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Qualitative Developmental Research Methods in Their Historical and Epistemological Contexts[1]

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Abstract: Methodology is not a "toolbox" of different methods from which the researcher selects some on the basis of personal or social preferences. If the *Ganzheitspsychologie* traditions of the last century have taught us anything, then it is the importance for scientific investigation to consider the developmental processes of the whole phenomena. We have taken a closer look at the fundamental ideology underlying qualitative and quantitative methodology in the context of development. For a thorough understanding, we must look critically at the meaning of "development," that is, the directional transformation of wholes. Through a historical overview of "lost" developmental perspectives, we discuss the possibility of a unification of qualitative and quantitative methods. We hope to make clear that methodology is an integrated structure of epistemological processes that can equally reveal and obscure the empirical reality in the knowledge construction process of social scientists. The coordination of the different perspectives depends on the interpretation of phenomena as well as the specific research questions.

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1 This contribution is a modified version of a German article first published in the "Handbuch Qualitative Entwicklungspsychologie" (Handbook of Qualitative Developmental Psychology], edited by Günter MEY and published by the Kölner Studien Verlag; pp.35-55, see for details: http://www.qualitative-forschung.de/publikationen/qualitative-entwicklungspsychologie/.

> "When a psychologist computes the variance of a sample or uses the formulas of factor analysis, it does not mean his field has become statistics and not psychology. To analyze structures we must do the same, but, since we are not dealing with quantities, we must simply resort to more general mathematical instruments such as abstract algebra or logic."
>
> (PIAGET, 1970, p.723)

1. Introduction: Why Discuss Qualitative Methods at All?

It is more than peculiar that the discussion about qualitative methods—usually set up in opposition to their quantitative counterparts—is still happening in our present time. The discussion is largely misplaced as it creates an artificial opposition at the level of valuation of different kinds of methods, rather than raising a more general issue of methodology as unity of axiomatic, phenomenological, theoretical aspects of the same knowledge making process (BRANCO & VALSINER, 1997). Furthermore, the fact that both research orientations must deal with similar (albeit at times inverted) problems is not adequately acknowledged (see MRUCK & MEY, 1996). What contemporary science of psychology needs is clarity about how to construct adequate methods for specific research purposes and not a discussion about whether one or another category of methods is better (or worse) by virtue of their ontology. [1]

We take it for granted here that the two kinds of methods—quantitative and qualitative—are principally two different routes of the same epistemological inquiry. However, the developmental states of both forms of inquiry in-and-of themselves are anything near identical. It is very true that the quantitative line of inquiry has been extensively developed in psychology, while the qualitative line of inquiry has not been advocated broadly and instead has been seen as rather limited in its scope. Only since recently, we have seen signs of a stronger reception for the latter approach (for developmental psychology, see MEY, 2000, 2005; for schematic discussion on qualitative research in Germany see MRUCK & MEY, 2000), and furthermore we are now also beginning to encounter some serious discussions about potential compatibilities between qualitative and quantitative research methods (see FIELDING & SCHREIER, 2001). [2]

As we see it, the question about "which methods are adequate for what kind of research goals?" cannot be answered independently of the nature of the phenomena under investigation. Psychology cannot lose its original phenomena from focus. Once it does, it becomes an artificial construct. The dangers of such development have been present all over the independent history of the discipline. Our current glorification of the methods—first quantitative, but eventually qualitative ones—is a symptom in the continuing crisis of the discipline. If phenomena become lost behind the vast array of methods, such as "valid,"

"standardized," or the like, science will be replaced by alienated data accumulation. [3]

In real *Wissenschaft* (or science), methods and their evaluation depend upon the goals of the investigators, their general theoretical credos. In the case of developmental phenomena, the issue is complicated by the very fact of limited understanding of basic developmental perspectives in psychology. It is precisely the limited understanding of developmental theories that makes this area of knowing (*Wissenschaft*) a well-suited arena for examining the limitations of contemporary "methods discourse" in psychology as a whole. Psychology's progress depends upon the creation of new abstract knowledge at the intersection of different thinking styles, or *Denkstile* (BENETKA, 2002) in the discipline and their relation with the basic phenomena of human conduct. [4]

2. What Is Development?

Central to understanding development is the notion of *transformation*. Novelty is only detectable in comparison of the new with the previous forms (or structures). That is, it is a concept that inherently entails a detection of qualitative difference in the form of time-extended phenomena. The focus of the study of psychological development is on *structural transformation* of the phenomena of human conduct. The notion of conduct is here used to emphasize the systemic unity of external behavior and intra-psychological feeling and thinking—along the lines charted out by Pierre JANET decades ago. It does not matter what kinds of systems of conduct are involved. They are all open systems, as it is only open systems (which depend for existence upon exchange with the environment) that are capable of development. Conduct systems of persons are thus subject to the same laws as those of small groups, communities, collectives, corporations, and countries. All these varied (in size) systemic units are amenable to development. In the case of human ontogeny the development of course occurs throughout the life course, and within each of the sub-parts of the life course—down to the minimal event sequences of some "Here-and-Now" setting where the person creates an understanding of the actual context (*Aktualgenese* or Microgenesis). [5]

