Journal of Person-Oriented Research
2016, 2(1–2)
Published by the *Scandinavian Society for Person-Oriented Research*
Freely available at http://www.person-research.org
DOI: 10.17505/jpor.2016.02

The Nomothetic Function of the Idiographic Approach: Looking from Inside Out

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How to cite this article
Valsiner, J. (2016). The Nomothetic Function of the Idiographic Approach: Looking from Inside Out. *Journal of Person-Oriented Research*, *2*(1–2), 5–15. DOI: 10.17505/jpor.2016.02

Abstract: Three innovations are necessary in psychology if it were to become person-oriented: (1) looking for the universal in the particulars, (2) accepting the irreversibility of developmental life events, and (3) conceptualizing transformation of complexity in terms of qualitative structures of dynamic hierarchical order. Psychology can only be a science if it resolves its ideological opposition to conceptualizing the work of general developmental principles in each and every particular instance of human experience. Wilhelm Windelband's introduction of the concepts of *nomothetic* and *idiographic* perspectives in science in the 1890s has been misinterpreted in psychology by treating these as if they were irreconcilable opposites, while the original intention was to show how generalizations can be possible precisely on the basis of single specimens. Each experience—given the irreversibility of time—is necessarily unique (with maximum frequency of occurrence 1). Considering similarity of the new with what had occurred before leads to looking at qualitative transformation of psychological phenomena—hence allowing a focus on development. Person-Oriented developmental psychology has the chance to study the emergence and disappearance of Gestalts of various levels of organization– as was suggested by Christian von Ehrenfels hundred years ago– through considering the temporal unification of the real (what has already emerged) and the imaginary (what might emerge–leading the possible emergence). This requires a radical change in the formal languages used in developmental science. An extension of the use of number system from real to complex numbers is suggested, with a focus on the dynamics of vector movements in the plane of the complex number.

Keywords: nomothetic idiographicity, similarity, sameness, *Aktualgenese*, complex and imaginary numbers, irreversibility of time, Gestalt purity and level, Ehremfels, Windelband.

Introduction

Immanuel Kant was wrong— but only half-way. He denied the scientific status for both chemistry and psychology as being incapable of reaching the status of real *Wissenschaft*. He was wrong about chemistry, but continues to be right about psychology. The absence of abstract theoretical focus—exemplified by the notion of "mathematization" in Kant's terms—is not only rampant but growing in contemporary "empirical science" of psychology[1]. The combination of the imperative of inductive inference based on "random samples" from presumed existing "populations" guarantees the poverty of understanding of the basic processes in amidst the ever-(over)-growing availability of information. Psychology of today is suffocated by the accumulation of data that do not tell us any new stories. The revival of the person-oriented perspective—hundred years after William Stern set it up very clearly in his system of

[1]Any discipline that declares itself "empirical science" closes its own door to being a science. Every science can of course include its empirical component if its theoretical structure requires it, but separating the empirical from the theoretical by the notion of "empirical science" and reducing the leading role of theorizing through such focus turns a science into an accounting exercise.

differential psychology (Stern, 1911)—entails an effort to restore the theoretical primacy in the discipline. Such effort is particularly necessary since the "information noise" that is the result of ever-increasing production of empirical data renders psychology rich in evidence and poor in explanations. The ideological prioritizing of the value of data accumulation may hinder—rather than help—our understanding of the basic principles of the functioning of the human *psyche*.

Aims and Axioms

My goal in this paper is to introduce the notion of irreversible transformation in the developmental forms—growth and decline in Gestalt hierarchies. The effort builds upon a previous elaboration of the growing forms (Valsiner, 2005) and the recent elaboration of my person-oriented perspective (Valsiner, 2015). It entails the move from real to imaginary number system in formal analyses we had suggested before (Valsiner & Rudolph, 2008) as in the human *psyche* the real and the imaginary are closely intertwined on the border of the Past and the Future. Anticipation of the latter is supported by reconstruction of the former in the unique moments of human experiencing. Hence, the person-oriented perspectives in psychology constitute an obligatory starting point for any effort in psychology as a science.

The starting axiom of these perspectives is the acceptance of the premise that *universality is necessarily present in the particulars*. In other terms—the absolute uniqueness of each and every, never to repeat itself, life experience is generated by a universal mechanism that operates in every person and guarantees their development. The second axiomatic postulate here entails *the irreversible process of form (Gestalt) reconstruction* which is an inevitable premise for any developmental perspective. The intersection of these two axioms provides a fertile basis for further creation of person-based developmental theoretical system. Yet such system is slow to emerge in contemporary psychology that is hindered by many ideological "ghosts" that come to our present day from the depth of its history (Valsiner, 2012). Psychology has been ideologically contested science between *Natur-* and *Geisteswissenschaften* in the 19^{th} century, with implications for our research efforts in the 21^{st} century.

From "Nomothetic Versus Idiographic" Opposition to Nomothetically Idiographic Science

The acceptance of the opposition—single-case (idiographic) versus populational (nomothetic)—that is widespread in psychology is a curious misinterpretation of Wilhelm Windelband's effort to reconcile—rather than separate– what was once ("*was einmal war*") with what always is ("*was immer ist*") [2]. We only need to add here—***what might become to be***—and we get the full range of the reality of human *being* (Valsiner, Marsico, Chaudhary, Sato, & Dazzani, 2015). All science builds its knowledge from phenomena that are new, surprising, and call for understanding. The individual case is at the core of scientific inference—be it in the case of an individual human being or an individual comet in the solar system. The single specimen is organized, and that organization follows general laws (Salvatore & Valsiner, 2010).

