of use to determine the realm of possible psychic activities the dynamic concepts specify the actually occurring mental locomotion. The integration of the topological and the psychodynamic concepts is needed for a productive analytic application. An example shows how topology may be employed for the analysis of an inner conflict psychologically defined as “the opposition of approximately equally strong field forces” [Lewin, 1931d, 605]. Assuming a child is trapped between a very unpleasant task, which it is requested to complete, and a punishment, which impends in case of non completion. While topology structures the child's options, psychodynamic concepts indicate all changes in the child's life space. The child finds itself in a “position” subjected to two “opposed forces with negative valences” with the consequence that a “tension” is build up and spreads over the “whole of the child's life space”. This makes the child move in order to leave the field of tension, i.e. possibly avoid both unpleasant options. The child moves through the topological space towards the “outer barrier” (Außenbarriere) of the field and tries to leave it (Aus-dem-Felde-gehen). In case the attempt to resolve the tension is successful the child will “break through” the outer barrier of its field. In case it is not successful, the child will be pushed back and remains in the tension field.

In Principles Lewin argues that there is a psychological reality constituted of “quasi-physical”, “quasi-social” and “quasi-conceptual” facts relevant for the constitution of a life space. Nevertheless, the selection of information that needs to be included into a topological abstraction may be summarized in Lewin’s short slogan: “What is real is what has effect” (wirklich ist, was wirkt). This means that “one may use effectiveness as the criterion for existence, i.e. consider the whole situation as the total of what has effects for the individual under consideration” [Lewin, 1936a, 19]. Lewin notes, “facts are to be included in the representation of the psychological life space only to the extent and in the manner in which they affect the individual in his momentary state” (ebd. 24). The real challenge is then to understand the meaning of the psychological situation before producing the topological abstraction, or in the words of the historian of science Peter Damerow: “To understand abstraction essentially means understanding what has to be abstracted rather than merely knowing how it has to take place.” [Damerow, 1996, 371]. Lewin's analytical technique - abstraction via “gradual approximation” - proceeds from the general to the particular. The trained psychologist begins by defining the fundamental structure of the life space as a whole. Hereby the challenge is to grasp the structure specifically and accurately. At the same time - Lewin warns - one should be careful of “wrong simplifications”, given that a correct simplification represents a schematization but one in which the whole situation is taken into account (cf. ebd. 16f.).

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402Cf. [Lewin, 1931c, 130-132].
403“Facts are to be included in the representation of the psychological life space only to the extent and in the manner in which they affect the individual in his momentary state. We express this by calling them quasi-physical facts” (ebd. 24).
404“In representing the psychological situation we have to include social, like physical facts, only in so far and only in the manner in which they influence the person under consideration. On this account, we shall speak of quasi-social rather than of social facts” (ebd. 26).
405“In addition to the quasi-physical and the quasi-social facts one has to consider quasi-conceptual facts as important for the psychological life space […]. A person may be engaged in solving an extensive conceptual, for instance a mathematical problem. He has to follow definite steps in his thinking to determine the suitable mathematical relationships and to find his way in a system of mathematical concepts. The structure of the psychological environment in which the individual moves about, in which he faces difficulties, and in which he carries out certain tasks is then essentially” (ebd. 26).
406Cf. [Lewin, 1936a, 17].
Lewin argues strongly in favor of the systematic instead of historical reconstruction of psychological causality.

“We shall here strongly defend the thesis that neither past nor future psychological facts but only the present situation can influence present events. This thesis, is a direct consequence of the principle that only what exists concretely can have effects. Since neither the past nor the future exists at the present moment it cannot have effects at the present. In representing the life space therefore we take into account only what is contemporary. [...] To be precise one will have to treat the single time sections not as moments without extension but as differential time sections in order to be able to determine direction and velocity of changes at given points” [Lewin, 1936a, 34f.].

This approach implies that parts of future events cannot be part of one and the same representation. Additional levels of a topological drawings may represent different aspects of time (one's future, past, and present) or levels of reality, so that it is possible to represent the person's view of the future, his position in fantasy, and so forth.407

Another challenge is given by the construction of the representation, which has to univocally link psychological relations and processes to mathematical operations.408 The following example given by Lewin might illustrate this. A mother "looks her child in the eye when she is trying to induce him to carry out a certain action or to emphasize a command" (ebd. 127). The event has to be described topologically from the perspective of the distribution of potential experiences. There are several different ways of interpret and then represent this look between mother (A) and child (B) topologically: (a) Represented as “arm” of A; (b) represented as separated region of A; (c) represented as power field of A (figure 23).

Figure 23: A-person looking at the B-person. A' corresponds to "be looking at" [Lewin, 1936a, 128].

The graphic representation of a psychological setting requires grasping the interrelation of all significant elements, which are then transposed into another scale, i.e. a sheet of paper. The “holistic transposition”, a technique that had been employed in Gestalt experiments to reconstruct real life phenomena in an experimental chamber, is foundational to this procedure. Later on, in Lewin's socio-psychological work, a similar holistic transposition will be applied to ensure that social situations can be studied in a laboratory. An example shall illustrate how Lewin meant to apply his field theory with its topological extensions.

“A woman stands at the loom in a big noisy factory, next to the last in the eighth row. A thread is broken. She is about to stop the machine to see what has happened. It is shortly before the lunch hour. She has accomplished very little during the morning. She is annoyed” (ebd. 22).

Further stressing the relationship between physical qualities of the factory (the space, the noise) and the experiences of the worker (frustration, annoyance), Lewin points out that if the woman stops the loom,

407See [Lewin, 1942a].
408See [Lewin, 1936a, 52ff.].
this will have consequences for the operation of the machines in the other rows. Would this act amount to crossing the boundary of the region? Or can it be accomplished within the existing connections and relations that define this psychological event? To answer these questions we need to clarify the relevant “quasi-social facts”:

“She has been married for three years. For a year and a half, her husband has been unemployed. The two-year old child has been seriously ill, but today seems somewhat better. She and her husband have been quarreling more and more often recently. They had a quarrel this morning. Her husband’s parents have suggested that she send the child to them in the country. The woman is undecided what to do about it” (ebd. 22f.).

The relevance of these “quasi-social facts” depends on the extent to which they can be plotted as part of the manifold of possible and non-possible events (“what is real is what has effect”). For instance, if stopping the loom is a boundary-crossing event, it may amount into a further boundary-crossing event that includes the woman’s relations to her family (it is not possible for the child to remain at home and for the woman to be unemployed). In topological terms this can be expressed by adding a further degree, visualized as a further dimension of the life space. The additional dimensions in Lewin’s diagrams represent degrees of irreality (R = reality layer; I = irreality layer; P = person; see figure 24).

“Action itself can be of very different degrees of reality. Processes which concern strong needs of the person and in which he had to surmount strong physical or social barriers have usually a high degree of reality. Among the quasi-conceptual processes one can for instance distinguish carefully planned consideration of the ways and means which lead to a certain goal from free play of phantasy, which is more irreal” (ebd. 196).

![Figure 24: Different degrees of reality in a life space, [Lewin, 1936a, 200].](image)

In Brown’s words, Lewin describes an ongoing procedure of topological abstraction. There are $n$-dimensions that might be psychologically relevant to a given event. At the level of reality the barriers in the life space are strong and the person (P) is more clearly separated from the environment. However, the further we proceed, the further we depart from concrete reality towards the relative abstraction of the life space. We must think of each plane as adding a further coordinate to the plotting of point (P), where the latter denotes a psychological event.\footnote{409Cf. [Brown, 2012, 155].}
10.3 Extensions of topological psychology: Distance and direction

In his *Principles* (1936) Lewin points not only to the possibilities but also to the limits of topology. While topological concepts constitute the fundament for the representation of the person and its environment, in Lewin’s opinion, they do not entirely suffice for the representation and analytical treatment of dynamic problems in psychology. In particular the use of such concepts of “distance” and “direction” outreaches topological configurations; these concepts include metrical characteristics.\(^{410}\)

Referring to contemporary mathematical research of the pioneers of mathematical topology, such as Felix Hausdorff (1868–1942) and Paweł Urysohn (1898–1924) Lewin argues that “one can sometimes determine direction and distances within the life space, that is, one can determine quasi-metrical characteristics which go beyond purely topological ones” [Lewin, 1936a, 60].\(^{411}\) In fact, it is not so much that Lewin wants to go beyond topology, but rather that he wants to complement it with selected metrical concepts.\(^{412}\)

Most of the time the psychologist deals with “directed actions” or, in dynamic terms, with directed psychological forces. This includes, for instance, conscious voluntary conduct or the so-called “instinctive conduct”. All directed actions strive toward an emotional “equilibrium” by contrast with affective conduct, or “undirected actions” in general.\(^{413}\) Action tendencies and changes in the topological space are indicated by means of “vectors”.\(^{414}\) To analyze change in the topological space thus dynamic concepts may be implied.\(^{415}\)

Lewin argues that “despite all obvious objections to any exact measurement in the psychological life space it seems to be possible sometimes to make definite statements about distance or at least changes of distance” [Lewin, 1936a, 56]. In mathematics, metrical space is characterized by the fact that, given two points \(P, Q\), one can define a distant function \(D(P, Q) \geq 0\). Yet, Lewin’s psychological metrics is not equivalent to the physical one:

“It is clear that a double distance in physical space generally does not correspond to a double distance in psychological space. There is no doubt that very different quasi-physical distances often correspond to equal physical distances [...]. It might seem to be impossible to measure in the exact meaning of the word quasi-social or quasi-conceptual distances. The same difficulties appear with the problem of magnitude of layers or regions of the person, or the distance between them” [Lewin, 1936a, 55].

Since metrical concepts are often applied to indicate change in the topological space these are linked with such dynamic parameters as “valence” and “force”. Lewin’s project of a topological space for psychology (including metrical and other peripheral characteristics) is widely succeeded by 1936. In fact, many of Lewin’s dynamic concepts, such as “rigidity” or “fluidity” are not clear-cut topological categories. Perhaps to the disadvantage of the desired mathematics-like accuracy these were at times included to free the representation tool of any concept-related inhibitions. It seems that in Lewin’s work practice the end to ensure the fully relevant representation of the observed (and covered) psychological reality justifies the possibly not completely stringent implementation technique.\(^{416}\) The conceptual

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\(^{410}\) Cf. [Lewin, 1934, 250f.] and [Lewin, 1936a, 60].

\(^{411}\) See also [Hausdorff, 1914, 211], [Urysohn, 1925, 309-15].

\(^{412}\) In fact, Lewin was not alone to employ topological and metrical space; he shared this for instance with Rudolf Carnap and the logical positivists. Carnap started his investigations on space by distinguishing between a topological intuitive space and a metrical physical space. The former plays the role of a Kantian pure form of intuition, which constitutes the arena for mathematical physics, which uses the latter. See [Friedman and Creath, 2007].

\(^{413}\) This is described in his early model of human conduct (Chapters 6 and 7). (see Dembo’s study discussed in Chapter 8).

\(^{414}\) Cf. [Lewin, 1934, 262], [Lewin, 1936a, 55f.].

\(^{415}\) From the perspective of topological psychology a direction is not equivalent to a “path” but – Lewin emphasizes – it determines the first step of the path. For example, if the direction is from \(a\) to \(b\), the first step of a path will equally take place from \(a\) towards \(b\). The path is thus a distinctive feature if one needs to reconstruct the direction of a psychic locomotion. This relationship between a “direction” and a “path” is valid in a particular type of space, which Lewin baptizes “hodological space” (which is not identical either with the Euclidian or with the Riemannian space). Cf. [Lewin, 1934, 262ff.].

\(^{416}\) A similar assessment of Lewin’s conceptual inaccuracy in presented by Hoffmann: “Man kann diese augenfällige Inkonse-
mélange is another reason why the surtitles given to Lewin’s theoretical system—i.e. “topological theory”, “field theory” or “vector psychology”—are at least minimally inaccurate.

10.4 Functions of the topological representations

In Chapter 9, we delineated the evolvement of conceptual knowledge over the course of Lewin’s experimental program. As a part of it, over the years of experimental work topological concepts and representations, too, develop into more and more complex and fine-grained entities. It is obvious that in Lewin’s theoretical system a topological representation is more than an illustration. Brown calls Lewin’s topological theory “the single most sustained attempt to demonstrate the power of topology for psychological thinking” [Brown, 2012, 149f.]. In fact, in Lewin’s topology we deal with a set of descriptive tools with applied functions. These functions shall get particular attention.

1. **Illustrative pedagogic function**: Topological representations originally assume a pedagogic function. They emerged during Lewin’s lectures and seminars and were a means to illustrate his theoretical ideas and empirical findings by visualizing the complex relationships in small simultaneous sequences of the field dynamics. Yet, the pedagogic function soon became subordinate to others: “Our aim in representing a psychological situation is not to give a visual picture of it. Illustrations may serve as a pleasant pedagogical device, but this is not of essential importance for our real task” [Lewin, 1936a, 76].

2. **Structuring and analytical function**: As stated in Lewin’s letter to Köhler (above) a topological representation is more than a mere illustration, a simplified reproduction of a psychological constellation. In *Principles* Lewin argues that topology is the foundation of the analysis of all psychological processes. Its prior function is to grasp the psychological situation in its state of affairs with respect to the interrelation of all facts within the field: “The determination of topological relationships is the fundamental task in all psychological problems” (Lewin 1936: 87). In other words, it helped to specify connections between psychic. The diagrams are supposed to make the analysis more systematic and help with the research design, in particular to account for changes and reversals of states of mind. As remarked by Hoffmann, the medium image can make use of the advantage of simultaneity over the spoken language, for instance by representing forces simultaneously active in a situation.\(^{417}\) A central function of topology is thus reflecting or in other words modeling very exactly the psychological situation at hand. The analytic function of topology is a precondition to the application of any qualitative or quantitative method. Given this structuring and analytical potential displayed by Lewin’s topological tool it was applied to data collected through empirical work, for instance in all works of the BEP from the maturity stage, as well as to some extent by Lewin’s networks (e.g. the Topology Group in the US). Topology increasingly evolved into a specific heuristic tool for structuring of psychological knowledge in accordance with the mathematical logic.\(^{418}\)

3. **Epistemic functions (circulation and generation of knowledge)**: Topological drawings offer an additional language that may be shared by a group or community in order to reflect about psychological processes (much in the style of Fleck’s “thought collectives”).\(^{419}\) They represent a way in which a researcher reconstructs his observed reality. Shaped through the filter of an individual perception topological representations illustrate the scholar’s style of reasoning. As Brawn remarks, the particular way in which the “mathematical imaginary” directly structures ontological assumptions within...
psychology dominates the way how the very object given to the psychological study is conceived, and thus in the more general sense, how knowledge is generated.\footnote{Cf. [Brown, 2012, 139].} Beyond this, the abstraction and formalization of the gained knowledge occurs by means of topological representations (after knowledge is accumulated throughout empirical work). Empirical observations are grasped, formalized, experimentally tested, then re-structured or re-fined by means of the topological tool. Lewin tested his topological representations in new experiments and again formalized their results by means of topology. Thus, in a sense, Lewin's topological psychology represents a mechanism of circulation and evolvement of shared knowledge \textit{(Erkenntniskreislauf)}. In his philosophy Lewin points out that the process of scholarly work and refinement of the results is, de facto, endless. In this process topology seems to be seminal to the extension and transformation of knowledge. We may even conclude that Lewin’s “eggs” give us a key to a process leading to the accomplishment of scientific discoveries.

From a historical analysis of mathematical thinking Peter Damerow concludes that there are three essential functions of mathematical representations: these may be used as intellectual tools for the application of mathematical thinking, in order to train students, and to develop implications or to solve unsolved problems, thus generating new knowledge.\footnote{Cf. [Damerow, 1996, 379f.].} We have shown that Lewin’s topological representations in diverse ways fulfill all three of these functions.

In sum, Lewin’s psychological topology is a heuristic tool and a representation of empirical observations in the same time. It possesses applied functions (1 and 2), as well as a theoretical function (3). With this integration of topological concepts Lewin suggested for psychology a path towards mathematical accuracy that had barely existed in preceding psychological research. Topology was employed as a tool to map and analyze mutual relations of the individual and the environment, as well as changes in this relationship. The specification of functional interrelations of the three fundamental concepts “person”, “environment” and “behavior” indicated an early stage of the formalization of the psychological system. The formalization of the relationships between individual concepts was key to the actual implementation of Lewin’s goal, i.e. to establish a conceptual system apt to deal with the whole discipline instead of dealing with selected sub-domains, such as volition, associations or memory (see Chapter 5).

\section*{10.5 A tool for social research}

We have pointed out that at the outset of the BEP psychology of behavior dealt specifically with the investigation of the individual psyche. Its methodology was barely adjusted to deal with the underlying dynamics of behavior as far as of more than one person at a time. By 1936, the approach developed in Berlin pointed to a way to jointly study individual psychological situations and social conditions within the frame of one and the same research scheme. In this experimental developments went hand in hand with the theoretical ones.

Since the early 1930s, Kurt Lewin becomes increasingly interested in the treatment of social phenomena. At that time, he employs the concept of “quasi-social” as synonym to the (later systemically introduced) “socio-psychological”. Hereby he distinguishes between the “objective” social facts (e.g. the belonging to a group or a party) that are constituted in the physical word and the perceived “quasi-social” ones. It is the “quasi-social” facts that are relevant, i.e. “have effect” in the psychological life space.

“Social facts such as friendship with another child, dependence upon an adult, etc., must also be regarded, from the dynamic point of view, as no less real than physical facts. Of course, in the description of the child’s psychological environment one may not take as a basis the immediately ‘objective’ social forces and relations as the sociologist or jurist, for example, would list them. One must, rather, describe the social facts as they affect the particular individual concerned” \cite{Lewin, 1931d, 595}.
For instance, the position of a person in a quasi-social space is defined through the social group it belongs to.\textsuperscript{422}

In the early 1930s, the concept of “life space” takes an increasingly important role in Lewin’s work since it allows for the reality of groups, i.e. group phenomena and social conduct.\textsuperscript{423} This concept implies that the state of a person (P) and that of its environment (E) are no independent dimensions. A hungry individual perceives its surrounding differently from a well-fed one. A child perceives the world not in the same way as does an adult. The psychological environment is, thus, highly dependent on the perception, attitude and point of view of a person in question, its needs and its state of development. In other words: \( E = f(P) \). But also the state of a person depends on, for instance, whether it experiences encouragement or criticism from its surrounding. Therefore also \( P = f(E) \) is true. Lewin derives his “life space” from the mutual interdependence of the person and the environment (which can be another person, a group, an organization or else); he grasps the manifold links between the person and the environment by means of his psychological “field”. This relationship he formalizes in his famous equation: \( B = f(PE) \). Importantly, although Lewin’s life space was conceived as a concept for individual psychological processes it has as well the ability to include socio-psychological facts, such as for instance the status of an individual in a group, the influence of a conduct of a person upon that of another one, the impact of a particular social atmosphere. In a life space both individuals and groups may be equally represented as structured topological entities. These socio-psychologically relevant situations can be analyzed with the field construct and its topological extension. Thus, it is the elasticity and abstractness of the concept of the “life space” that allowed it to be useful for the analysis of group conduct.

Another main feature of Lewin’s social psychology widely established in the 1940s the belief in methodology enabling empirical work at the intersection of social disciplines, such as sociology, anthropology, political science and economics. Lewin stresses this thought as early as as early as in his \textit{Principles}: topological concepts (e.g. the quasi-social facts of psychology, may apply to psychology as well as to sociology.