The focus on development thus cuts across the boundaries of different disciplines, forming a unified *developmental science*. In this sense of focus on structural transformation, developmental psychology has a parallel in developmental biology, at least in terms of its interest in the growth of multicellular organisms. The growth of anatomical organs, or tree leaves, is a problem of similar kind: how to make sense of structural transformation? Hence, we can consider all biological and social sciences that study development as belonging to one unified science—developmental science (CAIRNS, ELDER & COSTELLO, 1996). Developmental science entails efforts to reveal *general* laws of *emergence of novelty* along the trajectories of irreversible time in any open system. The problem, however, is that much of developmental psychology's standardized methods are borrowed from the realm of non-developmental psychology. In fact, mathematical models of the emergence of multi-cellular structures in

developmental biology may be closer to the ones needed in developmental psychology (see VALSINER, 1997, Chapter 3). [6]

3. Historical Background for the Study of Development

Developmental ideas have had a complex history within psychology over the past century and a half—they have recurrently been in the process of becoming established and then vanishing from the discipline (CAIRNS, 1998). Part of the reasons for such "lost and found" status of these ideas is due to the dominance of applied concerns of child psychology over those of general issues of development. [7]

3.1 Developmental psychology often lacks clarity about development

Paradoxically, the developmental perspective is least visible in the area where it should be most advanced: in child psychology. Yet on a second thought, that need not be so paradoxical. The research on children is entrenched in answering questions of allied social morality. Children are value-laden objects of investigation, and their development is viewed in any society through a prism of social representations that prescribe "good" or "bad" ways of their development. In contrast, developmental science is a general scientific discipline (*Wissen-schaft*) that includes both the actual development of children and the representations of such development into one general knowledge base. Child psychologists often work on topics of largely applied nature, where issues of development remain secondary to various concerns of children's (well)-"being," rather than "becoming." Hence not every study of children is developmental in its focus. In fact, most of child psychology is based on non-developmental axioms. It generates data about children "as they are" rather than "as they become." [8]

3.2 Three major directions of developmental thought in history of psychology

3.2.1 The "genetic logic" of James Mark BALDWIN

BALDWIN's systematic focus on the processes of development has been covered elsewhere (VALSINER & VAN DER VEER, 2000). BALDWIN's "genetic logic"—logic for development (BALDWIN, 1906)—still remains unsurpassed by its intellectual potentialities a century later. [9]

Any logic for development has to take into account the open-endedness of the developmental process. That is, how novel forms may emerge at some junction, given a previously existing structure and its current relation with the environment (see similarity with the ideas of *Ganzheitspsychologie*, below). The organism is active within its environment through a process of constant experimentation, trying and trying again (or engaged in "persistent imitation"), which leads to the differentiation of the environment and of the intra-psychological world (BALDWIN, 1895, 1897). [10]

BALDWIN clearly understood the theoretical dangers of viewing the organism's environment in terms of its static features. The world of the developing person is variable. That variability is generated by the fluidity of social interaction:

> "... the child begins to learn in addition the fact that persons are in a measure individual in their treatment of him, and hence that individuality has elements of uncertainty or *irregularity* about it. This growing sense is very clear to one who watches an infant in its second half-year. Sometimes the mother gives a biscuit, but sometimes she does not. Sometimes the father smiles and tosses the child; sometimes he does not. And the child looks for signs of these varying moods and methods of treatment. Its new pains of disappointment arise directly on the basis of that former sense of regular personal presence upon which its expectancy went forth." (BALDWIN, 1894, p.277) [11]

From such heterogeneity of the person's social environment follows the need for selective treatment of that heterogeneity by the person. As developmental science would discover a century later (MOLENAAR, 2003): *variability* is *the phenomenon* that needs to be studied empirically, rather than be eliminated by statistical manipulations of the data. [12]

For BALDWIN, unsubstantiated quantification of phenomena was a theoretical error. He understood the futility of the transfer of quantitative methodology to psychology:

> "The ... quantitative method, brought over into psychology from the exact sciences, physics and chemistry, must be discarded; for its ideal consisted in reducing the more complex to the more simple, the whole into its parts, the later-evolved to the earlier-existent, thus *denying or eliminating just the factor which constituted or revealed what was truly genetic* [genetic here = *developmental* in the sense of 21st century]. Newer modes of manifestation cannot be stated in atomic terms without doing violence to the more synthetic modes which observation reveals." (BALDWIN, 1930, p.7, added emphasis) [13]

Development entails transformation of structures (qualities) and cannot be reduced to the qualified counting of elements of such structures. The structures involved are fluid. That is, they are not only open to transformation, but are also constantly in the process of transforming. As a result, at any cross-section of time a developmental scientist can detect a high variability of structural forms of different "levels of Gestalt" (VON EHRENFELS, 1988). Furthermore, looking diachronically, the researcher detects a myriad of transformation of these structures as efforts to adapt to changing environments. [14]