“The social-psychological facts (the quasi-social facts of psychology) have great significance for sociology itself and the representations of psychological, especially of social-psychological facts, might be applied fruitfully in sociology” [Lewin, 1936a, 26].

Lewin thus stresses the need to form a shared research doctrine building on the methodology of topological representation and draws the path towards integrative social psychology.

A variety of student works of the 1930s shared the teacher’s interest in social phenomena. Amongst others, Mahler (1933) studied how the involvement of a task in a social context, such as a competition, may influence the individual’s performance. She found that the social link reinforces the degree of seriousness with which the situation is perceived (in the analytic language used by Lewin’s group: “psychological reality”).\textsuperscript{424} Dembo’s work was interested in the negotiation of social power relations in conflict situations.\textsuperscript{425} Wiehe (unpublished) and Fajans (1933) investigated the behavior of children in social situations. Also the metamorphosis of “thing fields” (\textit{sachliche Felder}) into “social fields” of forces in children’s conduct was studied by Fajans.\textsuperscript{426}

In Lewin’s later work socio-psychological research was directed at patterns of interaction characterizing groups rather than effects of social stimuli on individuals. However, the analytical framework of his social

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{422}“Der Ort einer Person im quasisozialen Raume z. B. ist durch die Gruppe bestimmt, der sie angehört” [Lewin, 1934, 289].
\item \textsuperscript{423}Around 1931, in a talk to a group of Montessori educators Lewin extended the concept of the “life space” by merging it with the “social field of forces”, which resulted in a “social space”. The address given in February 1931 was first printed in English in 1935 under the name \textit{Education and Reality}, a chapter of \textit{A Dynamic Theory of Personality}; cf. [Lewin, 1935a, chap. V].
\item \textsuperscript{424}Cf. [Mahler, 1933].
\item \textsuperscript{425}Cf. [Dembo, 1931].
\item \textsuperscript{426}Cf. [Fajans, 1933b, Fajans, 1933a]; in Lewin’s words Wiehe’s unpublished dissertation attributes a “fundamental significance for a broad field of social psychology” [Lewin, 1935a, 241]. Cf. Wiehe (unpubl.); Die Grenzen des Ich / The Behavior of the Child in strange Fields in Appendix A.
\end{itemize}
\end{footnotesize}
psychology represented an extension of the analytical tool for empirical research we have reconstructed in this dissertation. Chapter 11 elaborates on this claim.

10.6 Lewin’s brand in critical discussion

“Lewin’s introduction of topological psychology was an exciting innovation as well as an object of ridicule” [Back, 1992, 51]. notices Back. The diagrams exhibiting topological life spaces were the most distinctive products in the writings of his school. Topological representations, tenderly called “little eggs" by Kurt Lewin’s surrounding, became a specific brand of his way to work and think, whose autonomy and originality are hard to question. The American psychologist Donald W. MacKinnon (1903–1987), who visited Berlin in 1930 to work with Lewin, recalls:

You couldn’t discuss any psychological problem with him without his immediately seeing it in some fresh perspective and putting it in a new light, which always included putting it dawn on paper, drawing circles, Jordan curves, vectors, and whatnots representing the life space of the individual. Putting it dawn on paper this way, topologically, was now one of Lewin’s hallmarks,“ Donald W. MacKinnon quoted in [Marrow, 1969, 41].

In Lewin’s circle his topological drawings soon became a shared brand. Lewin’s friend and colleague, the psychologist Fritz Heider remembers:

“Ich erinnere mich noch, wie er mir das erstemal über seine Anwendung der Topologie erzählte: Es war an einem kalten Winterabend, an dem es ein wenig geschneit hatte; während wir auf die Straßenbahn warteten, zeichnete er mit der Spitze eines Schirms einen kleinen Kreis, der von einem großen Oval umgeben war. Er erklärte, das [sic] diese Figuren die Person in ihrem Lebensraum darstellten. Dann zeichnete er ein kleines Pluszeichen in das Oval – das war das Ziel der Person, und eine Linie, die die Person von ihrem Ziel trennte und die er Barriere nannte. Auf diese Weise konnte er mithilfe topologischer Mathematik viele Situationen darstellen” [Heider, 1984, 75].

Lewin’s students, who encountered the topological system as part of their lectures in the first place, were intrigued and confused at the same time.

“He was making up theories as he talked, drawing little eggs on the blackboard and calling them life spaces, and then there were arrows and plus and minus signs inside the eggs the students complained that he was inconsistent, because he kept changing his mind” [Wheeler, 2008, 1639].

Despite its originality the topological theory had to face severe criticism. After the publication of Lewin’s Principles many discussions arose particularly at American universities, e.g. Iowa, Duke, Oregon, carried out by mathematicians as well as theorists of science. One accusation hit on the a-historicism of Lewin’s approach, i.e. the limited observation time frame and the restriction to concretely experienced relationships. The topological style of analysis needed to limit the past and the future to their impact factor on the “here and now”, quite in accordance with the conception of Gestalt experience.

Other academicians were reluctant towards the way Lewin employed mathematics as grounds for his topological psychology. They argued that the reasoning behind Lewin’s topological representations was naive. No mathematical technique was necessary to evaluate psychic dynamics; they also stated that he employed mathematical techniques to represent insights that had already been validated through empirical means or verbal analysis.

427 Man konnte mit ihm kein psychologisches Problem erörtern, ohne dass man es nicht sofort in irgendeiner neuen Perspektive sah und dass er alles in einem neuen Licht zeigte, was immer zugleich bedeutete, dass es auf einem Stück Papier festgehalten wurde, dass dort Kreise, Jordankurven, Vektoren und was auch immer gezeichnet wurden, die den Lebensraum des Individuums darstellten. Es auf diese topologische Weise auf ein Papier zu bringen, wurde nun zu einem besonderen Kennzeichen Lewins.”

428 Cf. [Lück, 2001, 81]; see amongst others Lewin’s Topological and Vector Psychology: A Digest and a Critique by Robert Leeper, [Leeper, 1943].

429 See for example [Garrett, 1939]. Lewin’s later American experiments tended to adopt a more generous time frame; e.g. the experiment on group climates extended over about three months.

430 See [Back, 1992, 53].
While most opponents of Lewin’s topology at least granted it a certain heuristic applicability, the most radical criticism went beyond this. For instance, Jacob Robert Kantor (1888–1984), pioneer of a sub-branch of the American behaviorism (“interbehaviorism”) advocating a naturalistic system in psychology, accused Lewin of having set up “mere formal and analogical symbolic structures with little or no actual descriptive or interpretative value for psychological events” [Kantor, 1984, 375]. Similarly, the American psychologist and historian Henri Zukier claims that “Lewin’s field-theoretical approach remained largely a set of formal abstractions of considerable suggestive value” [Zukier, 1989, xiv]. Finally, the Austrian psychologist Peter Hofstätter (1913–1994) states that Lewin’s contradictory topological psychology did not share more than a name with mathematics.431

In my opinion, the first type of criticism seems (at least partly) valid while the second one is based on a misunderstanding. It appears erroneous to interpret Lewin’s topological constructs in terms of “mere formal and analogical symbolic structures” or as “a set of formal abstractions” given that Lewin himself explicitly warned about such a deficient reduction. The reduction of topological representations to mere symbols - so Lewin has it - may easily result in a falsification of psychic events:

“It is not our aim to find arbitrary symbols for the representation of situations. The mathematical concepts should ‘picture’ the dynamic properties of the situation only in the sense in which concepts represent facts. [...] Mathematical concepts are distinguished from other means of representation, such as the symbols of ordinary speech, in that they belong to a system of concepts which are related to each other in a univocal way. The scope and unambiguousness of these relationships are what makes the coordination of mathematical systems to real facts so fruitful for investigation and this is no less true for psychology than for other sciences” [Lewin, 1936a, 78].

The heuristic function of Lewin’s topology was a primary condition for its construction.

Concerning the second dissent, Lewin’s standing up to the own high standard of mathematical precision and accuracy may be viewed critically indeed. Lewin’s aims to define topological categories in an abstract but operational way, i.e. as unequivocal and whenever possible reversible abstractions.432 Yet, at the same time, he seems to admit that an absolute reversibility is not possible: “It is important to keep in mind that the dynamical concept and its mathematical representation are not identical. The same mathematical concept can be used for the representation of different facts. For instance, a vector can represent not only forces but also movements” [Lewin, 1936a, 64]. An ideally unambiguous coordination of mathematical systems to real facts, which Lewin emphasizes, is particularly hard to implement. The topological drawings include plenty of ambiguities, as was illustrated in figure 23; for instance they attribute different meaning to different types of borders graphically represented as thin and thick borderlines. Thus, Lewin’s representations seem incapable to overcome a certain blurriness. At the end, rather than being a tool of particular precision topology represents the observer’s individual perception of psychological relations between phenomena.

In my opinion the strength of Kurt Lewin’s topology is that it left a lot of room for the extension of the psychological theory. Its language, without grammar and syntax, was flexible enough to take into consideration various subtleties of the represented psychological situation. Nevertheless, it is easy to conceive of different kinds of tools that help to accomplish the heuristic process; simulations, verbal analysis or empirical tests may replace topology. As the further development of psychology clearly demonstrates Lewin’s topological system was not the only analytical tool to deal with (socio-)psychological situations; in the long run it was probably not even the handiest one.

431”Mit der mathematischen Disziplin der Topologie hat diese ‘topologische Psychologie’ freilich nicht mehr als den Namen gemeinsam. Sie ist zudem in sich selbst widerspruchsvoll, da sie in ihrem nicht-metrischen Raum trotzdem die Skalarbeträge von Vektoren (die Intensität von Kräften) definiert” [Hofstätter, 1956, 45].
432In the US Lewin undertook further attempts to elaborate his quasi-mathematical representations of the field. While in Principles, Lewin focused on re-thinking the mathematical-ontological grounds of psychology, in his later work he would be more concerned with the concrete calculation of the value of psychological vectors. See for instance, [Lewin, 1938], as well as [Lewin, 1942a, 43-59], [Lewin, 1942b, 60–86], [Lewin, 1951c, 170-187] (assembled in Field Theorie in Social Science, 1951), and [Lewin, 1944a, 1-29].
Yet, topology was certainly innovative and useful in the historical development stage of the 1930s, when it was developed and applied by the circle of psychologists that surrounded Lewin in Germany, as well as in the ensuing decades, at the hands of a wider group of social scientists in North America (see Chapter 11). As the historian Kurt Back puts it: “At a minimum topology was a very productive metaphor. Terms that were useful in every day language, such as ‘boundary,’ ‘direction,’ ‘steps,’ ‘barrier,’ or ‘force’ became useful in psychological research and theoretical discussion” [Back, 1992, 55].
Part III Conclusion: Berlin Experimental Program

A central question of the present dissertation was, how Lewin’s and his colleagues’ empirical work brought about the development of a new system of knowledge. In the present part we tackled this issue by closely looking at the example of Lewin’s experimental program in the period between mid-1920s and 1936. Hereby, we took into account various facets of development, such as the social dynamics, style of experimentation, applied functions of Lewin’s theory and the impact of his philosophical background. Results are assembled below.

Function of the network as a research function

While a distanced and hierarchical relationship was common between teacher and students at German universities of the 1920s the Berlin Psychological Institute under Köhler’s leadership represented a rare exception. The cosmopolitan micro-culture of the Institute was reflected in the liberal political attitude incorporated by staff, in particular Wertheimer, Köhler and Lewin (cf. Chapter 8). In numerous reports Lewin’s collaboration with his students was characterized as specifically informal and interactive. While Lewin singled out having supervised the most doctoral students of the institute many of them belonged to marginal groups (e.g. females, foreigners). In the context of the democratic attitude prevailing at the Institute, doctoral students were chosen on the basis of most promising research capacities (rather than their social status). The joint work and communication process translated the students’ energy into a collective research program and proved to be fruitful within a short time.

A variety of styles and approaches was characteristic of the experimental procedures in Berlin, Frankfurt and Giessen. However, what they all had in common was a person-oriented rather than data-centered approach to the study of mental life. Further shared features were small experimental samples and the request for a 100% consistency of the outcome, which naturally gave the qualitative experiments a predominance over the quantitative ones. Three kinds of Gestalt experiments were distinguished. The predominant type consists in demonstrations of Wertheimer’s organizational principles, i.e. “good phenomena”. Secondly, as scientific verifications of invariant relationships within and across sense modalities. Another group of experiments was psycho-physiological in nature; these intended to show that the perception of Gestalten could posses neurological correlates (Chapter 8). In this framework, Lewin delivered a rather far-reaching extension to the Gestalt style of experimentation. It was the fair bandwidth of experimental styles subsumed and integrated under the auspices of Gestalt that allowed for the acceptance of Lewin’s independent and cross-disciplinary research.

Lewin’s approach to psychological research may be described as the study of concrete cases from the perspective of a broad theoretical framework that was to be extended and revised throughout these studies. Hereby the investigations of Lewin’s students had a twofold relationship with his own research. It is the student circle that applied the analytical system in experimental practice, on the one side. On the other side, Lewin also made use of the students’ experimental findings to gain empirical proof for his own (theoretical) work.

Student contributions, based on experimental studies, extended Lewin’s system one-by-one, just like bricks. All of them at least to some extent operated with Lewin’s dynamic and topological concepts. Some delivered rather accurate and detailed characteristics of one or a few particular conceptual structures. Nearly all of the BEP student works successfully positioned their experimental results in the broader theoretical context, without, however, creating independent theories. Yet, in this respect one dissertation represents an exception. Dembo’s work does not only include an up to date theoretical survey it also introduces a whole variety of new concepts (e.g. the irreality layer). Hers is the one study that delivers the first application of topological concepts and autonomously develops topological ideas.433

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433 By 1931, Lewin’s publications exploring the topological theory are rather limited. Also, in 1935, he mentions that Dembo’s work...
The constitution of the group played an important role. In Chapter 9 we demonstrated that the structure and dynamics of Lewin’s student network was densely interconnected and even determining of the process of research. The group dynamics mounted in an intellectual network with a research agenda in which single contributions were (implicitly and explicitly) linked to each other. The gradual development of Lewin’s and his students’ theory and the experimental agenda emerged from a continuous collaboration.

Development of Lewin’s conceptual system

As demonstrated in Chapter 9, the central characteristics of the development of Lewin’s conceptual system as a whole are those of continuity and diversification. We could show that in the course of the program its substance changed in terms of the quantity of conceptual and experimental output, the complexity of research themes and elaborated concept types (involved knowledge resources) and the type of concepts. Lewin’s theoretical system began with a rather simple model of processes underlying human conduct (constitutive stage). While the basic concepts remained constant, the system was increasingly diversified into more and more substructures (expansion and maturity stage). In the course of the program both a quantitative and a qualitative diversification of concepts took place. This diversification entails the perceptible increase of complexity of the individual concepts and of Lewin’s theoretical system as a whole (as shown in the diagram 14 on page 116). For instance, since 1931 (maturity stage), a whole new group of topological or structural concepts was step by step introduced into the BEP. This new system, termed as “topological theory”, was inspired by mathematics and comprised linguistic and geometric conceptual counterparts at the same time. We have shown that since its emergence the topological system of concepts was organically interlinked with the “dynamic” system of concepts constituted earlier. For instance, the concept of the “field” was complimented with a topological counterpart, i.e. the “life space”. A system of topological sub-concepts was quickly developed (see diagram 14).

Experimental style

At least in two seminal ways Lewin’s groups’ experiments surpassed the experimental procedures conducted under the guidance of Wertheimer, Koffka and Köhler. These amount to the interactive and analytical specifics of the experiments (to be summarized below).

The interactive procedure

Lewin and his disciples elaborated and put to work interaction as part of the experimental procedure. The passive Gestalt observer was substituted by an active “participant” of the experiment. In the created “quasi-social” settings Lewin’s disciples were experimenting with types of hierarchies, at times creating a comradely atmosphere, at times bossing the proband around or provoking this to act out. The staging of several experiments truly had a theatrical touch while the actual experimental purpose was mostly hidden from the proband-participant. An open research design, in which the experimenter was instructed to react upon the subject’s conduct was preprogrammed. The specific trait of this kind of experiments was that the “humanization” of the experimental subject, built the most distinctive contrast with the elsewhere flourishing behaviorism. By styling his experiments as social situations Lewin rendered the proband the freedom to co-shape the development of the experiment.

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published in 1931 practically created the first evidence of the person-environment interaction [Lewin, 1935a, 241]. As identified, Dembo’s study was central to the BEP, as well.
Analytical functions of the multi-layered conceptual system

A central particularity of Lewin’s experimental approach is that this laid strong emphasis on the analytical procedure. This analytical procedure had to follow a complex set of rules. To this purpose, Lewin and his students elaborated a conceptual system, later known as “field theory”, and used this as a tool for dealing with experimental observations. Hereby the analytical system was designed in the particularly elastic way to grasp and reflect all mechanism behind the action absorbed on the phenomenological level. The central particularity of Lewin’s experimental style is thus its close link with the applied system of concepts. We shall briefly summarize, how Lewin’s topological field theory was constituted and functioned for the analysis of data in the empirical work of the BEP (as well as in later experimental research by Lewin’s surrounding).

In Part II of the present dissertation we elaborated Lewin’s early model of psychic activity underlying human conduct, and pointed to the transformation of this model into the field theory, which is a multi-layered system of concepts. In the present part we elaborated on this observation. Besides the psychological concepts shared with other contemporary psychological theories, Lewin’s field theory integrated a set of natural-scientific analogies as well as a range of spatial concepts. The latter were adopted from mathematics, and eventually allowed for the application of Lewin’s system to social reality. The materiality of spatial constructs is another resource (borrowed from biology) ensuring that psychic processes were grasped exactly. Lewin distinguished between different material properties of space, which he attributed to different “levels of reality”. Different types of processes are possible in different material environments. Accordingly, “softness” and “robustness” of spatial structures—conceptual properties adopted from biology, were employed to build up a particular milieu, in which psychic events take place following a set of implied rules. The topological psychology (the system of drawings), broadly known under the denomination “field theory” (the theoretical system in general), contained a set of applied functions, such as the pedagogic function, the structuring for analytical function and the epistemic function (aiming at the generation and circulation of knowledge). A variety of topological drawings was elaborated in the maturity stage of the research program and employed to account for and reflect on the complex relationships in simultaneous action sequences. In other words, Lewin’s multi-layered conceptual system enabled psychology to do the splits between such disciplines as mathematics and the social sciences, whose inner logic apparently could not be more diverse. The interdisciplinary thought patterns were unified in one conceptual universe created to analyze the perception, thinking and motivation mechanisms of an individual (and later a group) psychology.

Thus, the primary purpose of the conceptual framework consists in its practical application. The specific analytical purpose of topology was thus to grasp the psychological situation in its state of affairs with respect to the interrelation of all facts within the field. The diagrams were to make the analysis more systematic and help with the research design, in particular to account for changes and reversals of states of mind. The medium made use of the advantage of simultaneity over the spoken language, for instance by simultaneously representing forces that have impact on a situation. Importantly, it also offered a way to simultaneously analyze the psychic activity of more than one individual, which enabled socio-psychological research.

Broadly speaking, topology was employed to analyze mutual relations of the individual and the environment, as well as changes in this relationship. The application of this analytical system in the experimental program delivered new psychological knowledge in particular extending such psychological sub-domains as the resumption and accomplishment of interrupted activities, the relatedness of a performance to a person’s self-confidence and self-aspiration, the functioning of substitution on the mental level, the emergence of anger, the various modes of interaction between a person and its environment, the emergence of social conflicts, etc.

Besides the more immediate illustrative and analytical functions of the system Lewin’s field theory (or
topological psychology) represents a mechanism of circulation and evolvement of shared knowledge (Erkenntniskreislauf). The epistemic process is performed in steps. First, the accumulation of psychological knowledge is accomplished throughout experiments. Second, empirical observations are grasped and the concrete observations are abstracted, or in other words, they are translated into Lewin's dynamic concepts. Third, the extended system is tested in novel experiments. Thereafter, the knowledge system will be re-structured or re-fined again. Thus, topology seems to be seminal to the extension and transformation of knowledge and fulfills an epistemic function that can be shared by a community. It gives us a key to a process leading to the accomplishment of scientific discoveries.

**Between philosophy of science and the experimental implementation**

In the present part of the dissertation we related theory and practice of Lewin's Berlin work. Generally speaking, Kurt Lewin represents a rather bizarre example of a highly theory-equipped researcher who, at the same time, conducted experiments with an open research design and no strictly pre-sketched outcome. The given historical constellation is the key to understanding, though. In the shared but inconsistent framework of psychological knowledge of the Weimar time there was little agreement over psychological concepts and theories; canonic knowledge in psychology barely existed (Part I). Given the variety of epistemic gaps constitutive of the contemporary psychology experiments with the most open and integrative research design promised the most multi-faced insights. This is a conscious choice Lewin made for the BEP.

As established, Lewin's theory had never developed the shape of a full-fledged doctrine, even in his late American work. While the task of systematization and concretization was in many respects resumed by some of Lewin's later American students and collaborators (e.g. Meurton Deutsch, Ronald Lippitt and R. White). They observed that Lewin's concepts exhibited a particular openness or lack of precision. This distinctive vagueness reflects Lewin's understanding of the research work (Wissenschaftlichkeit), as such. He insisted that any scientific theory had to be open to revision, to which the scholar's unconditioned openness to self-revision is crucial. According to Lewin's philosophical maxim, empirical research and meticulous experimentation is key to the development of lawful concepts. This fundamental attitude, exhibited by Lewin, was shared with some of his contemporaries, amongst others the Neo-Kantian philosophers Ernst Cassirer and Paul Natorp in Marburg, as well as the Berlin neurologist Kurt Goldstein.

Furthermore, the open experimental design and the low level of pre-experimental knowledge are characteristic of Lewin’s particular manner to face the specific intellectual challenge of the young experimental psychology. Thus, in this respect his philosophical leitmotif determined the experimental design. Lewin distinguished and integrated more and more concepts and categories into his field theory while reviewing and progressively refining this throughout the duration of his entire career.

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434 See e.g. [Lippitt, 1947, Deutsch, 1954, White, 1992].

435 Cf. amongst others, [Deutsch, 1954, 189].

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The interpretation of science as a process not as a particular state of knowledge, as well as the rejection of commitments to specific movements or research schools, was reflected in Lewin’s experimental design. As pointed out in the chapter on philosophy of science, experiments were conducted to enable the researcher to verify the sustainability of his (pre-accepted) theoretical framework. Hereby, every concept has to prove valid in a 100% of existing cases (cf. Chapter 5).

“What is important in the experiment is not the realization of the largest possible number of equal cases, but rather a systematic variation—i.e., an analysis of the conditions by means of realization of the structured set of various different cases” [Lewin, 1992a, 391].

A challenging relationship: philosophy and experimental practice

While in his philosophy of science Lewin sketches out what the experimental procedure should ideally look like, we made the effort to link these general directives with the experimental practice of the BEP. Yet, this task turned out to be very challenging if not impossible. While a rather settled and coherent set of principles about how to conduct interactive procedures is included in various student papers, instructions on how to proceed in the analytical part of the experiment and how exactly new concepts should be formed barely exist. Such principles of experimental conduct have never been explicitly formulated by Lewin throughout his experimental program.

Concretely, in his philosophy Lewin indicates that to translate the experimental experience into new knowledge, i.e. new or more elaborate concepts, the researcher needs to identify exact “genetic types” of processes. Lewin’s and his students’ papers give hints on the implementation of this analytical challenge. For instance, the experimenter has to subdivide the whole construct into process units, whose wholeness needs to be preserved. He then needs to “decode” these units by getting to their “genetic” type, and by identifying their “functional” interrelation with each other; this way the researcher back-couples the real and the pure case.

In the outlined example, the categories Dembo built in the analytical part of her experiments (i.e. dreaming, thinking, acting etc.) correspond to Lewin’s notion of “genetic types” or “units”. Also the subsuming of these categories into broader and more abstract classes (i.e. “real” and “irreal” events) may be understood as the implementation of Lewin’s idea of framing “genetic event units” into concepts. These links are, however, barely included into Lewin’s writings and were added retrospectively. Lewin’s philosophical directives leave plenty of room for a practical interpretation. Eventually, the “decoding of genetic types” might predefine the experimental practice no more than in terms of an interpretation of motives and mechanisms that determine observed phenomena, with regards to all significant contextual influences involved. Thus, in practice Lewin’s philosophical directives might allow for a nearly endless variety of possible experimental procedures.

Another inconsistency seems to consist in the relation Lewin establishes between the concrete and the universal (“real case” versus “pure case”) in theory and in practice. In his philosophy of science, Lewin strongly emphasizes the superiority of the latter. As outlined amongst others by Dembo, “in the investigation of affective processes the main challenge is to derive the concrete form of the individual sequences [i.e. event types]. Despite of their plausibility and the absence of contradictions classificatory theories that simply grasp the average do not possess any substantial value as they do not reach to the concrete”.438 Accordingly, the real case would be a mere reflection of the yet grasped idea of the pure case (deduction). Thus, it seems that the central task of experiments is to examine the concrete case as closely as possible in order to grasp its essential characteristics.

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436First published in German in 1927, [Lewin, 1981d, 287].

437This is except for the mentioned paper On the Training of Subjects in Self-observation [Lewin, 1981c]. Yet, the position delineated in it has been revised in Lewin’s later experimental practice.

438”Die Hauptaufgabe bei der Untersuchung affektiver Verläufe ist es, bis zur Ableitung der konkreten Form der einzelnen Phasen vorzudringen. Theorien, die bloß klassifikatorisch vorgehen, Durchschnittliches ungefähr umreißen, sind trotz ihrer Plausibilität und widerspruchlosen Durchführbarkeit ohne wesentlichen Wert, weil sie nicht bis zum Konkreten reichen” [Dembo, 1931, 8].
In practice, however, Lewin’s research program seems to combine both deductive and inductive components, i.e. it draws from the theory (top down) and from experience (bottom up) at the same time. A particularly telling example from Lewin’s Berlin time should illustrate this. It is often narrated that a particularly remarkable experimental study of the BEP evolved directly from an observation made during Lewin’s and his students’ regular gatherings. One evening at a café meeting of the Quasselstrippe someone expressed amazement at the waiter’s apparent ability to remember what everyone had ordered without writing anything down. Some time after the group has paid, Lewin called the waiter and asked one more time what everybody in the group had ordered. The waiter replied indignantly that he no longer knew. This experience that made Lewin question the inconsistency of an everyday experience and the existing psychological theories of the functioning of the human memory became the stimulus for Bluma Zeigarnik’s investigation of memory functions. This phenomenon, now known as “Zeigarnik effect”, implies that the uncompleted task created a “tension systems”, which remained in the mind of the waiter until the tension was released through the completion of the task. Accordingly, in this case questions and hypothesis emerged from practical observations rather than the theoretical micro-construct, i.e. from concrete observations to general principles.

The three theoretical systems

By and large, there are three independent theoretical systems introduced in Lewin’s work, i.e. a philosophical, a methodological and a conceptual one. These are placed on three different scales and pursue different practical goals. We have the macro-dimension of Lewin’s philosophical directives, or to describe the phenomenon with Kant, “regulative ideals” (regulative Ideale), on the one hand. This is different from and must not be confounded with the methodological principles, which represent rather specific directives to experimental procedures, a meso-level. The conceptual structure Lewin seeks to elaborate represents a theoretical micro-level (which in turn consists of many interdisciplinary patterns). While the methodological guidelines aim at the interactive part of the experimental procedure and as such they are easily related to the experimental practice of the BEP, the “regulative ideals” focus on the related analytical work without, however, handing out a specific method to be used by the practitioner. However, both of these theoretical constructs focus on concept formation for psychology, i.e. another theoretical system specific to the subject matter. We may leave open whether this plurality of theories should be understood as a case of fruitful methodological prudence or a rather as theoretical sloppiness resulting in a critical lack of precision. At any rate, the duality of theory and practice reflects the ideal of a philosopher-practitioner outlined in Lewin’s philosophical papers (cf. Chapter 5). Drawing on this, our investigation clarified that at least in the case of Lewin himself, these two researcher profiles may well be assembled in one person. Yet, these can not be merged into one as “regulative ideals” of a philosopher are too loosely linked to the concrete empirical case and method of the practitioner’s work. Maybe also for this reason the history of psychology witnessed the gradual drifting apart of the two researcher profiles of philosopher and experimentalist.

While most Gestalt psychologists of the older generation found ways to combine experimental command with an epistemic interest, all of Lewin’s students chose experimental investigations over philosophy of science; their offspring lived the consequences of the inner-disciplinary split. Lewin’s and Wertheimer’s students did not follow their path equally committed to philosophy or epistemology and to the experimental research. Eventually, this generation formed a new academic community of specialists committed to applied research and practice.

439The story is reported in Lewin’s biography by Alfred Marrow, cf. [Marrow, 1969, 27], and also in an interview given by Bluma Zeigarnik, cf. [Yaroshevsky and Zeigarnik, 1988, 176].

440The above mentioned methodological principles of the interactive procedure have been extracted from the students’ dissertations where these were rather closely connected to the experimental case at hand while commentaries on the analytical part of the procedure were mostly derived from Lewin’s philosophical papers.
Socio-psychological prospects of the Berlin experimental program

To today’s students of psychology Kurt Lewin is probably better known as the “father” of experimental social psychology. This reputation is mostly sustained on the basis of his research in America. Yet, as can be demonstrated for the key features of Lewin’s topological psychology, the major analytical construct behind the empirical work in social psychology was constituted throughout Lewin’s Berlin work. The question implicitly raised here was: Why did a conceptual system develop in the framework of individual psychology could be organically applied to social research? I believe that the ability of Lewin’s conceptual system to deal with group research can be led back to the flexibility and the high level of abstractness of Lewin’s concepts. By the early 1930s, concepts that described social reality, such as the “environment” and the “social field”, were specified (Chapter 9). Giving room to these extensions Lewin’s psychology of action developed potential to embrace mental processes involving more than one individual. This prepared the ground for the establishment of social psychology and the research on group behavior.  

On the experimental level, quite a few practices that were first developed in the Berlin experiments built a sprout of Lewin’s later and more famous American research. Such are for instance, experiments involving variations of hierarchical settings (e.g. Dembo), which probably stood at the beginning of Lewin’s later comparative study of the democratic and authoritarian classrooms. Moreover, the functionalization of feedback, that entered the Berlin experiments in a subtile way at first, became an essential feature of Lewin’s socio-psychological experiments around 1940. Altogether, one may say that the principle of context-dependent conduct in the course of an experiment grew into a research principle in its own right, namely that of Lewin’s famous socio-psychological “action research”. 

Altogether, Lewin’s Berlin research group delivered a theoretical and empirical framework through the prism of which such broad psychological categories as action, behavior or human conduct were shaped. Other concepts, such as will, anger and psychic satiation were reformulated in the context of this theoretical framework. One might suggest that the explored research program—its experimental methods, handling of contemporary theoretical and practical knowledge and the output of their research—represents one of the pathways of the early experimental psychology, i.e. that of psychology of human conduct in the German speaking Europe. Its existence changed the shape of modern psychology. In Chapter 11 we shall elaborate on the place and heritage of Lewin’s Berlin experimental program in the later development of German and American psychology.

441 Also a limited number of other authors have delivered arguments defending this point of view; see [Gundlach, 1987, 67, 83] and [Wittmann, 1998, 39-68].
442 See e.g. [Lewin and Lippitt, 1938].
443 See e.g. [Lewin, 1944b, Lewin, 1946].
Work results and epilogue

11 American years: Continuities and new impulses

“In den USA lautet eine wohl nicht sehr verbreitete Anekdote wie folgt: Im Hof eines College trifft ein Besucher bei Nacht auf ein Standbild; bei näherem Zusehen bemerkt er, daß es Hitler darstellt. Entrüstet rückt er dem Provost auf die Bude und protestiert; worauf dieser: Wieso? Wir haben Hitler ein Denkmal gesetzt zum Dank für die vielen großartigen Begabungen, die er diesem Lande vermacht hat” [Wellek, 1965, 58].

The Wall Street Crash in October 1929, marked the beginning of the Great Depression, that lasted about 10 years and affected all Western industrialized countries. While the German economy experienced major difficulties the national-socialist political wing headed by Adolf Hitler gained power. The exodus then provoked by the Nazis affected Great Britain, Palestine, Latin America, Canada and Turkey, but most of all it affected the United States. Much literature has been published on the intellectual migration during these years, their level of education and the quality of professional skills. Without doubt, the movement has affected both the migrants and the host countries in uncountable ways.

Also the members of the Gestalt movement, most of whom were Jewish, were forced out of Germany by 1935. In 1927, Kurt Koffka accepted a position at the Smith College in Northampton, Massachusetts, where he remained until his death in 1941. Max Wertheimer came in 1933, taking a position at the New School of Social Research in New York. Wolfgang Köhler, who held the most prestigious position in Germany as director of the Psychological Institute at the University of Berlin, fell out of favor for having opposed the dismissal of his Jewish colleagues, as required by the Nazi regime. Köhler emigrated in 1935 and worked at the Swarthmore College until his retirement in 1955. According to recollections, he was treated with respect, and even became the only foreign-born elected president of the American Psychological Association in 1959. Kurt Lewin moved abroad in 1933. He started a two-year non-renewable contract in Cornell School of Home Economics, and never returned. Focusing on Lewin’s case we shall point to some mechanisms that have made this new social psychology impactful and discuss the matters of continuity and adaptation of the Berlin-style in the framework of the American research.

A small number of informative publications about various aspects of Lewin’s transition from German to American research, as well as a significant amount of material devoted exclusively to Lewin’s US work already exists. For instance, Mitchell Ash (1992) explores the socio-economic dimension of Lewin’s Iowa years and his local success strategies. Furthermore, Simone Wittmann (1998) discusses how Lewin’s Berlin work was essential to the constitution of social psychology. Another notable article on Lewin’s social psychology in the context of his emigration was published by Bierbrauer (1992). Therefore in this outlook chapter, we shall content ourselves with a brief overview over the continuity and adaptation of Lewin’s theoretical and experimental research in his later career that by no means intends to be exhaustive.

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444Some literature on intellectual migration: [Fermi, 1968], [Fleming and Bailyn, 1969], [Böhne and Wolfgang, 1992], [Fischer, 1991].
445On the emigration of the Gestalt psychologists see [Marrow, 1969, 68f.], [Sokal, 1984].
446On the emigration of the Gestalt psychologists see [Marrow, 1969, 68f.], [Sokal, 1984]. For biographic details on Lewin, see also Section 4.1.
11.1 Prepared emigration

As the historian Michael Sokal has shown, the transfer of Gestalt psychology to the United States started long before Hitler came to power and dragged the Gestalt movement out of academic positions and then out of the country and even before the leading Gestalt scientists themselves started to actively disseminate their work overseas. In the 1920s, an impressive number of researchers from Japan, the Soviet Union and the US had studied in Europe, got to know the Gestalt psychologists personally and considered them as friends.\textsuperscript{448} Particularly the Psychological Institute of Berlin was impressive for its number and the length of their stays; researchers and students from all over the world spent research stays in Berlin exchanging their experience and view with the Gestalt group (see Chapter 3).\textsuperscript{449} Long-term exchange between the Europeans and the Americans started there.

Additionally, in the 1920s many Gestalt psychologists (amongst others, Koffka and Köhler) began to visit the United States. The exchanges began when Koffka came to Cornell University as Jacob Schiff Visiting Professor of Education in 1924-1925, at the invitation of Robert M. Ogden, who had been a subject in the experiments he had done in Würzburg in 1909. His visit overlapped for several months with Köhler’s stay as visiting professor at Clark University in the spring and summer of 1925. Shortly thereafter, Köhler’s student Karl Duncker went to Clark University with the support of the Abraham Lincoln Foundation, and Wolfgang Metzger went to the University of Iowa to work with Carl Seashore on audition. Kurt Lewin was by no means unknown in the US neither. In 1929, J. F. Brown, who had studied with Lewin in Berlin, introduced Lewin’s work to the English-speaking world in a paper entitled \textit{The methods of Kurt Lewin in the study of action and affects}.\textsuperscript{450} In the same year, Lewin got a lot of attention with his presentation at the IX. International Congress of Psychology at the Yale University in New Haven. He spoke in German while presenting his self-made short movie “Hanna sits on a stone”. The movie displayed a 18 month old girl, his niece trying to sit down on a stone backwards. Lewin explains the child’s conduct in terms of his field theory.\textsuperscript{451} The prominent Harvard social psychologist Gordon Allport (1897–1967) would then acknowledge the movie’s decisive impact on the revision of theories of action and learning by several local psychologists: “This ingenious film [...] was decisive in forcing some American psychologists to revise their own theories of the nature of intelligent behavior and learning”.\textsuperscript{452}

Two years later, Lewin’s first two English-language publications appeared in the US.\textsuperscript{453} Soon thereafter he got an invitation to spend six months as a visiting professor at the Stanford University. In 1932/33, Lewin immediately landed a two-year non-renewable contract at Cornell University. In 1935, a permanent contract at the Iowa State Child Welfare Station.