Thus, in the case of psychological phenomena, variability is relevant both in the environment of the person, and in the intra-psychological realm. The latter becomes constructed through constructive internalization. The person

> "... comes more and more to reflect the social judgment in his own systematic determination of knowledge; and there arises within himself a criterion of private sort

> which is in essential harmony with the social demand, because genetically considered it reflects it. The individual becomes a law unto himself, exercises his private judgment, fights his own battles for truth, shows the virtue of independence and the vice of obstinacy. But he has learned to do it by the selective control of his social environment, *and in this judgment he has just a sense of this social outcome*." (BALDWIN, 1898, pp.19-20) [15]

It is obvious that the social nature of a person is expressed in his personal individuality. That individuality becomes differentiated from its social roots, and acquires relative autonomy. Mere slavish mirroring of the social world is rendered impossible by the heterogeneity of the latter, which triggers the need for "systematic determination" of the new knowledge by way of internalized selection mechanisms that operate within mental processes: through cognitive schemata (BALDWIN, 1898, p.10). The notion of such schemata—not as *re*presentations of the world but as *pre*-organizers of the person's encounters with the future states of the world—was crucial for Henri BERGSON's (1907) concept of pre-adaptation. [16]

3.2.2 Genesis of mental phenomena (the "Würzburg School")

It was the tradition of research on complex mental processes developed by Oswald KÜLPE after his move from Leipzig to Würzburg that allowed psychology to gain a glimpse into the emergence of mental Gestalts (KUSCH, 1999). The focus on the investigation of higher psychological functions found its beginning in the "Würzburg School"[2]. This includes the question of emergence of new forms of mental phenomena—how the higher functions emerge on the basis of their lower counterparts. [17]

The core of epistemological thought characteristic of the KÜLPE-group was the focus on realization—the dynamics of becoming real. KÜLPE's main work of three volumes was called *Die Realisierung* (KÜLPE, 1912, 1920, 1923). KÜLPE's general theory of *Realisierung* considered the centrality of volitional processes as integrating forces of the psychological system:

2 The "Würzburg school" consisted of KÜLPE and just a few coworkers (August MESSER, August MAYER, Ernst DÜRR, Henry WATT, Johannes ORTH, Klaus MARBE, Johannes LINDORSKY, Robert OGDEN, and others). Karl BÜHLER started in Würzburg in1906 and remained the main assistant to KÜLPE until the latter's death. KÜLPE also had numerous short-term visitors working with him, among whom Kurt KOFFKA (who worked toward his *Habilitation* with KÜLPE), Max WERTHEIMER, Charles SPEARMAN, and Albert MICHOTTE could be noted. It can be claimed that KÜLPE was a key figure in German-speaking psychology of the beginning of the 20th century, linking different holistic perspectives which did not always cooperate with one another.

The "Würzburg school" has been largely written off by later reconstructions of psychology's history as a failure—of the introspective method allowing access to complex phenomena (such as "imageless thought"). What has been overlooked in this re-writing of history is the positive contribution of that small group of researchers on the whole history of contemporary cognitive science (SIMON, 1999) and socio-cultural perspectives in psychology (Lev VYGOTSKY—cf. VAN DER VEER & VALSINER, 1991). Karl BÜHLER was prominent in the development of the notion of communication, and is de facto the discoverer of the phenomenon of insight in human thinking processes (BENETKA, 1995; VALSINER, 1998).

> "Circumstances do not rule us, but we confront circumstances,—choosing, arranging, and directing. Our mind is not the sport of incalculable accident; but according to the measure of the strength that is in us, the strength that manifests itself in attention, we can transcend the limits of our organism and help to move the universe, propounding and realising ideal ends. We do not stand in the mere course of events, indifferent transmitters of mechanical processes; we prove our independence and our freedom by rational test and consideration of the impressions that pour in upon us, and by consistent devotion to the plans and tasks that our conscience has approved."(KÜLPE, 1903, p.68) [18]

The focus on holistic integrative processes of the psychological (internal) and the external worlds were central for *Realisierung*. Furthermore, it was the introspective experimental tactics that were able to address these processes directly. [19]

A typical "Würzburg task" entailed a sentence or "saying," with the goal of getting a yes/no answer to the direction "Do you understand <saying>?" The *yes* or *no* answer was not meant to be data *per se*, but merely a transition point for the observer to move to immediate reporting of how the answer was arrived at. This moment was expected to trigger the processes that the knowing subject could report. For example,

> Experimenter (Karl BÜHLER): "Do you understand: *when the minds begin to moralize, the devils are set loose*?" [Erst wenn der Geist in die Moral fährt, geht der Teufel los]
>
> Observer (Ernst DÜRR): <9 seconds> "Yes"—"… comprehension came with the word: Nietzsche. This stood for the thought: Nietzsche is an example that if one wants both to be witty and treat of ethics, one is shadow-boxing" […wenn man geistreich sein will und Ethik treibt, man die Geister hintereinander jagt …] (BÜHLER, 1908, p.15) [20]