By mid-1920s, the Gestalt psychologists succeeded fast to win a large circle of supporters and colleagues interested in their ideas. For instance, Sokal and then Ash make the point that there was no replacement of scientific systems, rather a willing extension of the established behaviorists theories through Gestalt. Gestalt ideas could be brought over the behaviorists rather smoothly because since Gestalt never claimed scientific monocracy (as is discussed below).\textsuperscript{454}

The next decisive step was the fast to follow switch of the language of publications. The migrating scientists switched the language of publication to English and publish in American journals and collections of essays. Several publications, such as Köhler chapters in \textit{Psychology} (1925) and Koffka’s \textit{Principles of Gestalt Psychology} (mid-1930s) were vividly read and had great impact on the American psychological community. After a few more publications in German in the next two years Lewin, too, switched his publications to English.

\begin{itemize}
\item \textsuperscript{448} See [Sokal, 1984, espec. 1262f.].
\item \textsuperscript{449} See [Ash, 1995, 210f.].
\item \textsuperscript{450} Cf. [Brown, 1929].
\item \textsuperscript{451} Cf. [Weinert and Gundlach, 1982, 210], [Hoffmann, 2007b, 19].
\item \textsuperscript{452} Allport quoted as in [Marrow, 1969, 50].
\item \textsuperscript{453} These publications were the \textit{Environmental Forces in Child Behavior and Development}, that appeared as a chapter of \textit{A Handbook of Child Psychology} in 1931, see [Lewin, 1931a], and the English version of \textit{Der Übergang von der aristotelischen zur galileischen Denkweise in Biologie und Psychologie} in the Journal of Genetic Psychology, see [Lewin, 1931f].
\item \textsuperscript{454} See [Sokal, 1984, espec. 1262f.] and [Ash, 1996, 136-138].
\end{itemize}
publication language for good.\footnote{455} In Iowa he published the *Principles of Topological Psychology* (1936) and *A Dynamic Theory of Personality* (1935), the two books that consolidated his Berlin research. The translation of the German manuscripts was assumed by his friends and former students.\footnote{456} Work that has not been translated immediately, as well as the experimental procedures presented by gestalt, were reviewed and discussed in some detail.\footnote{457}

When the Gestalt psychologists finally migrated to the US for good, their arrival was by no means unexpected. There was both a general opening up to European ideas and the influx of European psychologists into the United States. As Sokal puts it, “Americans were too interested in German ideas and Germans too interested in American opportunities to wait until political events forced them into contact” [Sokal, 1984, 1262]. By 1930, Gestalt had gained a fair amount of recognition in the North American academic circles; the migrating researchers filled positions partly tailor-made for them (ebd. 1262f.). In other words, the rise of the Nazis Regime certainly reinforced the migration current but it did not fully determine it.

### 11.2 Local trends and Gestalt challenges in North America

When the Gestalt psychologists were finally ready to settle in the US, they encountered a different academic culture in terms of infrastructure, funding opportunities, ideas and experimental practices. Compared to the realities of the Weimar academic culture, the growing North American research network offered additional professional opportunities for psychologists outside academia. Considerable funding sources, such as the Laura Spellman Rockefeller Memorial Funds, were located in the private sector. The more flexible institutional and financial set-up made it possible to create academic positions and equip labs for the arriving European researchers.\footnote{458}

Embedded in the transforming infrastructure, the research trends in North America of the early 1930s remarkably differed from those prevailing in Europe. In science and philosophy, the early 20th century in the United States was marked by a pragmatic, anti-philosophical occupation with “making things work”—a trend that found its expression in J. B. Watson’s psychological behaviorism. Watson led American psychology in a direction distinctly different from the German one (and European in general). First of all, this implied a complete rejection of the introspection.\footnote{459} Another consequence of Watson’s dicta was the involvement in animal work in the mainstream of American psychology. In his 1913 behaviorist manifesto, Watson argued for the investigation of humans exactly the same way as animals asserting that “the behaviorist, in his efforts to get a unitary scheme of animal response, recognizes no dividing line between man and brute” [Watson, 1913, 158].\footnote{460} Instead, the physicalistic stimulus-response approach for a while seemed to offer comparable explanation for both human and animalistic behavior. Hereby, the eliciting stimuli were defined in terms of their physical characteristics while responses were
skeletal or muscular events.\textsuperscript{461} Therefore, from the 1920s on, major discussions of psychological theory involved taking a stance for or against radical behaviorism and Watson’s bequest to the discipline: Its focus of “prediction and control of behavior”.\textsuperscript{462} The ensuing tradition of experiments with animals, for which it was at least difficult to postulate a “cognitive” transformation of environmental events and physical action, resulted in the negligence of human cognitive function. “Watson’s unification of human and nonhuman behaviors into a single object of investigation prevented a psychology of the human and the human mind from being established, and in particular it avoided sophisticated investigations of human problem solving, memory, and language” [Mandler, 2002, 340]. These were precisely the research areas in which the Gestalt movement excelled.

Moreover, the rise of behaviorism as a mainstream tendency in American psychology led to equating all relevant work with “applied” psychology. This happened at the cost of the demand that academic psychologists present their work as both quantitative and socially relevant science. First of all, the wartime industrial psychology research, testing programs and personnel classification systems, led to a fast growth of applied psychological research. During World War I, the mass IQ testing of soldiers brought the psychological discipline to public awareness. In the US, the trend towards professionalization of psychologists advanced further than in Europe and experimental psychology fast became dominated by considerations of its applied use.\textsuperscript{463}

The other tendency that slowly but surely dominated the American scholarly landscape was the research on social entities or groups. Historical events, such as World War I, the ensuing Great Depression, New Deal reforms\textsuperscript{464} and political instability stimulated research on social issues. As the social world became an increasingly attractive subject of discovery psychologists and other researchers had to face the challenge of the collection of “group data”.\textsuperscript{465} At first, classification instruments, such as IQ testing, served for administrative needs but soon they spread to research in learning and cognition. Changes in the experimental methodology, such as the technology-based setups and a more accentuated hierarchy between the experimenter and the proband, followed. Generally speaking, the American behaviorists were interested in quantitative functional relationships between aspects of experience on the basis of which they created statistical models accounting for the variants across subjects’ responses to purposive stimulation. Therefore they attempted to adhere firmly to the natural scientific style of research. The framework for analyzing mental events mostly remained that of stimulus-response. This was embodied in impersonal manipulations in which the experimental subject was treated as objects to the experimenter.\textsuperscript{466}

\section*{Gestalt and the challenges of the local academic community}

When creating their own niche in America the Gestalt psychologists did not simply submit to professional practices that prevailed in the receiving environment. Ash (1996, 2005) makes the point that they mobilized their biographical and professional experience as well as the upcoming local circumstances to create new “intersectional” research practices. Often enough, they expressed disagreement with assumptions prevailing in the receiving community and opposed rather than passively accepted its research styles.\textsuperscript{467} Hereby, seminal Gestalt critique focused on theoretical assumptions shared by the

\textsuperscript{461}See [Mandler, 2002, 342].
\textsuperscript{462}See [Samelson, 1985, 33-38].
\textsuperscript{463}Cf. [Ash, 1996, 119f.]. In the 1920s and the early 1930s, European psychologies experienced a slow opening towards the integration of matters of social life, too. While individual German psychologists started taking interests in the conduct of groups and the individual in a group, as well, they tended far more to emphasize processes within the characteristic personality structures of individuals, rather than differences among individuals. Also about the same time, the French mass psychology was on its way.
\textsuperscript{464}The New Deal is a range of domestic programs enacted in the US between 1933 and 1936, and some that came later. The programs responded to the Great Depression, and focused on what is generally called the “3 Rs”: Relief, Recovery and Reform. That is Relief for the unemployed and poor, Recovery of the economy and Reform of the financial system to prevent a new depression.
\textsuperscript{465}Cf. [Back, 1992, 52].
\textsuperscript{466}Cf. [Danziger, 1992, 322-5].
\textsuperscript{467}See [Ash, 1996, espec. 121 and 138] and especially on Lewin see [Ash, 2005, 276-94].
American mainstream. Köhler made the point that behaviorism as well as the sensation-based cognitive research assumed the existence of isolated atomic units (i.e., reflexes of sensations), and combined these in the atomist manner (see Chapters 1 and 6), i.e., omitting reflection on the dynamic interaction among the units.\footnote{In his monograph \textit{Gestalt Psychology} (first published in 1929 in English, then in German translation as \textit{Psychologische Probleme} in 1933) Köhler devoted a whole chapter to the critics of behaviorism. Cf. [Köhler, 1929, 3-34].} By contrast, the Gestalt psychologists comprehended perception as a unitary whole process and tried to develop models to explain its dynamics.

This miss-match in matters of theory obviously led to an experimental one. The Gestalt psychologists criticized behaviorism for the uncompromising refusal of the introspective approach and, in general, for limiting itself to the overly restricted scope of allegedly objective natural scientific methods. For example, Köhler emphasized that “starting with an admirable enthusiasm for exactness, behaviorism has been misled completely at this point and that, consequently, the energy spent by behaviorism in its fight against ‘direct experience’ and ‘consciousness’ has been spent in the wrong direction” [Köhler, 1929, 20]. Lewin maintained that behaviorism had tried to answer all question “by interpreting everything as a conditioned reflex” [Lewin, 1939b, 871]. Quite in contrast, the individual-centric experimental approach remarkably deviated from the behavioristic procedures. The Gestalt psychologists felt that one needed to determine events within an individual, not among them (cf. Chapter 3). The issue, thus, was not one of quantitative versus qualitative research but rather the disagreement about specifics and ways of quantification.

Throughout the decades of residency in the US, the main traits of the Gestalt style of research remained largely unchanged. However, in some ways Koffka, Köhler and Wertheimer integrated local techniques, for instance by making use of the advanced apparatus available at American universities. Ash (1996) points to an example from Köhler’s career: In Berlin, Köhler had started to investigate phenomena, such as successive comparison and memory patterns, which – he believed – would yield insights about brain events underlying perception. While in Berlin he had claimed without actual experimental proof that such direct psycho-physiological investigations were both feasible and important (Chapter 3) it is in the United States that he got the technological opportunity to carry out this research. In the late 1930s, working in a personally designed laboratory at Swarthmore College, Köhler used the newly developed EEG equipment (electroencephalograph), by means of which he was able to verify the existence of his anticipated brain correlates. Devoting himself to this new format of neurological investigations he left the Berlin-style perception experiments aside.\footnote{See [Köhler, 1940, 193]; cf. [Ash, 1996, 123-125].}

The initial reception of Gestalt psychology in the US was ambivalent; it ranged from sympathetic skepticism to open hospitality. For many behavioristically oriented Americans the Gestalt methods seemed not to be “scientific” enough. For instance, Frederick H. Lund from the Bucknell University allocate Gestalt somewhere between philosophy and mysticism:

> “The very intangibility of the concept is doubtless responsible for the sympathetic if not enthusiastic response received from the mystics, the vitalists, and those who feel that there \textit{is}, or at least \textit{ought} to be something the matter with certain mechanistic and naturalistic interpretations of today. […] Indeed, with Koffka’s insistence that ‘the universal Gestalt’ is an original property of experience, that ‘meaning is not a property of experience,’ and Köhler’s affirmation that ‘no experience is needed for a first formation of units in the visual field,’ we again feel ourselves in the atmosphere of the Hegelian Universals and the Platonic Forms” [Lund, 1929, 307, emphasis original].

Another difficulty consisted in the fact that the applied-spirited American psychologists and pedagogues did not understand how the imported approach could help their cause. As a consequence, funding that was meant for applied research, e.g., large funds offered for child development by the Rockefeller Foundation, ran past the émigré psychologists. Nonetheless, despite the differences across (scientific) cultures Koffka, Wertheimer and Köhler ended up with rather successful careers. The leaders of
the Gestalt psychological school were persuasive enough to secure acceptable academic positions for themselves shortly after their emigration. By confronting the Americans with their research style and the ideology underneath, they had lasting impact that did not fundamentally change but substantially enriched the US psychology.\footnote{Cf. [Ash, 1996, espec. 121-6 and 138].}

Against this backdrop, Lewin’s case represents somewhat of an exception. First of all, his research agenda of the 1940s was embedded in a number of overlapping domains, amongst others, the local institutional and infrastructural facilities. As such, Lewin’s sensitive instrumentализation of its resources secured support for his professional project. Second, Lewin managed to awake interest and secure (financial) support of stakeholders outside the academia by, for instance, taking into account the local industrial and political demand for applied research. His sensitive reaction to the emerging trends combined with the interest and the ability to cross-link mundane and academic needs earned him increasing influence. Finally, Lewin was exceptionally talented in creating and sustaining a research network. In the US, even more efficiently than in the course of his German career, he surrounded himself with a critical amount of followers and collaborators, who promoted and contributed to his work.\footnote{Cf. [Ash, 1992, esp. 204].} The ensuing sections shall elucidate the cornerstones of Lewin’s American performance in the light of his German career and the stated specifics of the receiving academic framework.

### 11.3 Lewin in Iowa: Socio-psychological experiments and the evolution of style

At the Iowa Child Welfare Research Station (1935–1944) Lewin’s group engaged in experimental research in developmental psychology. Mitchell Ash argues that this was mainly an outcome of a financial situation in which significant funds from the Rockefeller Foundation could be secured for research on learning and development.\footnote{From an interview with Alvin Zander, who worked with Lewin in Iowa: “Kurt had funds from The General Education Board of the Rockefeller Foundation to have one fellow a year” [Patnoe, 1988, 43].} Both the research centre at Cornell and the Iowa Station were recipients of funding from the large scale research program in child development that the Rockefeller Foundation had maintained since the mid-1920s. It was Lawrence Frank, a Rockefeller Foundation official who had been impressed by Lewin’s experiments with children, who placed Lewin at the Iowa Child Welfare Research Station at the University of Iowa. Lewin remained in Iowa until 1944, and rose to the rank of a full professor in 1939.\footnote{Cf. [Ash, 2005, 279].}

#### Lewin’s micro-network

First, Lewin managed to establish a replica of his micro-network, the Quasselstrippe of Berlin was recreated in Iowa (meanwhile the students translated it as ‘Hot-Air Club’), and met each Tuesday noon at the Round Window Restaurant. In addition to the lunch meetings, students were frequently at Lewin’s home, offices were adjoining, and most people often had lunch together. When Lewin then left Iowa in 1944, the Quasselstrippe travelled with him. Most of his close collaborators tried to copy the conception in the own work environment but ended with establishing a colloquium for presentations of work results. Second, Tamara Dembo and Jerome Frank, two of Lewin’s former students from Berlin, joined him in Cornell. When Lewin then moved to Iowa, the Rockefeller Fund also provided fellowships for Dembo, Robert Barker from Stanford, and Herbert Wright from Duke to follow him to Iowa.\footnote{See [Wheeler, 2008, 1644f, 1647f.].} Additionally, since 1933/34 another network of friends and colleagues grew around Lewin, the so-called Topology Group. The group met regularly up until 1964/65 (although Lewin died in 1947) and helped a lot to the spread of Lewinian ideas at least in the United States. The group counted altogether 51 participants participating at different times, including Ruth Benedict, Erik Erikson, Fritz Heider, Wolfgang Köhler, Kurt Koffka,
Margaret Mead, William Stern, Edward Chase Tolman, Murray, Tamara Dembo. Meetings were held irregularly.475

Changing the research perspective: The “applied turn”

While the philosophically inspired academic community of the Weimar Germany was devoted to fundamental research, it left practical needs on the sidewalk. Additionally, in Berlin, amongst many other Gestalt psychologists Lewin was part of a liberal socio-political and artistic milieu, which tended to appreciate scholarly work in terms of the discourse around it, and not necessarily in terms of its applicability to concrete problems. As outlined in Chapter 8, though, Lewin was more of an exception; he early demonstrated his theoretical and practical interest for applied psychology (see the essay The Socialization of the Taylor System (1920) and the experimental style of the Berlin group).

The situation looked differently in the United States. There the Gestalt psychologists encountered a pragmatic tradition to focus on socially relevant problems that needed to be solved. In this new framework, any person that showed capable of doing so, had a high reward expectation. Building on his initial sensitivity for applied problem-solving, Lewin of all Gestalt psychologists most successfully embraced the new work opportunities. In this respect, Wolfgang Schönpflug aptly calls his timely change of research perspectives, the “pragmatic turn” (pragmatische Wende). Speaking in particular about his research, we may characterize it as the “applied turn”:

„In Deutschland war es die vom Idealismus geprägte Philosophische Fakultät, eine von den Bedürfnissen der Praxis und den Themen der Aktualität abgesetzte intellektuelle Gemeinschaft, die in der Klärung fundamentaler Fragen wetteiferte; hinzu kam für Lewin die sozial-politische und kunstästhetische Szene, in der fundamentale Ansätze ebenfalls willkommen waren. In jedem Fall war der Intellektuelle deutscher Provenienz eingebettet in eine Umgebung, in welcher der Diskurs die Methode der Bewährung war. Anders in Amerika: Lewin traf dort auf eine pragmatische Tradition, die Problemen wegen ihrer gesellschaftlichen Aktualität hohe Aufmerksamkeit einräumte und jedem, der sich dieser Probleme tatkräftig annahm, eine Bewährungschance gab. Lewin machte sich diese Pragmatik mit ihren Konsequenzen zu eigen, und wiederum fügte er ihr seine eigene Produktivität hinzu, indem er Techniken wie das Gruppentraining entwarf und einsetzte“ [Schönpflug, 1992, 24].

As the flip side of the coin, after his emigration, Lewin’s output in philosophical works declined to a level close to zero. However, Métraux points out that the nearly total absence of philosophical contributions in Lewin’s American career does not mean that philosophy and theory of science simply vanished from his agenda, nor did his committed objectives tracelessly disappear in the new socio-academic context.476 Yet, we observe the preservation of original principles without any further development of his philosophy of science. It is the applied research track that becomes central to Lewin’s american research.

Another change of perspective occurred when Lewin gradually shifted his focus from investigations on individuals to research on group behavior and the analysis of the individual from a group perspective. Lewin’s experimental style significantly changed throughout the American years. While before 1933 his preferred unit in experiments was a dyad, a group consisting of two rather than more participants, after the migration, he started systematic experimentation with larger groups. The ambition was to pass from the study of group-individual-relationships to experimental settings where group life could “proceed freely”. The new goal was to study “the total group behavior, its structure and development” [Lewin and Lippitt, 1938, 292]. Against this backdrop, upon arriving in the US, he had developed interest in new research themes, such as cultural and educational differences, socio-psychological barriers between social groups and its effects on minorities, as well as frustration and regression.

To implement these ideas, methodological innovation was introduced, whereof the main one the attempt to work with real life situations. Two contrasting experimental styles were practiced by Lewin’s American

475See [Marrow, 1969, 111-115], for a complete list of group members see (ebd. 260).
476See [Métraux, 1992, 382].
working groups. The more conventional one made use of the “holistic transposition” technique (see Chapter 10) to transfer a real life situation into a setting suitable for experimental observation. Hereby the main challenge was to identify the “essential structural characteristics” of the real life situation so the transposition left the relationship between the whole and all parts unaltered.\(^{477}\) The other, principally different approach penetrated the experimental setting itself. A group of investigators “in the field” was charged with the task to collect immediate insights about the social situation and dynamics of interest. Initially, the role of the investigator was largely that of a silent observer, who made notes, drew conclusions and finally submitted a report including a set of recommendations. With time, however, a completely new research style grew out of it, namely that of participative investigation, in which the psychologist engaged in interaction with the probands and social change was introduced in a collaborative effort (i.e. action research). In the following range of Lewin’s American landmark experiments of different types are instanced for illustration purposes.

Leadership and social climates

The one paradigmatic experiment on leadership and social climate, that established Lewin’s reputation as a social psychologist, involved the observation of groups of 10-year-old boys (Boys Scouts) over a period of several months, in a joint study conducted together with Lippitt and White in 1939. The experimental setting was that of a club, rather than a school, where the subjects were engaged in the making of theatrical masks. Instead of comparing individual behavior under isolated and group conditions the crucial experimental comparison was among different kinds of groups. Group differences were created by adult leaders, who were instructed to behave in accordance with a set of programmed instructions prepared beforehand (the Berlin model of semi-structured experimentation was, thus, made use of). In the autocratic groups, the assignment of tasks, techniques and partners was dictated by the leader, who abstained from participation in work but offered personal praise and criticism for the work accomplished by group members. In laissez-faire groups the policy, such as the division of labor, was determined freely by group members, without any participation from the leader. The latter remained uninvolved in work decisions unless explicitly asked. Democratic groups were characterized through collective processes with decision-making assisted by the leader. Before accomplishing tasks, members were given choices and a way to collectively decide the division of labor; the leader usually provided technical advice. An outcome of the experiment was that under autocratic leadership the boys were more likely to lose initiative, to become discontent and aggressive (when the autocratic leader left the room, tensions exploded) and to act without regard for group goals or the interests of other group members. Under laissez-faire leadership the participants were less work-centered that in other cases. Scapegoating was developed under both autocratic and laissez-faire condition. When the democratic leader left the room, the boys usually continued working on the tasks.\(^{478}\)

The experiment was pioneering in terms of social psychology since it involved studies conducted on groups rather than on individuals. Additionally, it constituted the first attempt to create a social climate in a controlled set-up. Another important trait of this pioneering socio-psychological experiment was the tendency to combine a range of different methods, amongst others, interviews were conducted with parents and children, each boy was given the Rorschach inkblots, as well as a Moreno-type questionnaire.\(^{479}\) As pointed out, this hybridity of experimental styles, as the willingness to experiment with the

\(^{477}\)See [Lewin, 1951b, 164-169].

\(^{478}\)See [Lewin et al., 1939, Lewin, 1939a].

\(^{479}\)See [Lewin et al., 1939, 298]. (1) Rorschach inkblot test is a psychological test in which subjects’ perceptions of inkblots are recorded and then analyzed using psychological interpretation. Some psychologists use this test to examine a person’s personality characteristics and emotional functioning. It has been employed to detect an underlying thought disorder, especially in cases where patients are reluctant to describe their thinking processes openly. The test takes its name from that of its creator, Swiss psychologist Hermann Rorschach. (2) In the 1930s, the Jewish Romanian psychotherapist and psycho-sociologist Jacob L. Moreno came to develop a quantitative method for measuring social relationships in course of his studies of the relationship between social structures and psychological well-being. This quantitative approach became widely known and used as sociometry. Using the
11.4 Experiments in the field

Upon their establishment in American universities, Wertheimer, Köhler and Koffka obtained positions in which they could conduct excellent research but did not have the opportunity to train doctoral students. This lack of American students put the Gestalt viewpoint at a decided competitive disadvantage compared with the neo-behaviorist research institutions headed by Clark Hull and Kenneth Spence at Yale and Iowa, respectively, in the 1940s and 1950s, or the many centers for cognition research in the 1950s and 1960s. In this respect Lewin's situation was different; he had a few dozens of students and close collaborators, some of whom (Tamara Dembo and Jerome Frank) had followed him into the emigration. Lewin, however, had to also face some limitations.

When the United States entered World War II in December 1941, resources of social and behavioral disciplines became an important part of the mobilization effort. Many military and other government programs needed professional advice in dealing with the human factor that urged experts to develop new ways of tracking problems, analyzing and reporting results. Soon after Lewin was granted US citizenship in 1940, he was invited to join expert committees in such organizations as the Office of Naval Research, and the Office of Strategic Services, to undertake research related to practical requirements of the government and the people in local communities. Lewin made use of these new resources to expand the bandwidth of field research in social psychology.

Changing food habits

Another important research area came about through Lewin's friendship with the anthropologist Margaret Mead who was secretary of the Committee on Food Habits and used to visit Lewin in Iowa. The government needed advice on how to alter habits and tastes so that they could embody the finding of the new science of nutrition and maintain the health of American people in times of wartime shortage. Lewin was asked to launch a series of experiments on group decision and social change. In this the effectiveness of two approaches on achieving social change was compared: The first was group lecturing without a collective decision made by the group and the second a group discussion including all individuals’ commitments to the decision made by means of the collective agreement of the whole group.

In the first study, performed by Lewin's associates Bavelas, Festinger, Woodward and Zander, when speaking to housewives the group leader tried to resolve their doubts about serving intestinal meats. In the second study, implemented by Radke and Klisurich the goal was to increase the housewives' use of fresh and evaporated milk. This time the procedure was somewhat altered: In the group decision setting the group leader would persuade all the women to raise their hands indicating that they agree to serve intestinal meats in the near future. The women were also told that there would be a follow-up study to check on their commitment. In the third experiment by Lewin, Radke and Klisurich compared the effectiveness of group decision and individual instruction in persuading mothers to supplement infant diets with orange juice and cod-liver oil. To achieve a group decision the experimental setting was constructed as following: (1) A group discussion was carried out. (2) This was concluded with a request for a decision under a 100% group agreement. (3) The decision was to be made public, (4) including a statement of a specific time period within which action had to be taken. (5) Announcement of a follow-up

term “Moreno-type questionnaire” Lewin, Lippitt, and White most likely a mean questionnaire focusing on social relationships of the group participants, i.e. attractions and repulsions between group members.

480 Cf. [Ash, 1996, 136].
481 See [Marrow, 1969, chap. 15].
482 Cf. [Wheeler, 2008, 1646].
483 See [Radke and Klisurich, 1947].
was made. In all cases the group decision method proved to be more impactful. It could be shown that the mere group discussion about increasing production did little, but there was clear change if the group made a decision to increase production. Hence, the binding superstructure of group decisions reinforced the individual’s commitment to stick to the decision. Another important discovery was that it was actually easier to change all the members of a group than it was to change individual members.484 Lewin’s theory behind these experimental studies involved the problem of changing group standards. He thought that women were aware of how often other women serve intestinal meats and that they would not want to differ very much from that standard. “Increasing driving forces” toward serving the meats would not be very effective if they moved the women away from the group standard. By having all the women in the group raise their hands and promise to serve intestinal meats, the group standard was changed. Not only were the “restraining forces” against serving the meats thus reduced, but new “driving forces” were created to reach the new group standard. In terms of methodology, this experimental series represented a landmark since it started the transition from the simulation of social climates in a laboratory to actual field research.

**Overcoming resistance to change**

In 1939, the Harwood Manufacturing Corporation opened a new plant in rural Virginia. After training, the workers - mainly women with no factory experience - produced only half as much as similar apprentices in the North. Alfred Marrow, a friend and colleague of Lewin since the days at Cornell, was an officer of Harwood and asked Lewin to investigate the problem. Following Lewin’s recommendation, the factory hired Alex Bavelas, then a graduate student at Iowa, and then Jack French, who replaced him, to conduct a series of small-group studies on human factor in factory management. They worked there from 1940 to 1947 in close collaboration with Lewin.

During the years of Lewin’s association one of the most serious management problems at Harwood was the production workers’ resistance to change; this included operation standards, engineering process, and customer requirements. Whenever organizational changes could not be avoided workers were taken from jobs on which they were highly skilled and placed on new ones. Yet, they always resisted these transfers. Eventually, both managers and operators got frustrated implementing innovation. To improve the situation participative methods were applied by Lewin’s group. A test group of workers was invited to participate in the discussion and planning of the restructuring together with the management. Very fast this group’s productivity increased in contrast to those, who did not enjoy participation privileges. In this way, the investigators found out that the motivation and morals of each group was proportional to the degree to that it shared the decision. It was shown how participative involvement of individuals in the decision making process reinforces the individual’s commitment to a group’s decision.485 The importance of this study thus consists in the intentional and functional use of participative methodology. While in the Berlin experiments interactive components have from time to time shown useful, it is since these experiments in the early 1940s that including the probands’ participation became programmatic. The Harwood Studies were pioneering to the research branch on organizational change.486

**Overcoming stereotypes**

One of the subsequent labour efficiency studies, conducted by Lewin and his associate French, had the management behavior to its focus. In the American mass production industries of the 1940s it was

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484 See [Bennett, 1955, 251-272].
485 For the description of the Harwood studies see [Marrow and French, 1945]. Lewin links the Harwood experiments with his theoretical investigations in [Lewin, 1947a, Lewin, 1947b], as well as in [Lewin, 1951a, espec. 224-236].
486 See [Burnes, 2007]; the article argues that the first phase of the Harwood studies can be seen as having laid the foundations of organization development.
assumed that for skilled jobs older women workers are inferior to younger ones. As a result, many large companies consistently refused to employ women over thirty.

At the outset, French presented to the factory management scientific evidence on the women’s work capability but this did not bring any results. Also it turned out that the procedure to applied to change the housewives’ attitude (i.e. group discussion, group decision, and change) did not work on the management level. Finally, the psychologists decided to stimulate social change by giving the management an active role in the investigation process. The management staff undertook a proper research investigation in order to find out how much the employment of the few older women already costed the company (assuming that these were less productive than the younger staff). The study focused on the comparison of the daily output, turnover, absenteeism, and speed of learning. Surprisingly, the manager found out that the older women were superior to the younger staff, and as the investigation was their own, they had to believe the results.487

In this experiment Lewin’s team increased the participation of group members from the mere participation in the discussion process to an active contribution to the research endeavor. They showed that an active personal involvement into the practical research investigation reinforced the identification with the project, and led towards change of attitudes, even though at the beginning a high resistance level existed. The binding power of group involvement stabilized the changing attitude in the form of a group decision. Additionally, the Harwood studies are significant as one of the earliest—even if not the earliest—experimental practices in organizational and management psychology.488

To conclude, the experimental style and practices of the American years significantly differed from the German ones, and evolved more and more throughout the years at Cornell and Iowa. Nevertheless, they inherited important impulses from the Berlin-style, such as the openness towards interactivity, the variation of hierarchies and the tendency to combine a range of different methods in one experimental procedure. All of these were preserved and expanded in the American experiments. Other impulses were collected on the sidewalk of the American life. Lewin managed to profit from the American opportunities to enrich and diversify the experimental style. Importantly, however, this experimental work relied on a strong theoretical foundation that was build up in the Berlin years.

11.5 Extension and limits of the topological field theory

Preservation and extension

Throughout his American research, Lewin invested plenty effort into the conceptualization of his experimental experience with groups. The intention behind it was to create an overarching socio-psychological theory that would apply to any group—family, work, religion or community.489 In short, Lewinians conceived the group as a psychologically organic whole defined through a dynamic interdependence of all actors involved. Once assumed, a group was a single entity (as well as the individual member of the group, in case these needed to be considered separately) the researcher could easily translate this into field theoretical terms. Main extensions and adaptations of his Berlin theoretical framework, i.e. the Topological Field Theory (TFT), shall be pointed out briefly.

Lewin’s experiments during his time in Iowa brought about a variety of systematic theoretical extensions accounting for group behavior. Hereby, the group was translated into a field theoretical set-up. Psycho-sociological problems of a minority group (1935) might have been Lewin’s first work expressly

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487 See [Marrow and French, 1945].

488 An example of preceding experiments in organizational psychology is given by the Western Electric Hawthorne Works experiments in Chicago (1927–1932). In the course of experimental observations workers proved to be more productive when being subject to interest of externals. This form of reactivity, when subjects modify an aspect of their behavior being experimentally measured simply in response to the fact that they are being studied, was then called the "Hawthorne effect".

489 This being one of many generalist ambitions, typical for holistic researchers; another one was the hope field theory would become the ultimate tool for research on any psychic process underlying conduct.
designed as socio-psychological. Herein Lewin extended his original concept of the life space to describe the interaction field between the individual and the environment; he baptizes the new dimension “social space”. Using metaphors from physics and molecular biology, he describes the situation of the marginalized Jewish population as depending on the relative permeability of the boundary and the valence force fields between in- and out-groups.490

Drawing on the TFT, Lewin conceived the group as a configuration of a variety of positive and negative forces implying also that groups possess positive or negative valence towards its members. Using this as a starting point, Lewin argued that in order to effect any sort of change in the goals or concerns of the whole group, a change in its equilibrium is necessary. Field theoretical constellations of concepts were used for instance in the studies of racial prejudices (Lewin & Grabbe 1945), and of change in food habits (Lewin 1943, Radke and Klisurich 1947). For instance, observations in experiments on group decisions could be represented through a change of group regions (as contrast to a situation where each individual within a group is moving to a commitment while the general social space stays unchanged). One could also vary conditions and in greater detail specify changes that would occur (Lewin & Grabbe 1945).491

In sum, we see that substantial parts of the analytical construct behind the outlined empirical work in social psychology was constituted throughout Lewin’s Berlin work. The conceptual framework of the TFT developed in Berlin was preserved, as were the holistic foundations of Lewin’s theory. Significantly, the TFT was thus to become a foundation to the experimental program conducted in the US.

A new conceptual layer

Based on the discussed experiments of the late 1930s and 1940s, Lewin’s American work led to the emergence of new and more complex conceptual structures, such as the concept of “group dynamics”, “group leadership”, “social climates”, “group decision making”, “group development” (later reinterpreted as “organizational development”), “group cohesiveness” and “social change”.492 These concepts are more complex than the “basic” concepts of the TFT. They do not simply include states or relationships but mostly they refer to processes observed over (at least a short) time span. For instance, Lewin and his associates demonstrated that in a group each member recognizes the other members as instances on whom he depends to a definite degree. The willingness to stick together, or “group cohesiveness”, is a determining factor of any group. Hereby the degree of conformity is linked with the degree of “cohesiveness”, which correlates with the degree of interdependence of the group members.493 More complex extensions of this kind, usually related to group psychology, formed an additional layer of Lewin’s theoretical system.

Loose ends

Besides the abandoned research in philosophy of science, pointed out earlier, another promise of a theoretical pathway made by Lewin in his early publications was never really kept. We recall that in his philosophical publications Lewin urged towards a formalization of the conceptual system for psychology (Chapter 5). Then, using topology he tried to establish some kind of practical foundation to it in his Principles (1936) (Chapter 10). Lewin’s later and most substantial attempt to draw the foundations of a functional psychological theory, in which concepts were interlinked in a strongly binding algebraic way, is incorporated in The Conceptual Representation and the Measurement of Psychological Forces

490See [Lewin, 1935b].
491See [Lewin, 1942a], [Lewin and Grabbe, 1945], [Radke and Klisurich, 1947].
492See e.g. [Lewin, 1936b] on social-psychological differences between the United States and Germany, [Lewin and Lippitt, 1938] and [Lewin et al., 1939], studies of the impact of social climates, [Lewin and Grabbe, 1945] and [Lewin, 1946] on socio-psychological barriers between social groups, as well as [Lewin, 1939b] and [Lewin, 1942a] on later conceptual extensions of the field theory.
493See [Lewin, 1939a].
(1938). A couple of years later this was succeeded by Robert W. Leeper’s monograph *Lewin’s topological and vector psychology: A digest and a critique* (1943), in which, in Lewin’s own words, “Leeper has done more than merely present vector psychology; he has criticized it and improved it.” However, broadly speaking, all these attempts to create such a transition from a “soft” to a mathematically accurate construct remained vague and remind more of a programmatic work than an actual implementation. This may be one reason why this part of Lewin’s theory remained without great resonance. Additionally, as suggested by Rainio, in the circumstances of war there was a stronger interest for Lewin’s analysis of group dynamics and social conflicts while his quasi-mathematical conceptual system appeared too fundamental for real life application. In any case, Lewin’s attempt to introduce a relatively high level of formalization into psychological theory remained widely unsuccessful.

11.6 Creating an infrastructure for applied social research

Integrating social science

In the last few years of his life one of the central concerns of Lewin’s work was the unification of various social sciences. In 1945, he emphasizes that “social science needs an integration of psychology, sociology, and cultural anthropology into an instrument for studying group life”. He further explains that psychology relies on group experiments, as only examining the social whole one can understand the individual; sociology needs studies on group dynamics to realize the transfer from the description to an in-depth analysis of the social space; while the “experimental cultural anthropology” is undergoing a transition from the study of “primitive” cultures to a broader focus on all cultural differences and all aspects of cultural life (ebd.).

“Psychology, sociology, and cultural anthropology each have begun to realize that without the help of the other neither will be able to proceed very far. During the last five years first timidly, now very clearly, a desire for an integrated approach has become articulated [...] Economics will have to be included in this symphony if we are to understand and to handle intergroup relations more effectively” [Lewin, 1946, 36].

In Lewin’s understanding such a unification implied the cross-disciplinary integration of both theoretical and methodological elements of the different social sciences and was meant to be implemented in the framework of innovatively organized institutions. Importantly, this vision of Lewin’s represents a continuous path originating in the Weimar academic milieu, in which Gestalt psychology was busy providing a mediating approach in-between humanities and science. In the US, Lewin managed to implement the vision; he created a pioneering cross-disciplinary network of senior researchers with backgrounds in various social science, i.e. the Topology Group. As pointed out e.g. by Samelson (1985), the creation of an integrated social science perfectly suited the plans of big practically oriented non-university establishments, such as the Laura Spelman Rockefeller Memorial (LSRM) and became the strategic point of application for the huge funds available. Once again we see two things coming together; Lewin’s preexisting vision that was nourished by his Weimar experience could gain grounds through emerging North American opportunities.

Group dynamics, action research and leadership trainings

In 1943, Lewin decided that he needed a research institute, loosely attached to a university, but not subjected to its routines. This meant equally, that he needed funding sources outside the conventional

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494 Lewin’s Forward to *Lewin’s Topological and Vector Psychology* by [Leeper, 1943, iii]. See also [Lewin, 1936a, Lewin, 1938, Leeper, 1943].

495 Cf. [Rainio, 2009, 1].

496 [Lewin, 1945, 126]

497 Cf. [Samelson, 1985, 39].
In order to get the funding, Lewin first approached the Field Foundation, and acquired a grant of $30,000 (which equals the value of about $413,700 in 2014). In the following year, Lewin was unexpectedly contacted by the American Jewish Congress. Its president was attracted by Lewin’s articles on community organizations on minority problems and intergroup relations. The Congress offered him a million US-dollar (which is the equivalent of nearly 14 millions US-dollars today) to found a research institution devoted to group prejudice and for its effective diffusion: the Commission on Community Interrelations (CCI). By the 1946, the CCI studies of the nature and causes of tension between social groups and the methods by which these tensions might be released had received wide recognition in the US. Numerous articles appeared in professional journals, popular newspapers and magazines [cf. ebd. 202, 219].

In 1944, two new research institutions were to be established simultaneously. The second one, the Research Center for Group Dynamics (RCGD) was allocated at the Massachusetts Institute of Technology (MIT). Financial sources were found in numerous public and private foundations [cf. ebd. chap. 16, esp. 183]. The social psychologist Albert Pepitone recalls that “much of [the graduate research at MIT] was funded by outside agencies to whom the researchers reported. The Bethel workshops for leadership training were an enormous enterprise which provided paid assistantships and involved most of the students” [Patnoe, 1988, 85]. In an interview, Cartwright describes the institutional environment at the MIT as “the most productive institution I have ever experienced”.

Action taking and social change was a major focus of Lewin’s late work. The Commission on Community Interrelations was equally launched in 1944 for the American Jewish Congress and designed as the applied wing of the group dynamics research. It relied on Lewin’s conception of the role of the social scientist as a consultant or guide giving technical assistance to problem solving. In a statement suggesting a work design for the CCI Lewin delineated a combination of experiment and application, he termed action research. He introduced the action research paradigm in two late papers, Action Research and Minority Problems [Lewin, 1946] and Frontiers in Group Dynamics [Lewin, 1947b] as “comparative research on the conditions and effects of various forms of social action and research leading to social action. Research that produces nothing but books will not suffice” [Lewin, 1946]. The idea combined two components Lewin was concerned about, the systematic, preferably experimental, study of social problems and efforts at its solutions. The approach differs from classical academic psychology which until then has not been concerned with finding solutions to problems other than scientific.