This format of the introspective experiments indicates that these studies were predecessors of microgenetic methods that went into vogue in the 1920s. The whole period before World War I was a growth time for different process-oriented tactics of investigation—necessarily qualitative in their nature—that were to tackle the complexity of the human psyche. [21]

3.2.3 Ganzheitspsychologie

It is rather unfortunate that the productive developmental ideas of the "Second Leipzig School" of Felix KRUEGER, Hans VOLKELT and others have not received adequate recognition during our time. *Ganzheitspsychologie*, in parallel with James Mark BALDWIN's efforts to build a new system of "genetic logic," has been the core of developmental science in the 20th century. It has antedated a number of themes that become popular again in psychology in the 21st century, such as affect and its embodiment (DIRIWÄCHTER, 2003). Furthermore, *Ganzheitspsychologie* proceeded in directions that our contemporary developmental

science is only beginning to address—the empirical ways of gaining access to developmental processes (see DIRIWÄCHTER, 2004a). [22]

From the viewpoint of developmental science, scattered static elements of a psychological phenomena have little use for psychology since only through their structural configuration, that is, their every-changing relationships amongst themselves and through their dependence on embeddedness within a greater whole do they come to "life." At the core of *Ganzheits*-perspective lies the notion that the whole has the emergent and functional primacy in relation to its parts (see DIRIWÄCHTER, 2004b). That notion has been shared by other holistic perspectives in Continental European thinking in terms of complexes and *Gestalten* (ASH, 1995). In the most general—axiomatic—terms: *any whole is different from a listing or summing up of its parts*. Yet it can be different in different ways: by way of emergence of new quality from combination of elements (e.g. WUNDT's *creative synthesis*), or by way of transformation or differentiation of a new whole based on a previous one, or by a "top-down" *Gestaltung* of the phenomenological field through social representations or generalized signs. This axiom of the whole needs to be understood from the perspective of the experiencing organism: "Certain relationships of independently variable composition of consciousness form (as a relationship) characteristics, that claim the independent variableness for themselves (as one). One calls these characteristics *complex qualities*." (EHRENSTEIN, 1934, p.12) [23]

For psychology, what develops are not scattered static elements, but whole organisms that are comprised of consolidated, yet ever transforming components that represent sub-wholes in and of themselves. Yet the complex quality of the whole has a creative or novel character that is always *qualitatively* different from its subparts. The whole has an "*over-summative*" character: it takes the form of multi-level structural unity which, in case of developmental phenomena, is undergoing transformation. [24]

In the definition of *Ganzheits*-psychological wholes, the structure consist of lasting joints, hierarchical layers, and holistically-related forces, that is, forces which are lawfully dependent on a totality and which give that totality its frame (KRUEGER, 1924/1953a, p.135). The totality of a person entails both the structured buildup and developmental potential of his/her organs (biological basis and its potentials), as well as non-physical capabilities. The latter we come to understand as consciousness or human psyche. Both physical and non-physical are linked together into a dispositional whole. In other words, *Ganzheitspsychologie* was the carrier of a non-dualistic perspective. Such a physic-psychic structure represents a uniform or undivided complex of constant conditions that underlies all human expressions. [25]

Still, under certain conditions one can look at partial structures (such as perceptions, memory, or productive thought) separately from the whole. Partial structures are dispositional states of affairs, which display in various degrees their inner layers and linkages. It is precisely due to these internal linkages and their relationships and integrations with other constructs (other sub-totalities) that the

totality of the entire structure consists of a dispositional whole. The dispositional whole can be subdivided into (a) *organism* (the unity of body, soul, and spirit), (b) *community*, (c) *culture and civilization*, and (d) *cosmos* or nature (WELLEK, 1950, p.12). In this sense, structure is *not* to be equated with experiences; rather it represents the conditions in which experiences emerge. [26]

Psychical synthesis is never created entirely new. Instead, it merely represents transformed relationships (VOLKELT, 1922). It can be viewed as constant differentiation and de-differentiation of field structures. Hence, Wilhelm WUNDT's principle of *creative synthesis* through re-combination of elements does not suffice (DIRIWÄCHTER, 2003, 2004c). Rather, the synthesis works between different structured fields; undifferentiated fields transform into more developed wholes (or previous structured fields are transformed into new ones). The starting point of this process is always the higher-level whole. The person's development does not progress from scattered elements to a synthesized whole, rather it progresses from one totality/whole to another (VOLKELT, 1962, p.27). [27]

The *Reale Ganzheit* (or real whole) can be empirically studied through highlighting the experienced totality, the functionality, and structure of the whole. The *Ideale Ganzheit* (ideal whole) is comprised of a formal (definition based) whole (that can be seen through logical evidence of content) and value orientations (*Wertganzheit*) that have *a priority* (in the sense of the platonic idea). These ideas follow KRUEGER's (1940/1953b) system of the whole (*Systematik der Ganzheit*) and take the unfolding processes empirically full into account. [28]