A farther wide-ranging consequence of the Lewin group’s work on group dynamics and leadership re-
search, as well as their increasing reputation as area experts was the establishment of the National Training Laboratories in Bethel, Maine, in summer 1947. In 1946, Lewin was asked by the Connecticut State Commission to organize a workshop in which people would be trained and training methods would be evaluated. By then, Lewin's MIT group had assembled solid experience in different leadership styles and environments from Boys Scout studies at Iowa, in 1939 and an amplitude of leadership studies at Harwood (cf. ebd. 146). The extension consisted in the fact that the new experiments focused on community action, and their task was the controlled modeling of group behavior and the preprogrammed injection of social change.

The two weeks training program was designed for 41 students. Most of them were educators and social agency workers, half black and Jewish. During the training period, most participants returned home in the evening, but a couple remained on campus. Having nothing to do, they asked if they might sit in on the evening feedback meetings in which the research staff reported on the unprocessed data they have collected. Lewin agreed (to involve the community members in the so-called “fact-finding activity” had already proved productive in Harwood) and soon the students were involved in a vivid discussion with the research staff about their interpretations of events. The result—in the words of Bradford—was like a “tremendous electric charge... as people reacted to data about their own behavior”. The next night at least half of the workshop participants attended the evaluation meeting. By this coincidence, it could be discovered that feedback had the effect of making participants more sensitive to their own conduct. The workshop success motivated the establishment of the National Training Laboratories in 1947, under the direction of Lewin's associates Ronald Lippitt, Kenneth Benné, and Leland Bradford. Kurt Lewin unexpectedly died of a heart attack before the first session (cf. ebd. 211-3).

Publications of the MIT group dominated the early work in experimental and applied social psychology, similarly as those from the CCI.504 Deutsch recalls that the group was very influential also because of becoming active in social psychology so early that there were very few others doing research and publishing in this field.505 For many psychologists—especially students—Lewin's psychology was a way to tackle real-world problems instead of the traditional topics of attitude measurement, social facilitation, and child socialization, which filled the prominent texts of social psychology at the time.506 He therefore got a lot of appreciation from the psychological community.507

Some years after Lewin’s death, the demand for the so called “sensitivity trainings” rapidly surpassed the most audacious expectations of the original research team. In the 1950s and 1960s, it became one of the most vividly growing social phenomena in the US that had permeated industry, gained access into the educational and the service sector, as well as in many others.508

11.7 Conclusion: Towards an applied social psychology

Our work has made explicit that Kurt Lewin both adapted to American trends and helped to reshape them by pointing out new dimensions of psychology, such as the behavior of groups and the individual in a group. He was able to do so by skillfully combining accumulated experience with local impulses. Lewin’s “applied turn” was most significantly reflected in the experimental style of his American research that preserved selected elements of the Berlin-style but distinctively evolved as a whole. The dyad got substituted by groups, the workplace moved into the “field”, i.e. industrial or communal settings, while participative methods grew into a speciality. All in all, the research methods were significantly diversified while studies were conducted on the larger scale and could sometimes include a follow-up after a longer time period. Also the ambition of the experimental studies changed, or rather, was extended. In the

504 In his biography of Kurt Lewin Alfred Marrow lists over 100 publications and dissertations connected with the RCGD during the period of 1945–1950, and over 70 works related to the CCI, see [Marrow, 1969, app. E and F].
505 See [Deutsch, 1992].
506 See e.g. [Murphy et al., 1937].
507 Cf. [Back, 1992, 52].
later years, their focus went beyond the mere determination of possible actions in a given situation to *programmed influence* of those actions and desired action scenarios.\(^{509}\)

On the one side, Lewin managed to profit from the American opportunities to enrich and diversify the experimental style. On the other side, however, his experimental work in social psychology relied upon the strong theoretical foundation that was built up during the Berlin years. In addition to this, the theoretical framework of the BEP was enriched by a variety of new complex concepts that emerged in the course of the experimental research. The maintenance of the TFT thus turned out to be the precondition to the evolution of the experimental style.

In his later career Lewin used the American funding opportunities to found new institutions. In fact, the development of Lewin’s socio-psychological theory could only succeed because it paralleled the infrastructural transformation. The work conducted in the newly established institutions was to a larger extent independent of administrative and institutional boundaries; the emphasis was laid progressively on external collaboration, interdisciplinary and a hybrid work style. Lewin timely recognized an emerging demand for industrial and political consulting as well as such issues as conflict mediation and leadership trainings in the various communities he stayed in touch with. He then reacted to the demand filling the emerging niche with solution-oriented research and cross-linked the research and application areas using his networks and his reputation. That way, he eventually re-interpreted and widened the professional profile of the academic psychologist, and created an infrastructure for psychology’s transition from an academic discipline to a science-based profession.

In sum, Lewin succeeded to shape a new institutional as well as intellectual space for applied social research, which included the implementation of a theoretical and methodological agenda based on interdisciplinarity and cross-area-applications. Involving a critical number of followers and collaborators he managed to cross-link social and scientific systems in such a way that both could profit from each other.

12 Lewin's legacy and keys to innovation

The relationship of today's psychology with Kurt Lewin's work is a peculiar one. In the literature on American social psychology, Kurt Lewin occupies a prominent place (although, as was shown, the later experiments substantially rely on the methodology elaborated in Berlin). He is considered a significant figure of 20th century psychology, even a celebrity. Also the web sparkles with colorful models (allegedly) penned by Lewin. Yet, his theories are quite rarely dealt with in detail and his studies are more frequently sketched than fully reported. The links to Lewin's actual contribution remain rather loose. A significant number of psychology books refer to Lewin without explicitly quoting or discussing his work. For instance, in the Retrospections on Social Psychology one of Lewin’s most prominent students, Leon Festinger, emphasizes that his mentor inspired the socio-psychological sub-discipline without, however, touching on the specific features of Lewin’s methodology.

The role assigned to Lewin is often an inspirational one. Although Lewin dwelt among the American practitioners for less than 14 years, most scholars, who knew him personally, claimed being lastingly inspired not only by his professional style but also by his unveiled passion for his work. His field theory is known to some extent, much less his vector psychology. Quite often it comes down to the name-dropping of his most resonating conceptual pieces, e.g. group dynamics, change management and action research. Regarding the experimental methodology, Lewin is much credited with the courage to experiment on real world problems and with the ingenuity to bring complex situations into the laboratory. In a sense, it is Lewin's achievements in applied psychology that turned into an external indicator of his life's work's success. It is the American experiments, such as the leadership studies and action research, that still enjoy popularity and are valued particularly for their originality, while the German ones remain unknown.

In view of this inconsistency, the present work made it its purpose to shed light on the still little explored role of Lewin’s German work in the broader context of the history of psychology. At the beginning of the present work we advanced the following questions:

What innovation did Kurt Lewin contribute to contemporary psychology? How did Lewin's and his colleagues’ empirical work bring about the development of a new system of knowledge?
What role does Kurt Lewin’s contribution, in particular his early professional experience in Germany, play in the history of experimental psychology?

In the first section of this concluding chapter we shall delineate the main traits of Lewin’s psychology against the background of the then-predominant academic tension between humanities and natural science. In the ensuing section we reconstruct the process throughout which he and his collaborators approached innovations. Undertaking a change of perspectives, we conclude with a brief evaluation of the traces of Lewin's German career in modern psychology.

12.1 Lewin’s core achievements in the historical context

12.1.1 Between two poles

The above-mentioned questions were tackled against the backdrop of a historical reconstruction of the German experimental psychology from the establishment of the first laboratory (1879) to the Nazi Gleichschaltung (1933). In this period different research attitudes co-emerged. The general historical trend

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511 For a newer summary on Lewin reception see also The Beginnings of Business Psychology with Kurt Lewin, published in German under the title Anfänge der Wirtschaftspsychologie bei Kurt Lewin, [Lück, 2011, 91, 110].
512 Cf. [Festinger, 1980].
went from the polarization and the negotiation of the discipline’s place in the academic field, through the diversification of experimental styles, to the split into various research schools and their specialization in the more or less related psychological domains.

In Chapter 1 we have shown how the network of the pioneers of experimental psychology stemmed from the philosophical hegemony of the 19th century. Its members, such as Wundt, Küpe, Stumpf, Müller and Ebbinghaus, were trained in the spirit of duality between psychology and philosophy. They pushed psychology towards an independent disciplinary identity. In this process the central issue was whether experimental psychology would take the shape of a human or a natural science. Therefore in the 1900s and 1910s, their offspring, a succeeding generation of experimental psychologists, was trained in the middle of an academic controversy between the “pure” philosophers and the experimentalists.

As discussed in Chapter 2, in the 1920s, the war intermezzo boosted the fast growth of applied psychology in the Western world and initiated a rapid methodological shift towards natural science-based and applied psychology. While German psychology remained institutionally attached to philosophy, it increasingly developed its own academic infrastructure (i.e. a network of laboratories) in this way solidifying its status as an independent discipline. At the same time, a diversification of psychological schools and experimental styles took place.

In the middle of this controversy, fundamentally different psychological doctrines sought for the origins of human behavior. On the one side, the approach named associanism with its offspring psychology of will (e.g. by H. Ebbinghaus, G.E. Müller and N. Ach) represented the rather natural-scientific style of thinking. On the other side, qualitative and humanistic (meaning individual-centric) Gestalt psychology, as well as for instance Sigmund Freud’s psychoanalysis built the humanistic (geistwissenschaftliche) pole of the same discipline.

We have delineated that associanism largely dismissed the cognitive dimension of the individual psyche barely distinguished psychology from natural sciences. The intention behind it was to imitate natural-scientific objectivity. For the experimental procedures this meant that the proband was depersonalized and understood in terms of its studied qualities. A research goal was the determination of an average situation much rather than of individual traits. In other words, individuality was widely dismissed from the research scope.

Gestalt psychology in various ways represented a counter-movement to the disintegration of the discipline. The Gestalt psychologists refused to delimit themselves to philosophical theory or psychological experimentation (Chapter 3). We learned that the Gestalt school of psychology combined philosophy as a knowledge framework and experimental research as the validation of this knowledge. Therefore for the Gestalt group it was a priority to justify psychology as both an empirical and a philosophical discipline. In other words, Gestalt can be positioned as an integrative humanistic approach to psychological research. Kurt Lewin’s psychology of human conduct was closely associated with Gestalt psychology in the 1920s and early 1930s. Both the Gestalt school in general and Lewin’s research program in particular made it their task to understand the underlying non-phenomenological layer of mental processes (Chapters 3, 5 and 6). The Gestalt psychologists distanced themselves from natural-scientific approaches that tried to isolate particular phenomena and explain them in terms of stimulus-response-correlations. Instead to the Gestalt practitioner observable data represented “symptoms” or “surface” indications of “deeper-lying” wholes.

In the present work we investigated Lewin’s psychology of human conduct in relation to the two poles that majorly co-influenced the constitution of the early experimental psychology, i.e. natural science and philosophy. As was demonstrated in Part II, Lewin’s psychology of human conduct made use of philosophy of science to build a general theoretical framework, on the one hand, while it reviewed and extended the associanist studies on willful action on the other hand. The decline of elementaristic psychology and the “mechanistic” psychology of will together with the liberal Gestalt patronage at the University of Berlin delivered the academic milieu, in which Lewin’s psychology of human conduct could
12.1.2 Key achievements of Lewin’s circle’s German work

What does Lewin’s psychology of human conduct (Verhaltenspsychologie) represent? The environmental psychologist Brunswik situates it halfway between psychology of perception and behavior ("pre-behavioral" but "post-perceptual") claiming that Lewin’s pathway towards a systematic psychology behavior remained uncompleted.513 Throughout this in-depth investigation, we have seen that areas of Lewin’s Berlin research included perception, thinking and motivation mechanisms, as well as some aspects of psychology of personality, cognitive, social and developmental psychology. The BEP created new trend-setting impulses in the domains of the resumption and accomplishment of interrupted activities (the so-called “Zeigarnik effect”), the interplay between a person’s self-confidence, self-aspiration and his/her performance, the emotional substitutions, the emergence of anger, the various modes of interaction between a person and his/her environment, the emergence of social conflicts, and others. Altogether, Lewin’s Berlin research group conceived a theoretical and empirical framework through whose prism such broad psychological categories as action (Handlung), behavior (Verhalten) and human conduct could be shaped. Other concepts, such as will, anger and psychic satiation were reformulated in the context of this framework (Chapter 9). There is thus no point in delimiting the conducted research to just one narrow domain or method of investigation. We may, however, say that the multiple facets of human conduct represent the core of Lewin’s research.

As demonstrated in this book, a sustainable achievement of Lewin’s Berlin work was placing questions of personality into a social context. At the outset of the BEP, psychology of human conduct dealt specifically with the investigation of the individual psyche, investigating no more than the psychic processes of one person at a time. By 1936, the approach developed in Berlin pointed to a way to jointly study individual psychological situations and social conditions within one and the same research scheme. From the point of view of Lewin’s field theory—condensed in \( B = f(P, E) \)—there is no distinction between psychology of personality and social psychology; the investigative situation is recognized as intrinsically social. By the early 1930s, concepts describing social reality, such as the “environment” and the “social field”, became research focus (see Chapter 9). Giving room to these extensions, Lewin’s psychology of action developed potential to embrace mental processes involving more than one individual, which was well operationalized in his American research on group behavior. One may say that his assertive campaign against the fragmentation of psychology into individually structured and little interrelated sub-domains (see Chapter 5 on philosophy of science) was not sufficient to win the war. Yet, in a sense, Lewin won the battle for the unification of individual and social psychology.

Nevertheless, probably the most fundamental outcome of Lewin’s German work was the theoretical body he built together with his colleagues, i.e. his Topological Field Theory (TFT). In Part III we have shown that Lewin’s topological field theory is a body of definitions and axioms that can, and has generated psychological work hypothesis. These definitions and axioms were extracted from interdisciplinary origins, as was specifically demonstrated in Chapters 6, 7, 10, and represent functional abstractions integrated and unified in a joint theoretical body (elaborated in 12.2). In the introduction to this dissertation we pointed out that “the goal of field theory is to be able to describe fields with systematic concepts in such a precise way, that a given person’s behavior follows logically from the relationship between the person and the dynamics and structure of his concrete situation”.514 It does so by describing the necessary and sufficient conditions for particular behaviors and experiences employed to analyze the mutual relations of the individual and the environment, as well as changes in this relationship.

513 Cf. [Brunswik, 1943, 266].

514 This nice definition originates from an early systematic study of some contribution on Lewin’s Berlin group, [de Rivera, 1976, 3].
There are at least three features of the TFT that account for its particular value and secured Lewin the so-called “competitive advantage” vis-à-vis other contemporary research. First, the TFT represents an applied multi-level tool for the analysis of causal relations in psychic processes. Second, it offers a system of modeling psychological situations that was more flexible than the preexisting ones. It was applicable to very different psychic processes by gathering a variety of patterns, which linked to each other, could model diverse constellations of psychic facts (see 12.2 on page 176). To make an analogy, similarly a chess computer is preprogrammed to preview for a significant amount of combinations and scenarios of the development of a game. In other words, Lewin’s substituted static modeling by a dynamic one. Third, the applied reservoir of conceptual patterns offers an additional analytical dimension, the so-called psychological space. Real-life situations were transposed into this dimension in order to be studied. Hereby, topological diagrams were to make the analysis more systematic and help with the research design, in particular to account for changes and reversals of states of mind. The medium made use of the advantage of simultaneity over the spoken language, for instance by simultaneously representing forces that have impact in a situation. Importantly, it also offered a way to simultaneously analyze the psychic activity of more than one individual, which enabled socio-psychological research. In more general terms, it allowed for a higher analytical precision. (We discussed the analytical procedure that was part of Lewin’s experiments in Section 9.1 and Chapter 10.)

The main task of the TFT is mapping the psychic situation at hand, as well as its changes over an observation time span. As specified, in an advanced stage of the experimental program the research group had gathered a reservoir of conceptual patterns (or simply, knowledge items) that accounted for psychic processes. Using these knowledge items, psychic processes observed throughout the experiments had to be mapped. For any new psychic situation or process, the knowledge items were re-organized and interlinked in a new meaningful way, so an adapted model emerged (several examples were presented e.g. 17 on page 121). Studying a concrete case of psychic activity, scholars strung together the conceptual patterns as a modular construction system, be it a particular psychic process (“dynamic” model) or situation (mostly implemented in topological drawings). In Lewin’s own words, he substituted static modeling with a “dynamic” one. The accumulated reservoir of conceptual patterns accounted for a variety of possible development scenarios of psychic processes. Obviously, this implied that Lewin’s style of mapping psychic reality was more complex and elastic than the preexisting ones. On the one side, it offered the opportunity to grasp psychic processes specifically, case-by-case. On the other side, however, the application of the TFT seems substantially more challenging than that of the other then-existing theories involved in experimental research of behavior or will. In sum, however, our historical analysis has shown that for a short historical period Lewin’s TFT could contribute most promising insights to the contemporary research in these domains (see Chapter 6 for the yields of the field approach in Germany and Chapter 11 implemented in the American psychology). The tool allowed to tackle problems from various psychological sub-fields, such as individual psychology (personality, will, emotions), group psychology or social psychology, data originating from experiments in laboratory conditions and field experiments (as for instance, Lewin’s American Boy Scouts experiments outlined in Chapter 11).

Nonetheless, the composition of knowledge patterns into models was to obey rules dictated by Lewin’s philosophy. This meant that all of the TFT concepts could be applied exclusively to the processes of mental life. In other words, the researcher had to specify every concept as a mentally effective entity (“what is real is what has effects” within the psychological field). For example, if Lewin spoke of “dynamics”, this implied a “psychic motions”. If a “reality” was mentioned, one could be sure that a

515 Nowadays, data reservoirs are expansive and processes operating with these data are so complex that they cannot be operated but by machine memory and intelligence. Be it a tax or accounting problem, or a chess championship, whenever there is a need to operate with big data in a limited amount of time computers are often able to solve those complex tasks faster and more accurate than humans. In his epoch, Lewin dealing with an early stage of the similar problem in applied psychology. In fact, one could imagine feeding a data base with patterns of the TFT to thereafter select and combine those fitting for the analysis of a particular case with the help of an algorithm.

516[516][Lewin, 1936a, 19].
“mental reality” is at stake. In this way, the consistency of the conceptual system as a whole was assured.

It is the interplay of experimental experience and theoretical revisions throughout the Berlin Experimental Program that accounts for the constitution of the described theoretical body of knowledge. We have demonstrated how Lewin's circle used the TFT to extract knowledge from (experimental) experience to extend the knowledge framework of psychology of human conduct (Part III). Nevertheless, the specific style of experimentation introduced by Lewin's group bears a value in itself. The creativity and spontaneity that eventually resulted in the interactivity of the experimental style (described at length in 8.6) became somewhat of the trademark of Lewin's group. The Berlin experiments on real-world problems with the ingenuity to correctly transpose those into the laboratory (via Gestalt-style transposition) bridged half the way to Lewin's famous American experiments in the real-live environments. Such are for instance, experiments involving variations of hierarchical settings, which probably stood at the beginning of Lewin's later comparative study of the democratic and authoritarian classrooms. Moreover, the functionalization of feedback, that entered the Berlin experiments in a subtle way at first, became an essential feature of Lewin's socio-psychological experiments around 1940. Context-dependent conduct in the course of an experiment grew into a successful research principle in its own right, i.e. the socio-psychological “action research”. In the Epilogue, we have seen that in Lewin's American studies tackled new challenges and had a vast impact. The ensuing developments in psychology and the social sciences inherited many features of the Berlin experiments (Chapter 11, see also section 12.3).