3.3 Methodology for preserving the wholes

For *Ganzheitspsychologists*, in order to proceed with any form of human analysis, we must be aware of the following differentiable aspects of analysis that must be kept separate (KRUEGER, 1915, p.75-80). First, the *analysis of components*: where components, as mentioned above, refer to the non-reducible parts of a totality, which are inevitably totalities of their own. These sub-totalities are necessarily standing in relation to each other and cannot be fully segregated from each other or from the greater totality without losing their meaning. [29]

Second, the *analysis of conditions*: this second approach, which is always conceptually abstract, goes beyond the immediate experience, rising analytically over everything that was ever a part of a single psychological experience and could ever be held in its components. Conditions are always conceptually thought and empirical conditions, which as we know all science seeks out, are abstracted from compared events of the past, which are terminologically abstracted in and of themselves. In other words, the analysis of conditions is bound to the limitations our language allows for interpretation. [30]

According to KRUEGER, the latter also applies to concept of causality, which is often—especially by psychologists—all too readily attributed into something previously not conceptualized. That is, causality is often *post-hoc* hypostatized. However, causes only represent a specific form of conditions and thus, causal

analysis is only a specific case of the analysis of conditions. This is based on the idea that from comparing past and present events, we can more or less establish the laws of these events, with the expectations that these laws will apply in the future as well. But since there is always a chance that these laws contain faults, all analyses of conditions remain more or less hypothetical. [31]

4. Axiomatic Contrasts: Developmental and Non-developmental Perspectives

In most general terms, *developmental* and *non-developmental* perspectives are opposites that deal with the same phenomena. They can be contrasted, but not eclectically mixed. The study of transformation addresses issues that the study of "things-as-they are" finds superfluous, unnecessary, or plainly labels as an "error." The non-developmental perspective is based on the *axiom of identity*:

X = [is] = X [32]

Questions of development are ruled out from that axiomatic basis. In contrast, the developmental perspective is based on the *axiom of becoming* which takes two forms:

X — [becomes] —> Y

X — [remains] —> X [33]

The axiom "X — [remains] —> X" is not the same as the identity axiom of non-developmental perspectives "X = [is] = X." *Being* is conceptualized as an ontological entity, while through *remaining,* a *process of maintaining* an emerged state of a system is implied. Both becoming and remaining are processes which guarantee both relative stability and change in the case of development. In the case of remaining, the particular system that is maintained in its general form depends upon constant innovation of the form by new parts. Biological organisms maintain themselves by the processes of new cell production and old cell death, while the form (the structure of the organism) in general remains the same. [34]

History of psychology provides us with notable—yet forgotten—examples of theoretical efforts to capture the dynamics of development. The traditions of *Ganzheitspsychologie* described above serve as examples where the implications of the non-developmental approach with its axiom of "*X = [is] = X*" were avoided. As living organisms, we not just "*are*," but rather we are constantly in the process of "*becoming*"—in an ever continuing cycle of development. Thus, the focus for science was to be placed on the transformational states of becoming. These transformational states, or transformational synthesis (VOLKELT, 1922), represented conditions through which one previous state of being was to transform into a novel form that was to comprise the beginning of the next condition of an ever-changing flow of development. Of particular interest is the focus on the *active* properties pertaining to the experiences of that organism. Further, experiencing is necessarily developmental. It is never brought to aware-

ness through an array of elements, rather experiences are perceived as a constantly transforming "whole." The flow of irreversible time provides a framework under which development occurs. [35]

4.1 Multi-level nature of development

Developmental science investigates transformation of structures at different levels of generality—phylogeny, cultural history, ontogenesis, and microgenesis (*Aktualgenese*). Each of these levels entails its own functional time unit—for instance, a period of one million years in phylogeny may be a reasonable time frame to use, while for cultural history of a social representation of some king 500 years may suffice. Ontogeny is limited to the maximum length of the organism's life time, while microgenesis may be limited to developmental transformations that occur in milli- or microseconds. [36]

A person's experience transforms from diffuse to clarity during *Aktualgenese*. Ordinary life conditions create limited access to the ongoing environmental contexts. Vision or audition may be incomplete, attention partial, and communication semi-concealed. The person complements such limitations by constructing the missing parts of the whole; the generation of subjective reality (*Aktualgenese*). We come to see the structural dynamics as a vital condition for perception in which dynamic qualities of the total field, such as affect, are being experienced. Irregularity or un-clarity leads to feelings of distress or restlessness (SANDER, 1932/1962, p.311). Our structural forces tend to press an experienced phenomenon to optimal clarity. It would be a grave mistake not to look at the intermediate steps of the process in which we gain this clarity. [37]

4.2 Trajectories in development

The study of development requires a special look at methodology. Once the nature of structure and its transformation over time is retained at the data level, the principal kind of data would be those of original trajectories of change—be those microgenetic, ontogenetic, phylogenetic, or cultural-historical. The question at stake is the preservation of the nature of the phenomena (CAIRNS, 1986) and that we should take into account the dynamics of intra-systemic variability (MOLENAAR, 2003). In the case of development, we encounter the need to deal with complex forms in transition. Theoretical ideas in psychology have rarely grasped such ideas due to the avoidance of systemic thinking. Furthermore, developmental phenomena require the conceptualization of indeterminacy together with determinacy (FOGEL, LYRA & VALSINER, 1997). [38]

Variability—both within a system over time, and between systems—is crucial for any understanding of development. Hence the trajectories described at the data level form families of similar trajectories. In order to arrive at such family descriptions, the individual case (the individual trajectory of development) is the crucial feature of the data. Generalizations in this perspective are made from single cases to the generic functioning of the personality system (LAMIELL, 2003). The empirical task of the researcher is first to analyze the systemic

functioning of single systemic case. Once the single case is explained only then can the researcher aggregate knowledge into a generic model regarding the ways in which the system works across persons (MOLENAAR, HUIZINGA & NESSELROADE, 2002; for the meaning of the single case in developmental psychology, see MEY & WENGLORZ, 2005). [39]

The process of such post-analysis aggregation is that of re-application of the generic model (created on the basis of a single case) as a hypothetical pattern to newly selected single cases. The latter may be selected on the basis of information about the standing of the case within a sample (thus leading to a combination of case-based and sample-based information—still with the primacy of the former). In fact, selection of cases from different ranges of the sample (i.e., using information about inter-individual differences)—from extreme ends and from the middle of the distribution—may help the inductive side of the generalization process. If the hypothesized generic model of the single case (and based on one single case, say, drawn from the middle range of the sample distribution) is demonstrated to function in cases which are "outliers" in the distribution, the researcher is on his/her way towards basic knowledge. This strategy is well known in linguistics, where adequacy of a theoretical proposition is tested on singular examples from language, testing for extreme cases that may refute the proposition. Finding such single counter-cases forces the theoretical system to reconstruct, or at times may even lead to the abandonment of the system. In qualitative research, the single case analysis in which new cases are added (whereby minimal and maximal contrasts are differentiated) has been particularly well developed and enhanced through GLASER and STRAUSS' (1967) framework of Grounded Theory (or "theoretical sampling"). [40]

Again, this contemporary focus is rooted in the past. *Ganzheitspsychologie* defined the whole in terms of the processes (or development) of a particular configuration (*Gliederung*), for psychology most relevant is *the experience*, and in terms of the functional and structural whole (*Strukturgefüge*); whereby the former has to be clearly distinguished from the latter two which are mediated and removed from the immediate experience. It is important to remember that the whole of the psyche is not based on logical correlations of isolated, actual "parts" that are contained in the whole. "Parts" are not independent of one another and do not merely relate to each other, rather *they are interwoven into each other*. Thus, it is not uncommon to observe experiences that lack concrete configurations and are seemingly unstructured. In this sense, a given, such as a feeling, can be qualified as a whole and differentiated from what does not belong to that given, and thus be examined based on immediate similarities. [41]

The organisms that develop are unique structures of multi-level organization. According to KRUEGER (1915, pp.166-171), in order to study the transformations amounting to new syntheses, the following three approaches must all be incorporated:

a. A consistent questioning of the developmental changes that occur.
b. How these changes are dynamically linked and integrated in a uniform whole with qualitatively different, interactive parts.
c. The awareness of an overarching "drivenness" of the totality into a certain direction, whose changes are understood developmentally and whose terminology is based on functional conditions that lead to the laws of occurrences, especially structural laws pertaining to the structure of the totality (as opposed to structure-less matter that is void of any development). [42]

These structural laws, and thus, developmental laws are the precondition of any form of analysis. *The dynamic whole with all its processes is the unit of measurement*. The totality is not just additive, that is, an amorphous unit, rather it is a synthetically, living form, a structure, that cannot be understood without the constant dynamically interacting parts, essential to life, stemming from present as well as past. In this, the *Ganzheitspsychologie* perspective was closely linked with Lev VYGOTSKY's cultural-historical perspective, particularly with the notion of "minimal gestalt" as unit of analysis. In VYGOTSKY's original words,

> "Psychology, as it desires to study complex wholes … needs to change the methods of analysis into elements by the analytic method that reveals the parts of the unit [literally: breaks the whole into linked units—*metod … analiza*, … razchleniayushego *na edinitsy*]. It has to find the further undividable, surviving features that are characteristic of the given whole as a unity—units within which in mutually opposing ways these features are represented" [Russian: *edinitsy, v kotorykh* v protivopolozhnom vide *predstavleny eti svoistva*][3] (VYGOTSKY, 1982, p.16) [43]

VYGOTSKY's critique of the Gestalt traditions (of the Berlin kind) went along with the dynamic focus of *Ganzheitspsychologie*—with the additional emphasis on the dialectical oppositions within the holistic unit (requiring the analysis to bring out the sub-parts of the whole that are in opposition with one another, yet parts of the whole). In that VYGOTSKY continued the analytic focus of "synthesis-through-analysis" that emphasized the role of generalization of knowledge based on the study of systemic single cases. Such generalization comes through the use of signs. In the layperson's world through speaking and thinking; in science it comes through the formal operations the researcher performs on the phenomena to make sense of them. [44]

3 It is important to note that the intricate link with the dialectical dynamicity of the units—which is present in the Russian original and in the recent German translation—is lost in English translation, which briefly stated the main point: "Psychology, which aims at a study of complex holistic systems, must replace the method of analysis into elements with the method of analysis into units" (VYGOTSKY, 1986, p.5).