12.1.3 The network and the academic milieu

Against this background, it seems important to recall that Lewin's experimental program could only properly be evaluated, and was, in the context of the overarching Gestalt infrastructure in Berlin, Frankfurt and Giessen. As exemplified in Chapter 8, the Gestalt experimentation was not limited to just one specific set of procedures. Instead, a variety of styles and experimental procedures was co-practiced; the informal democratic atmosphere of the involved institutes supported the sharing of both tacit knowledge and specific experimental techniques. The Gestalt psychologists worked through the rich possibilities of theory-based procedures; different but related theories were verified in open-ended research programs. Research was conducted in a large variety of psychological and psycho-physiological subdomains at the same time. The extraordinary growth of the doctrine and influence of the Gestalt school in the Weimar years substantially succeeded due to even this simultaneous advancement of different research paths.

Lewin's own experimental program at the Berlin Institute reflected this superstructure and dynamics on a smaller scale. Lewin's circle of the Quasselstrippe investigated the horizon of possibilities of psychology of human conduct (Sec. 8.6). The group was the agent constituting and transforming the reservoir of shared knowledge described above. First of all, several research pathways were explored at the same time, so results would be brought together and eventually integrated. Secondly, interdisciplinary expertise was brought together. The dense Weimar academic environment enabled collaboration with specialists in diverse disciplines, such as neurologists and physicists. As a result, we have seen that interdisciplinary know-how played an unmistakably significant role in the constitution of the TFT. Notably, the principle of the maximal interdisciplinary exchange was revived in the American years, in which experience from various social sciences, such as sociology, anthropology and economics, was exchanged, for instance, in the community founded by Lewin, i.e. the Topology Group (Chapter 11).

12.1.4 The aftermath

What is thus the aftermath of Lewin's German work in experimental psychology? The bottom line is that his Berlin research did not excel due to then-elaborated insights in psychology; these more frequently
emerged in his later American research. However, its core achievements consist in the conceptual and methodological frameworks (i.e. Lewin’s three theoretical systems, see conclusions of Part III) as well as the original style of experimentation, which he widely developed in the German years. It is the later utilization of these methodological and conceptual insights that yielded Lewin his most famous experimental designs with an outcome that had significant long-lasting impact (see 12.3). The heyday of Lewin’s psychology was however only possible due to its German roots.

12.2 The epistemic cycle: On the constitution and evolution of knowledge systems

Against the background of our historical case, a major focus of the present work is the transformation of the theoretical body of knowledge over time. The dissertation tackled the question: How did Lewin’s and his colleagues’ empirical work bring about the development of a new system of knowledge? I elaborated in detail the complex process of the formation and evolution of bodies of shared knowledge, including different stages and mechanisms of this process. As a result, the present work delivers a systematic reconstruction of the process in which new knowledge is constituted. I shall outline the different stages and components of this process, in the following referred to as epistemic cycle.

The model in figure 25 on page 178 graphically reflects the main steps of the knowledge flow. The model was built on the basis of the examined historical case and reflects the way innovative knowledge structures emerged. As shown, the specific mode of interplay between experiment and theory is decisive to the transformation of the theoretical body of knowledge. Trying to give the model a universal shape, I would like to place it at the disposal of other historians and social scientists interested in the analysis of epistemic processes.

12.2.1 Function of the network as a research function

The epistemic cycle starts with its central agent, Lewin’s Berlin circle. As discussed, this circle was equally a community of interest sharing whole knowledge and experience package. Ludwik Fleck once described similar scientific communities as “thought collectives” (Denkkollektive) unified by commitments to common “styles of thinking” (Denkstile). In the case of the BEP the two main functions of the research collective were a simultaneous multi-directional exploration of the new domain and a combination of different types of (and often interdisciplinary) know-hows. We shall turn our attention to the object of transformation. Lewin’s group made it its task to build up a theoretical framework apt to deal with increasingly more complex psychological processes, on the one hand, and equally developing experimental methodology to gain new insights, on the other hand. The members of the group were studying concrete cases from the perspective of a broad theoretical framework in order to extend and revise this throughout their studies. We shall elaborate on this.

12.2.2 Sources of knowledge

A starting point in designing the new body of theoretical knowledge for psychology of human conduct was the learning from “disciplinary experience” historically accumulated in other disciplines. As shown, Lewin tried to apply developmental principles observed in historically more mature disciplines. A source of inspiration was the organization of theoretical knowledge in physics (Chapter 5). In practice, digging into the experience ambit of other disciplines (studied through the prism of the neo-Kantianist approach) gave

518In today’s academia, too, several research networks take on a similar strategy, i.e. a joint multi-directional exploration of ideas in a shared field. Cross-disciplinary groups enable exchange by bringing together expertise from different fields. In this way, new knowledge emerges at the interface of different areas of expertise.
Lewin’s circle a whole normative set of design rules for psychology ((a) in fig. 25), and helped to define more precisely the key notions of the psychological discipline, such as “psychological phenomenon” and “psychological law” (see more in Table 2 on page 69).

The constitution and evolution of the TFT as a knowledge system heavily relied on continuities with its sources (discussed specifically in Chapters 6, 7, 10). As was shown, three types of knowledge sources were tapped in the context of the BEP, which resulted in Lewin’s psychology of human conduct. These comprise (1) knowledge appropriated directly from disciplines other than psychology, (2) the output of earlier research in experimental psychology and (3) experience-based knowledge from the BEP itself (see fig. 25). Concerning the first type—knowledge appropriated from other disciplines—we have to further distinguish between a directive set of rules originating from philosophy and interdisciplinary patterns that were appropriated in the topological field theory. These resources were operationalized in different ways.

1. Knowledge appropriated directly from disciplines other than psychology: To deal with the growing and increasingly complex psychological processes, Lewin appropriated and integrated parts of different psychological theories (Chapter 6) as well as thought patterns of diverse origins. Therefore the theoretical framework of the experimental program is build on Gestalt theory as well as on experience collected in such domains as the early psychology of will, physics, biology, physiology and mathematical topology. We have shown that the mathematical imaginary inspired Lewin’s topological psychology as, for instance, the physical field model inspired the psychological model of the field. Concepts of the TFT were built via functional abstraction ((b) in fig. 25). Analogies with concepts that indicated a dynamic process in physics were made, e.g. “energy flows”, “distribution of forces” and “tendency towards an equilibrium”. (For instance, Chapter 7 was explicitly devoted to the shaping of natural scientific analogies for psychology.) The “materiality” of spatial constructs was borrowed from biology. Different types of processes were possible in different material environments. Accordingly, “softness” and “robustness” of spatial structures were employed to build up a particular milieu, in which psychic events take place following a set of implicit rules. Different “levels of psychic reality” were attributed differing material properties. Representation of knowledge entities via images and/or equations are further types of functional abstractions (Chapter 10). Importantly, every conceptual layer kept a specific analytical function that was akin to the function of the set of concepts in the original discipline.

2. Knowledge assembled earlier in experimental psychology: Here the BEP foremostly relied on the experimental studies of volition, described in chapter 6, as well as on preceding Gestalt psychological research (Chapter 3 and 8).

3. Experiment as knowledge trigger: The experiments of the BEP aimed at the generation of specific psychic activity. In Section 8.6 we have demonstrated that the semi-spontaneous interactive character of experiments was essential to the empirical practice of Lewin’s Berlin group. It was specified how experiments trigger the revision of knowledge. We have discovered that by conceiving his experiments as social situations, Lewin rendered to the proband the freedom to co-shape the development of the experiment. In the created “quasi-social” settings, Lewin’s disciples were experimenting with types of hierarchies, at times creating a comradely atmosphere, and at times bossing the proband around or provoking this to act out. They provoked out different variations of anger (Dembo’s study), or variations of children’s play (Sloisberg’s research). Such research designs allowed for a large variety of spontaneously constituted experimental scenarios, which frequently led to surprising insights. Those insights, in turn delivered the basis for new questions that animated further research. One may add that Lewin’s later experiments granted its subjects an even bigger autonomy by including much of the real life situa-
Figure 25: Epistemic cycle 1: Constitution of the knowledge system

A large body of knowledge in physics is gained through exploratory experiments, rather than through controlled experiments. As Friedrich Steinle notes, exploratory experiments typically look for “regularities” rather than proof; the stock of knowledge at the outset of the experiment is mostly limited and “unstable” while, in turn, the epistemic expectations are high; also the procedures are guided by rather unspecific, hence flexible, methodological guidelines and involve auxiliary means that cannot be too confiding. According to Fleck and Lewin, an open exploratory research design is optimal to gain new knowledge in a little explored field. Friedrich Steinle, whose primarily analyzed experiments in the history of physics, suggests that explorative experiments (in physics and other sciences) possess similar traits. These have proven to be applicable in very different experimental settings in different historical periods and academic environments.

519"Once a field has been sufficiently worked over [...] the experiments will become increasingly better defined. But they will no longer be independent, because they are carried along by a system of earlier experiments and decisions, which is generally the situation in physics and chemistry today. Such a system will then become self-evident know-how itself. We will no longer be aware of its application and effect." The translation is mine.

520See [Steinle, 2005a, 521-528] and [Steinle, 2005b, chapter 7].
In sum, the semi-structured explorative style of experiments allowed for a maximum of new impulses. As a result, over the years, the group assembled a vast reservoir of conceptual patterns that could be put together just as construction bricks, depending on the psychological situation that was to be built up.

12.2.3 Shift of emphasis: Circulation of knowledge between theory and experiment

The experimental program started off with knowledge collected foremostly from external sources. The emphasis of the research program then increasingly shifted to the interplay of theory and experiment, their mutual adjustment and extension. Experienced-based insights enriched and transformed the shared knowledge reservoir throughout the course of the BEP (Part III). These were collected and reviewed in student experiments (Chapter 9). Mechanisms of the re-organization of knowledge patterns were identified in the present work; we further zoom into the details of the interplay between experiment and theory (illustrated in fig. 26).

Figure 26: Epistemic cycle 2: Interplay between experiment and theory

Once an experiment is conducted, the researcher employs the accumulated reservoir of conceptual patterns to map a particular mental process or situation (as shown in the preceding slide). One of the two following scenarios seem possible in this case: either (2a) the knowledge items at hand suffice to conveniently grasp this process or situation as a whole or (2b) an incomplete or inconsistent model, that cannot grasp the whole process or situation, emerges in the first step. In principle, this leads to two parallel scenarios or possible cycles. In the small cycle, 1–2a–4–1, knowledge is verified and stabilized through the experiment. As a consequence, the knowledge framework is not revised, but confirmed (s. figure 26).

In the second case, 1–2b–3–4–5–1, the model obviously lacks a certain pattern that is not yet included into the reservoir of conceptual patterns, a so-called "uncertain variable". A trial and error approach

521 The research challenge is thus comparable with that of an algebraic equation. We earlier discussed that Lewin tried to find
allows for generating different types of "uncertain variables" aiming to leverage the inconsistency. Once an acceptable conceptual pattern is generated (3) and the original model is complemented and restructured (4) the cycle concludes with a new experiment (1). In this case, the function of experiment is the verification of the new "variable" and the new model. The trial and error approach continues until theory and experiment mutually fit. The outcome of the trial and error approach is thus the extension and/or revision of knowledge patterns (5). In sum, every time the big cycle 1–2b–3–4–5–1 is run through, the underlying body of knowledge is extended throughout the inclusion of a new conceptual pattern.

On top of this, by means of the reconstruction of the epistemic cycle underlying the Berlin experimental program we could identify three relevant motors and mechanisms triggering the emergence of new knowledge. All three suggested triggering mechanisms contribute its share to the transformation of the body of knowledge (see fig. 27). These are: (A) The experiment, that generates new experience; (B) the TFT, i.e. the applied analytical tool makes the discovery of the inconsistency possible; (C) the researcher's imagination (i.e. experience-based but flexible abstraction) that allows to generate different types of uncertain variables that could neutralize the inconsistency. A short reflection on the role of the imagination may be added. As was pointed out, Kurt Lewin was looking for characteristics of the higher mental processes. The relevant psychic processes could be neither properly observed, nor have they been conveniently described by Lewin's colleagues and predecessors. Therefore, apart from the accumulated knowledge, the imaginative capacity of the scholars played a significant role in the discovery process. In case the model at hand was inconsistent with the observed phenomenon (case 2b), the researcher would have to resort to this unusual resource to identify the uncertain variable. The cognitive faculty we resume under the term "imagination", in short, implies the relevant capacity to productively combine experience with a case-specific abstraction so that new knowledge patterns can be generated. The extension and adjustment of models generated with the TFT thus rely on the accumulation of experience and the experience-based but loosely detached from it, capacity to think abstractly.

12.2.4 Multi-stage process supervision

In the given historical example we deal with a multi-stage supervision of a research cycle, meaning Lewin's effort to overview and steer all the stages of the epistemic procedure. We have demonstrated that three theoretical systems were combined in Lewin's work, i.e. a philosophical, a methodological and a conceptual one. These are different in nature and pursue different practical goals. We have the macro-dimension of Lewin's philosophical directives, or as Kant puts it, “regulative ideals” (regulative Ideale). The “regulative ideals” focus on the related analytical work without, however, singling out a specific method to be used by the practitioner. Philosophy of science formed the epistemic framework of the emerging field theory while the methodological principles represented rather specific directives to experimental procedures. Lewin went at least one step further than other “pure” philosophers of science, for instance Cassirer. In his emploi as experimental practitioner he was busy with implementing his own philosophical agenda. In sum, Lewin oversaw the investigative process at all its stages—the great design, the methodological executive design, experimental implementation, analysis, evaluation and theory building cast in one piece. In the modern economic practice suchlike approach is called supervision and control over a whole product chain. Such an approach may obviously have positive as well as negative implications. Amongst the positive, high consistency of the work and the assurance of a high quality at every step of the way.

\[^{522}\]As above noted, that methodological principles of the interactive procedure have been extracted from the students' dissertations where these were rather closely connected to the experimental case at hand while commentaries on the analytical part of the procedure were mostly derived from Lewin's philosophical papers.

\[^{523}\]Our work clarified that in his German career Lewin combined the two researcher profiles of the philosopher and the experimental practitioner while in his American years he nearly fully abstained from philosophical research.
12.2.5 Maturation of the body of knowledge over time

Overall, the research program represents a stepwise formation of a reservoir of knowledge organized in the form of a conceptual network. A crucial observation is that the investigated body of shared knowledge matured over the years of theoretical and experimental work (see in particular Chapter 9). First of all, the maturation of the body of knowledge is reflected in the growth of the entire knowledge reservoir, which is linked with the extension and revision of individual patterns. Beyond the quantity, maturation also touches upon the conceptual precision. We demonstrated how experimental work, supervised by Lewin, added components to the knowledge reservoir and extended this by filling in knowledge gaps. This resulted in the increase of density and the stabilization of the enclosed body of knowledge. This stabilization of conceptual body of the TFT implies that the theoretical structure in question was verified in many different experimental sequences and therefore is less likely to be refuted. As a consequence, a part of experiments of the later BEP period (maturity stage) did not limit themselves to qualitative investigation but combined this with a quantitative approach (see Section 8.6). In sum, over the course of time, the system accounted for an increasing number of mechanisms and scenarios of psychic processes that were to eventually explore variations of psychic activity by characterizing them with increased precision.

12.3 The disappearing footprints: From a river to rivulets

The summary of Kurt Lewin’s work achievements presented above leaves us with one question: Which of the just-delineated achievements of Lewin’s (German) work have had an impact on the long-term history of psychology, and which were quickly outdated? At the time of Lewin’s demise at the beginning of 1947, the stream of methodological precepts in American psychology headed strongly into another
direction. Experiments were conceptualized as demonstrations of functional relationships between specific stimulus elements, now known as “independent variables”, and specific response elements, called “dependent variables”. Against this background, research in social psychology continued being carried out by associates of the Research Center for Group Dynamics, among whom were such fairly established psychologists as S. Asch, M. Deutsch, F. Heide, J. French, L. Festinger, R. Lippitt, D. Cartwright and others. However, as delineated by Kurt Danziger, social psychologists, who claimed to have been inspired by Lewin quickly split into two distinct directions. One group abandoned experimentation and either concentrated on observational methods or on programs of social melioration. A second group, whose most prominent representative was Leon Festinger, gave their preference to laboratory experimentation in which the systematic manipulation of complex social situations played a major role. It is this group that provided the nucleus for the development of postwar mainstream social psychology in North America. Unlike Lewin’s, their research described (socio-)psychological relationships in terms of linear relationships among discrete, formal variables and cast its analysis in the then-popular statistical methods.

Nonetheless, a small hard-core community of students and associates loyal to Lewin’s research style lasted over several decades. They kept Lewin’s network, i.e. the Topology group, alive. A so-called First International Kurt Lewin Conference, held in March 1984 at Temple University in Philadelphia, brought together academics, practitioners and students, who reported an impressive variety of applications of Lewin’s ideas in their ongoing work (e.g. in the domains of therapy, education, business, organizational psychology, human resources, action research, the study of cooperation and competition, and more). A commemorative volume of the Journal of Social Issues, published in 1992 by a group calling itself “second-generation Lewinians”, is another piece of evidence of the persisting impact of Kurt Lewin’s heritage. In the editor’s words, the volume “devoted to demonstrating that social psychology is still finding inspiration for the practical application of theory and methods in Lewin’s thought and work”; it “calls attention to Lewin’s continuing influence on the application of social psychology to the solution of social problems.”

12.3.1 North American reception

To today’s students of psychology Kurt Lewin will probably be known as the founder of the applied social psychology—a reputation mostly thriven on the basis of his research during the American years. Along with Freud, Lewin is remembered as the person who first made psychology applicable to human life in society (as opposed to the artificial reconstruction of the social order). Nonetheless, it is his studies of phenomena of group life, such as prejudice, in or exclusion and discrimination, as well as theoretical frameworks like group dynamics, change management and action research that are still popular nowadays. His German work in psychology of will and human conduct are barely known instead. What went lost first was the creativity and spontaneity of the experimental style, which Lewin displayed in conceiving and optimizing several parts of the research interaction with his probands. According to Danziger, Lewin’s American followers soon started to create a canon of experimental frameworks, which were documented only in the last experimental phase, namely only after the intended results were achieved through pre-studies. By contrast, Lewin’s Berlin group made the process of reflection and finding of solutions as such as its focus. Elliot Aronson, Festinger’s student, comments of the socio-psychological experiments conducted by their group:

“There were lots of rehearsals […]. Festinger was always concerned about having a scenario

524 See e.g. [Danziger, 2000, 340].
525 Cf. [Danziger, 1992, 320f.]. See also some of Festinger’s works as, for instance, [Festinger et al., 1950, Festinger, 1953].
526 Main result of the conference are held dawn in [Stivers and Wheelan, 1986].
527 See [Danziger, 1985a, 1ff.].
528 See [Danziger, 1995a, 1ff.].

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that would make sense for the subject and engage his interest while testing our hypothesis [...]. It was clear that Festinger attending to methodological details that were absolutely essential but most researchers never wrote about. There were things that we never saw written down any place in any journal article or methods book controlling the experience of the subject—having the subject experience the thing you intend for the subject to experience—*that's* playwriting” [Patnoe, 1988, 223-226; emphasis original].