5. The Nature of the Data: Signs, Not "Givens"

All data are signs—in the semiotic sense of that concept. These signs (data signs) re-present (*Darstellung*) and pre-present (*Vorstellung*) selected, abstracted (and hence impoverished) features of the phenomenon under investigation. The data are not a "given" entity, but signs constructed on the basis of empirical reality through the knowledge construction processes of science (KINDERMANN & VALSINER, 1995; BRANCO & VALSINER, 1997; VALSINER, 1995, 2000). [45]

This (semiotic representational) view of data makes it possible to address the issues of relative distancing of the data from their underlying phenomena. Issues of validity of the data become resolved in the analysis of whether the sign adequately represents those aspects of the phenomena that the researcher's theoretical orientation has highlighted. As signs, the data are qualitative in their normal form. Quantification is but one of the possible operations for the making of data when it is theoretically substantiated. Furthermore, the end result of any quantified data use is in itself qualitative[4]. *Wissenschaft* may use quantifications, but only for the service of a holistic, qualitative understanding of the phenomena. [46]

5.1 Data signs of different quality: points and fields

Scientific conceptual systems can operate with two kinds of substantive data signs: points and fields. These are abstract signs that stand in for the original phenomena, which are rich, fluid, and constantly transforming as a flow of experience (*dureé* in BERGSON's terms—BERGSON, 1907). As signs, our point or field terms create a relative abstracted stability of our depiction of the fluid phenomena (see Figure 1) [47]

All descriptive abstracted terms are signs which denote selected aspects of the "fuzzy" real phenomena. Such signs can be constructed in terms of homogeneous point-type signs—be those graphic points, alphabetic designations, or numbers—of the nominal scale. Each of the choices preserves some selected aspect of the original phenomena and creates a potential for further abstracted manipulation with the knowledge captured by the signs. Thus, the field-signs (A and B in Figure 1) preserve the spatial extension of the original phenomena (while losing the temporal one). The point-like signs lose both the spatial and temporal features of the original phenomena, while allowing for algebraic or quantitative transformations of the data. As is obvious, each of the routes taken for abstractive extraction of data from the phenomena entails selective retention of some features of the original together with the loss of others. What is being gained is the set of possible further operations with the

4 As an example, consider the sign functions of significance levels ($p<0.05$, $p<0.01$, etc.) as well as F-values or beta-weights reported in psychological texts. Their reporting serves the sign function of indicating a qualitative finding (e.g., some samples are claimed to be different from one another, or from a control or random case), the role of quantification is overcome by qualitative theoretical claims. In case of interpretation of correlation data (see VALSINER, 1986) such move from quantifications to qualifications entails normative inferential errors which are consensually allowed.

data, which can be of epistemological value if the theoretical system they are in give them meaning.

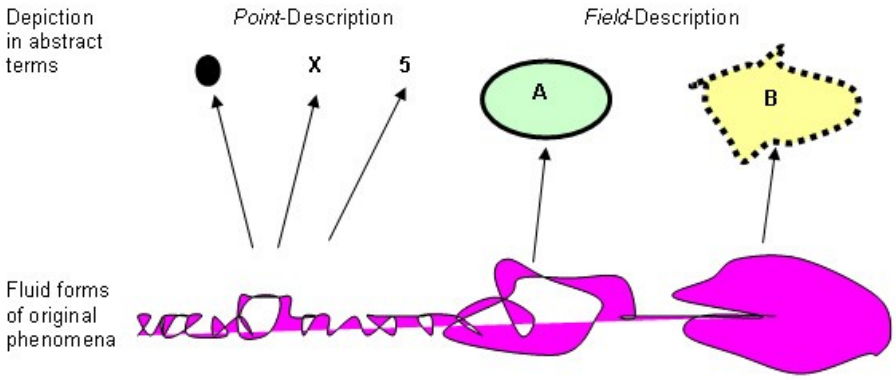
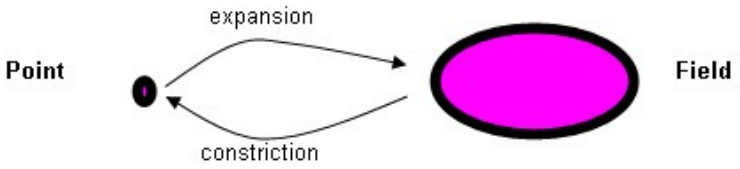


Figure 1: Theoretical terms (data signs)— point or field kind—used to represent the fluidity of phenomena of *dureé* [48]

Data descriptors as signs are mutually related. A graphic descriptor (point) can be transformed into an alphabetic symbol (X) or number ("5" as in Figure 1). Furthermore, different abstract terms—points and fields—can enter into a relationship with one another. First, it is easy to see that any point-type descriptor is a homogenized and minimized field, and any field is an expanded and heterogenized point: they can be viewed as transformations of the same sign between two forms:



Furthermore, relationships can be posited between different points/fields that define a structure—the unity of at least two elements bound by a relation of two points, as in:

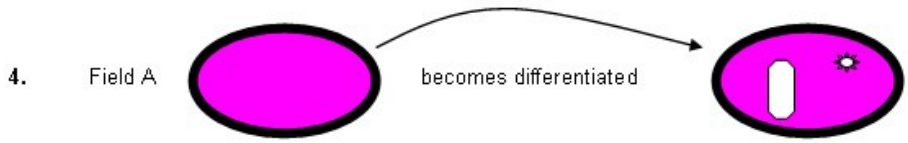
It is at this junction where the basic assumptions of qualitative and quantitative methodologies diverge. For the quantitative direction, the structure needs either to be viewed as a homogeneous unit and denoted as such, or broken into its constituent elements (eliminating the relation between the two). So, from 1. above we get:

In both cases of 2. the crucial feature of a system—the relationship between parts—is inadvertently lost. Homogenization of the data sign indicates the ease

with which the intricate structural features of the original phenomenon can become lost in the data construction process. Hence it is a necessary feature in the quantification process of data, and a counter-productive feature in the case of deriving qualitative data out of the phenomena. In case of qualitative data derivation, we are faced with the need to capture the heterogeneous nature of the original phenomenon in the data. This operation we can call the *heterogenization of the data*. [49]

5.2 Heterogenization of data as the basis for qualitative data construction

Data heterogenization entails the maintenance of the theoretically relevant features of the original structure of the phenomena in the data. It can take two forms—they parallel the two historically known views on creative synthesis in the history of holistic perspectives (that of WUNDT's "upward" synthesis from elements 3., and that of *Ganzheitspsychologie's* view of "downward" or "parallel" synthesis—transformation 4.):



Both 3. and 4. bring into the data construction the temporal sequence that had been absent in the homogenization of data. The notion of differentiation (and de-differentiation) is of course a concept that has been central to developmental science from its beginnings in the work of J.W. VON GOETHE and K.E. VON BAER to the present time, culminating in the framework of Heinz WERNER (1957). The notion of structuring of the field opens a door for new formal modeling efforts that may be borrowed to psychology from contemporary qualitative mathematics. [50]

6. Conclusion: Theoretical Primacy in Psychological Science

Both history of *Wissenschaft* and psychology's phenomenological focus lead to the same result—there is no way for any researcher to opt for the use of either quantitative or qualitative methods without verifying their adequacy for the phenomena under study and theoretical questions raised. Thus, instead of juxtaposing quantitative and qualitative methods we can consider them as parallel lines of method construction. Which of the two is selected depends upon the nature of the research question, rather than on some socially consensus-based value (or "right" or "wrong" methods, or "hard" or "soft" science). We are better

off talking about *coordination* of the qualitative and quantitative trajectories in the knowledge construction process (as FIELDING & SCHREIER, 2001 have done), rather than privileging one over another. Under some circumstances it is useful (for some research questions) to re-think an existing method of one of these trajectories from the perspective of the other. This of course happens in the case of habitual quantification in psychology, where the most intricate structured phenomena are turned into quantitative data that do not represent the crucial aspects of the phenomena any longer. Yet there are also examples of the opposite move: de-quantification of taken-for-granted classic quantitative methods (e.g. for personality inventories see DIRIWÄCHTER, VALSINER & SAUCK, 2004; VALSINER, DIRIWÄCHTER & SAUCK, 2005; for rating scales see WAGONER & VALSINER, 2003). In psychology's history, the young Jean PIAGET de-quantified the intelligence tests in order to have a closer look at how children cognitively operate upon the individual test items, rather than how the accumulated test indices represent some imaginary quality such as "intelligence" (DUCRET, 1990, pp.41-43). [51]

De-quantification of existing methods makes sense if it is warranted on theoretical grounds. Since development is by definition a systemic phenomenon, the decision to create qualitative methods (or de-quantify existing quantitative ones) may be warranted. Transformation process analyses may be particularly suggestive for the making of qualitative methods. Yet those methods are of value only because their role is to exemplify relevant aspects of the transforming structural reality—its dynamic *Ganzheits*-structure—rather than for any other reason. [52]

All our coverage in this chapter can be summarized in one simple claim: Methodology is not a "toolbox" of different methods from which the researcher selects some on the basis of personal or social preferences! Instead, it is an integrated structure of the epistemological process (BRANCO & VALSINER, 1997) that can equally and easily reveal and obscure the empirical reality in the knowledge construction process of social scientists. Developmental psychology can be developmental if it builds a methodology that affords the study of processes of development. Without such consistency it may become merely a label of no scientific consequences in its true sense (Wissenschaft). Science requires abstractive generalization of knowledge out of always local particulars—and the process of arriving at such generalizations needs to be explicit and clear in case of both qualitative and quantitative trajectories of knowledge construction. [53]

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