The semi-spontaneous interactive component, which was as essential to Lewin's research practice as it was to his research philosophy, vanished from the agenda of the next generation of social psychologists. The crucial questions of the meaningfully communicative interaction between experimenter and subject was pushed in the background. Lewin's innovativeness—for instance, his Iowa experiments on group climates—was not tied to such conventions. Instead the theory-guided experiments prevailed.

Obviously, Lewin's theoretical key achievement, the topological field theory, left its traces in the history of psychology. Martin Gold, Emeritus Professor at the Research Center for Group Dynamics, underlines that the still valid analytical advantage of the field theory is that it helps to explain individual's psychological experience and behavior while being applicable to collective psychological facts and its social environment.

“Field theory as it has developed up to now at the psychological level of analysis will continue to prove enormously useful to social psychological research in at least two ways. First, it will keep foremost a useful conceptualization of the individual whose psychological experience and behavior psychologists aim to explain. Progress in theoretical and empirical work at the boundary depends on increasing our understanding of the psychological processes in the interior. Second, theoretically guided social psychological investigations will require conceptualization of the social facts beyond the boundary. Very little has been done so far to impose field-theoretical concepts on social, collective facts. Initial conceptualizations such as 'social space' (Lewin, 1939/1948), 'gate-keeper' (Lewin, 1943/1951f), and 'group atmosphere' (Lewin, 1939/1948) suggest how this work can be done. Field theory as practiced at the psychological level is a useful model to follow as we move out into the social environment” [Gold, 1992, 74].

Today's American experimental psychology is dominated by an approach, dubbed by Benjamin (2009) "cognitive behaviorism". The cognitive development of the American psychology did not take off until well after the World War II. It stepped in where the classical behaviorism failed to solve questions about human thought, memory and motives for action. The current of "cognitive behaviorism" recognizes an amalgamation of the behaviorist striving for objective data and the needs of a science of the mind. The modern multidisciplinary approach borrows what it needs from computer science, linguistics, economics, communication science, information theory, social psychology and neuroscience. Thus, in fact, after leveling out the extremes of the radical behaviorism modern psychology re-adapted traits that were yet specific to Gestalt, such as the interdisciplinary methodology employed for the investigation of subtleties of the higher mental functions. From the perspective of the present cognitive psychology Lewin's framework of dynamic psychology seems to deliver a solid basis for the modern holistic theory of cognition and behavior. For instance, the Finnish social psychologist's Rainio's "neo-Lewinian" theory implies that the psychic force is viewed as the probability of a transition from the cognitive state to another. Thus, extending Lewin, the strength of the force has an exact measure, which is probability. While the cognitive course of events is a stochastic process controlled by those probabilities. In this modern interpretation, Lewin's suggestion to assume that valence fields generate psychic forces is made mathematically more exact.

On the other side, we see that the impact of the field theory is long-lasting but progressively weakening. Gold (1990) listed a number of descriptions in current textbooks and compendia, which generally speak

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529 What the field-theoretical perspective has to offer in dealing with the latter sort of social conflict is, first of all, the diagnostic tools by which to recognize it. An adequate diagnosis will reveal that the problem lies not only with the individual—that is, in the life space—but also in the social environment—the foreign hull—where the legitimacy of goals is adjudicated” [Gold, 1992, 76].

530 See [Benjamin, 2009, 388]; see also [Mandler, 2002, 339–351].

531 See [Rainio, 2009].
of the field theory in the past tense and discuss the ways in which it is not a theory. C.-F. Graumann (1992) documented the decline of references to Lewin and his field theory in psychological journals. As a counter-development to the apparent long-term success of Lewin's field theory, we observe the failure of its far-reaching formalization initiatives. Those extensions that Lewin sketched out at length but did not consequently elaborate or apply in his lifetime. In retrospection, a number of German and American historians of psychology, such as Danziger, Back and Graumann, claim that parts of Lewin's topology, his vector psychology and the hodological space, never really took off.

According to the American historian of psychology Kurt Danziger, Lewin's theoretical language virtually died with him. Lewinian concepts were popular for a while, but in practice they worked only insofar as they had not been formalized: “Lewin (1936, 1938) attempted, quite unsuccessfully, to introduce a relatively high level of formalization into psychological theory” [Danziger, 2000, 341]. Back agrees that “as fruitful as Lewin’s work has been, it lost identity, and one may surmise that the absence of a strong mathematical core was at least a contributing factor” [Back, 1992, 58].

“Field theory is still honored as a recognized system of psychology; but topological psychology and similar mathematical neologisms, like hodology, are forgotten or, at best, remembered with an embarrassed smile” (ebd. 53).

Certainly, Lewin's field theory still gets more attention where it hit the spirit of the time and was integrated in prevailing branches of American psychology, such as for instance, ecological psychology. The historian Michael Cole points out that Lewin's field theory played a role in the formulation of psychological ecology as a way of “discovering what part of the physical or social world will determine, during a given period, the ‘boundary zone’ of the life space of an individual” [Cole 1996, 223]. Lewin had entered psychological ecology with an analysis of the social structure through which organ meats might enter the wartime diets of Americans. Follow-up research was undertaken by his collaborators and successors, such as Festinger, Schachter, and Back’s (1950) study of the influence of social norms in a housing project, as well as the efforts to map the domain of psychological ecology by Barker and Wright (1959), Barker (1968), and Bronfenbrenner (1977). Another example is Lewin’s impact on the development of economical psychology. For instance, his Harwood studies of the employees „resistance to change“ influenced the mainstream-interest of American psychology and are still remembered in today’s research.

Besides psychology, the field theory found various applications in social sciences. For instance, in The Forms of Power the philosopher Thomas Wartenberg puts forward a “field theory of power”, which explains how the power-holder modifies the nearby space in this way creating power relations as dispositions.

12.3.2 German and East-European reception

For a contrasting perspective on Lewin’s footprints, a brief look at his impact on psychology in Germany and the Russian-speaking countries of the former Soviet bloc will be of use. In Germany, Lewin’s reception experienced an essential revival in the early 1980s. From 1981 to 1983, the Kurt-Lewin-Werkausgabe, a collection of his works in four volumes appeared. Amongst these a range of previously

532 See [Gold, 1990].
533 See [Graumann, 1992].
534 This quotation refers to Lewin’s two most extensive publications on his topological theory and its formalization, i.e. [Lewin, 1936a, Lewin, 1938].
535 See e.g. [Lewin, 1951c, 59].
536 Cf. [Cole, 1996, 222ff.] and [Moser and Uzzell, 2003, 421f.].
537 See [Lewin, 1943]/[Lewin, 1951c].
538 See [Festinger et al., 1950], [Barker and Wright, 1955], [Barker, 1968], [Bronfenbrenner, 1977].
539 See [Lück, 2011, 109].
540 See e.g. [Wartenberg, 1990, 71-90].
unpublished German-language works, and some not yet translated into German, can be found. Simultaneously, a temporary tide of research publications on Lewin’s work shaded light on previously neglected aspects of his work. Curiously, this Lewin revival coincides not only with the liberalization of the political climate but also with the Americanization of German psychology. Lewin re-entered the headlines of German history of psychology as an established member of the American (not European) tradition.

Speaking about the former Soviet bloc, it seems important that in the Russian-language tradition psychology is conceptually and methodologically strongly embedded into the framework of the humanities (geisteswissenschaftliche Tradition). In the 1920s and the early 1930s, Lewin’s group entertained promising collaborations with the Soviet research community gathering around the cultural psychologist Lev Vygotsky. Vygotsky’s research circle, situated in Moscow before being forced out to the Ukrainian Kharkov, formulated a cultural-historical approach to psychology of the higher mental functions. Since 1925 vivid exchange between Lewin and the Russians Vygotsky-Luria-Lewin-triangle was entertained. They met at various international congresses, together with Luria Lewin participated in two expeditions to Central Asia and visited Moscow in 1932. Shared interest existed in the exploration of processes of thought, perception, child development and motives of action. Lewin’s creative use of the field concept and his microfilms seemed to awake much interest of the Russian-speaking scholars.

In 1930-1, two of Lewin’s Berlin students Bluma Zeigarnik and Gita Birenbaum returned to the Soviet Union and started collaborating with Vygotsky on psychological research in clinical settings, where they thought of applying and promoting what they had learned in Berlin. At first, they were welcomed with open arms. Yet, the flirt of Soviet psychology and Western science could not last much longer. The exile of the Kharkov School, the communist-marxist Gleichschaltung of psychology and overall social science, as well as the Iron Curtain that generally prevented exchange for several decades had a lasting impact practically in annulling germinating collaborations. Today, a consequence is an astonishing ignorance and the scarcity of references to Lewin’s work in the Russian-speaking community.

With the loosening of the political polarization and the emergence of the dissident movements in the early 1980s, Zeigarnik, now a renowned Soviet psychology professor, published the first Russian-language volume devoted to Lewin’s early work in Berlin, i.e. Kurt Lewin’s Theory of Personality. With one exception, up until 2000, Lewin’s own writings have not even been published in Russian language. In 2001, the first collection of his major theoretical and methodological works appeared in translation, edited by Vygotsky’s associate A. Leontiev.

Based on this evaluation of Lewin reception in both geo-political blocks we thus see that the intellectual isolation caused by the Iron Curtain surmounted the closeness of scholarly views. Being much closer to the humanistic pole established in Soviet psychology, Lewin received more recognition in the United States, where he had the chance to join the mainstream and build up a strong academic network, and remains hardly known in the Russian-speaking countries. In this case, the fruitful exchange with a convergent development was thus geo-politically decapitated.

541 After Vygotsky’s death in 1934, the group was forced out to the Eastern Ukraine by political authorities; in this peripheral place it continued its research as the Kharkov School. For an extensive account on the Vygotsky circle and the Kharkov School see for instance [Yasnitsky and Ferrari, 2008, Yasnitsky, 2009].
542 See [Luria, 1931, Luria, 1932, Luria, 1933].
544 In 1931-32 Birenbaum and Zeigarnik worked at the Clinical Department of the Institute for the Research of the Higher Nervous Activity (IVND) in Moscow, and later, they moved to the All-Union Institute of Experimental Medicine (VIEM) where they worked under Vygotsky’s supervision up to his demise in 1934. They collaborated with a group of researchers at the Psychiatric Clinic, mostly medical doctors—psychiatrists and neurologists—that included N.V. Samukhin, E.S Kaganovskaya, and A.M. Dubinin. The work of the Moscow group of clinical psychologists was paralleled by the research in Kharkov, at the department of clinical psychology of the Ukrainian Psycho-neurological Academy (Luria, Lebedinsky, Gal’perin, Zaporozhets, Kozis, Margolis and Voloshin). See [Yasnitsky, 2009, espec. 66f.]. See also Bluma Zeigarnik’s interview with Yaroshevsky, [Yaroshevsky and Zeigarnik, 1988].
545 See [Zeigarnik, 1981].
546 The only work existing in Russian translations before 2001 were the American ones: Field theory in social sciences (1951) and Resolving social conflicts (1948).
547 See [Leontiev and Patayeva, 2001].
In summary, the most central observations about the aftermaths of Lewin’s psychological work are following:

1. Lewin’s Germany-rooted psychology still makes an appearance in today’s “Western” psychology and social science, but the connection to what he actually accomplished, especially in his German research, is loose and unspecific.

2. While interest in his experimental style and the conceptual idea behind the field theory is still widespread, the mathematization of his field proved to be a failure.

3. Traces of his work have spread into different research domains and disciplines. A development similar to the splitting of a tight current into several rivulets took place.

4. For geo-political reasons linked with successful networking and institutionalization, among others, Lewin’s work had a much more lasting impact in the Western world than in the former Soviet bloc.
Appendix

A BEP: works, participants, experimental periods

Below one may find a directory of works whose main outcome was derived from the Berlin experimental program. These are Lewin’s papers and published talks, as well as published and unpublished predoc-toral works by his disciples. In each case only the first appeared publication in the original language of the writing is listed. Further publications are:

- Lewin (1926): Vorbemerkungen über die psychischen Kräfte und Energien und über die Struktur der Seele
- Lewin (1926): Vorsatz, Wille und Bedürfnis
- Zeigarnik (1927): Das Behalten erledigter und unerledigter Handlungen
- Schwarz (1927): Über Rückfälligkeit bei Umgewöhnung (I)
- Karsten (1928): Psychische Sättigung
- Ovsiankina (1928): Die Wiederaufnahme unterbrochener Handlungen
- Lewin (1928): Die Entwicklung der experimentellen Willens- und Affektpychologie und die Psychotherapie
- Lewin (1929): Die Entwicklung der experimentellen Willenspsychologie und die Psychotherapie
- Lewin (1929): Die Auswirkung von Umweltkräften
- Freund (1930): Psychische Sättigung im Menstruum und Intermenstruum
- Birenbaum (1930): Das Vergessen eine Vornahme
- Lewin (1930): Kindliche Ausdrucksbewegungen
- Hoppe (1931): Erfolg und Mißerfolg
- Dembo (1931): Der Ärger als dynamisches Problem
- Lewin (1931): Ersatzhandlung und Ersatzbefriedigung
- Lewin (1931): Environmental Forces in Child Behavior and Development
- Lewin (1931): Die psychologische Situation bei Lohn und Strafe
- Lewin (1931): Sachlichkeit und Zwang in der Erziehung zur Realität
- Voigt (1932): Über die Richtungspräzision einer Fernhandlung
- Frajans (1933): Die Bedeutung der Entfernung für die Stärke eine Aufforderungscharakters beim Säugling und Kleinkind
- Frajans (1933): Erfolg, Ausdauer und Aktivität beim Säugling und Kleinkind
- Brown (1933): Über die dynamischen Eigenschaften der Realitäts- und Irrealitätsschichten
- Mahler (1933): Ersatzhandlungen verschiedenen Realitätsgrades
- Schwarz (1933): Über Rückfälligkeit bei Umgewöhnung (II)
• Forer (1933): Eine Untersuchung zur Lese-Lern-Methode Decroley
• Lissner (1933): Die Entspannung von Bedürfnissen durch Ersatzhandlungen
• Lewin (1933): Eine dynamische Theorie des Schwachsinnigen
• Sloisberg (1934): Zur Dynamik des Ersatzes in Spiel- und Ernstsituationen
• Lewin (1934): Der Richtungsbeginn in der Psychologie
• Lewin (1935): A Dynamic Theory of Personality
• Lewin (1936): Principles of Topological Psychology
• Jucknat (1938): Leistung, Anspruchsniveau und Selbstbewußtsein
• Wiehe (unpubl.): Die Grenzen des Ich / Die Wirkung sozialer Machtfelder auf das Kind* (The Behavior of the Child in strange Fields)
• Rosenfeld (unpubl.): Die Wirkung von Erfolg und Misserfolg bei verschiedenen Altersstufen*
• Köpke (unpubl.): Ersatzbefriedigung bei normalen und schwachsinnigen Kindern*
• ? (unpubl.): Psychische Sättigung bei Schwachsinnigen*548

548The four unpublished student works marked by the asterisk are listed as in GSIA PK, I. HA, Rep.76 Va, Sect. 2, Tit.X, Nr. 150, III, p.382.
Table 4: Experimenting students and experimental periods of the BEP

<table>
<thead>
<tr>
<th>Author</th>
<th>Titel</th>
<th>Publ. year</th>
<th>Experiment. period</th>
<th>M/ F</th>
<th>Origines</th>
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<tbody>
<tr>
<td>1. Zeigarnik, Bluma</td>
<td>Das Behalten erledigter und unerledigter Handlungen</td>
<td>1927</td>
<td>1924-1926</td>
<td>F</td>
<td>Puenai, Litauen</td>
</tr>
<tr>
<td>2. Schwarz, G.</td>
<td>Über Rückfälligkeit bei Umgewöhnung (1. Teil)</td>
<td>1927</td>
<td>12/1923-08/1924</td>
<td>M</td>
<td>Germany</td>
</tr>
<tr>
<td>4. Ovsiankina, Maria (Rickers)</td>
<td>Die Wiederaufnahme unterbrochener Handlungen</td>
<td>1928</td>
<td>1924-1926</td>
<td>F</td>
<td>Chita, Asian Russia (Russian father, German mother)</td>
</tr>
<tr>
<td>5. Freund, A.</td>
<td>Psychische Sättigung im Menstruum und Intermenstruum</td>
<td>1930</td>
<td>?</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>6. Birenbaum, Gita</td>
<td>Das Vergessen eine Vornahme</td>
<td>1930</td>
<td>1924/25; 1928/29</td>
<td>F</td>
<td>Kowno, Russia (Jewish?)</td>
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<tr>
<td>7. Hoppe, F.</td>
<td>Erfolg und Mißerfolg</td>
<td>1931</td>
<td>?</td>
<td>M</td>
<td>Germany</td>
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<tr>
<td>8. Dembo, T.</td>
<td>Der Ärger als dynamisches Problem</td>
<td>1931</td>
<td>1925-1928</td>
<td>F</td>
<td>Baku, Russian Empire/Azebaizan (Jewish)</td>
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<td>9. Voigt, G.</td>
<td>Über die Richtungspräzision einer Fernhandlung</td>
<td>1932</td>
<td>?</td>
<td>M</td>
<td>Germany</td>
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<tr>
<td>- Frajans, Sarah</td>
<td>Erfolg, Ausdauer und Aktivität beim Säugling und Kleinkind</td>
<td>1933</td>
<td>1928-1929</td>
<td>-</td>
<td>-</td>
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<tr>
<td>11. Brown, Junius F.</td>
<td>Über die dynamischen Eigenschaften der Realitäts- und Irrealitätsschichten</td>
<td>1933</td>
<td>SS 1930</td>
<td>M</td>
<td>USA</td>
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<tr>
<td>12. Mahler, Wera</td>
<td>Ersatzhandlungen verschiedenen Realitätsgrades</td>
<td>1933</td>
<td>1930-1931</td>
<td>F</td>
<td>Hamburg, Germany (Jewish?)</td>
</tr>
<tr>
<td>- Schwarz, G.</td>
<td>Über Rückfälligkeit bei Umgewöhnung (2. Teil)</td>
<td>1933</td>
<td>12/1923-08/1924</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Author</td>
<td>Titel</td>
<td>Publ. year</td>
<td>Experiment. period</td>
<td>M/ F</td>
<td>Origines</td>
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<td>16. Jucknat, Margarete</td>
<td>Leistung, Anspruchsniveau und Selbstbewußtsein</td>
<td>1938*</td>
<td>1931-1934</td>
<td>F</td>
<td>Gumbinnen, Germany</td>
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<tr>
<td>18. Rosenfeld</td>
<td>&lt;another study on the experience of success and failure&gt;</td>
<td>unpubl.</td>
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</tr>
</tbody>
</table>

Most of the works can be consulted in the HUA. Information on experimental periods is derived from student publications listed in the bibliography.

* Jucknat submitted her doctoral study to the Berlin University in October 1936. Information on the unpublished dissertations originates from Lewin’s account in **Environmental Forces (1931)** and ***A dynamic Theory of Personality (1935).***
B List of Abbreviations

- BEP - Berlin Experimental Program
- CCI - Commission on Community Interrelations (established by Lewin in New York)
- GStA PK - Geheimes Staatsarchiv Preußischer Kulturbesitz (Secret State Archives Prussian Cultural Heritage)
- HUA - Humboldt University Archives
- RCGD - Research Center for Group Dynamics (established by Lewin at the MIT)
- TFT - Topological Field Theory
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