In psychology over the 20^{th} century, the contrast between the nomothetic and idiographic perspectives has acquired a surplus meaning of conflict, rather than of cooperation. The roots of that misinterpretation and its implications are thoroughly analyzed elsewhere (Lamiell, 2003). From a consistently developmental perspective, every new emergent phenomenon is unique (idiographic) and in its precise uniqueness—the very fact that it has emerged—universal principles are embedded. Development of anything new is hence **nomothetically idiographic**—the unique (maximum frequency is set at 1) can emerge only if general developmental mechanisms make it possible. In development, any new event has inevitably the frequency of 1. Once a similar event occurs later in development that recurrence can be treated as a *repetition* of the other (hence "growing" its frequency from 1 to 2 to N), or as a *similar* event. Non-developmental perspectives in psychology opt for the former, while developmental orientation necessarily needs to accept the latter perspective.

The Starting Point for Study of Development: Similarity, not Sameness.

Developmental science has concentrated on the logic of development—looking for principles of emergence (Valsiner, 2016). The most elaborate effort to discern logic of development has been that of James Mark Baldwin in the beginning of the 20^{th} century. Setting the stage for developmental science—aside from recognizing irreversibility of time—is the non-reducibility of the decision about detected differences into making of categories of sameness (in a se-

[2] Reproducing here Windelband's original location of introducing the nomothetic/idiographic distinction:"So we may say that the empirical sciences (*Erfahrungswissenschaften*) seek the knowledge of reality either the general in the form of the natural law (Naturgesetz) or the particular in the historically determined form (*Gestalt*). They consider in one part the ever-enduring form (*gleichbleibendeForm*), in the other part the unique content, determined within itself, of an actual happening. The one comprises sciences of law (*Gesetzeswissenschaften*), the other sciences of events (*Ereigniswissenschaften*); the former teaches us what always is (*was immer is*), the latter what once was (*was einmal war*). If one may resort to neologisms, it can be said that scientific thought is in the one case nomothetic, in the other idiographic." (Windelband, 1904, p. 12, 1998, p. 13, added underlining).

Here Windelband considers both nomothetic and idiographic as parts of the knowledge creation process—what once is (or was) leads to understanding of general laws, and these laws guide our understanding of the next unique observation. In the text that follows immediately he pays tribute to the conventional opposition of the natural sciences and historical disciplines, and accepts psychology into natural sciences if such choice were to be made:

"If we hold to the customary expressions, we may speak further in this sense of the opposition of the natural science and historical disciplines (*historisches Disziplinen*), provided that we bear in mind that in this methodological sense psychology is by all means to be numbered among the natural sciences" (ibid., added underline)

quence A-A, both A-s are A-s, A is A). Instead, the only categorization type that is possible in developmental science is that of similarity (in a sequence A-A the second occurrence of A is not the same as the first, but similar, *since it includes the history* of the first A). Any developmental perspective is historical in its nature (Lyra & Valsiner, 2011).

According to Baldwin (1906, p. 103) developmental differences are detected on the basis of transformation in time. Development cannot be predicted before it has happened, and it cannot be explained after it has happened. What remains is the possibility to study it as it is taking place. For example, for some time the observer does not distinguish a difference in a line of unfolding of phenomena—

xxxx...

until a next moment leads to difference that is sustained

xxxxyyyy

As a next step, recognition of yet another x in such flow ("xxxxyyyyxxxx") is not that of sameness, but only of similarity (Sovran, 1992). The second sequence of "xxxx" occurs after "yyyy" and is systemically linked with it. Neither xxxx nor yyyy are repetitions of the elements (x, y) but extensions of the given qualities (x and y) over irreversible time. The crucial question for developmental science is how to make sense of border transformations (x→y, and y→x). Secondly—it is crucial to recognize the emergence of new qualities of the whole at its moment of similar occurrence.

Vertical and Horizontal Similarities: Exploration of Unfolding Gestalt Qualities

Horizontal similarities are unique phenomena recognized as similar over irreversible time. That similarity is guaranteed through constant modification of the emerging forms that retain similarity with previous ones—yet are unique in their particulars. We can consider such transformation of forms as a case of "vertical" similarities—they are comparisons of the specimens of Gestalt structures of the phenomena belonging to a heterogeneous class (fuzzy set) as it unfolds over time. Each new similar phenomenon is of different precise form—even if the similarity can be discerned.

In nature, *psyche*, and society it is the transformation of forms that matters (Valsiner, 2005). This makes the focus on Gestalt qualities[3] central for developmental science. Gestalt qualities are the basis for any innovation—which is in itself a new Gestalt quality. Developmentally, the process of completion of the Gestalt is always open-ended (as the person faces the uncertainty of the impending future) and hence calls for free generation by the creative activity of imagination. Christian von Ehrenfels made that very clear in his exposition of the origins of Gestalt qualities:

> The mind that organizes psychical elements into new combinations does more than merely displace the component elements amongst themselves: he creates something new [*Der Geist, welcher psychische Elemente in neue Verbindungen bringt, ändert hierdurch mehr als Kombinationen; er schafft Neues*] (von Ehrenfels, 1988c, p 149; 1988b, p. 109).

Properties of Gestalt: "Level" and "Purity"

Together with the emergence of qualitatively higher forms of Gestalten comes the question of their maintenance, and dissipation. The hierarchy of Gestalt qualities could be tested by how they preserve interventions that might eliminate them—how enduring are the particular level of Gestalt qualities. Ehrenfels' elaboration of the notions of "level" and "purity" are interesting starting points for our elaborations:

> A rose is a Gestalt of higher level than a heap of sand: this we recognize just as immediately as that red is fuller, more lively color than grey. ... For *a fixed degree of multiplicity of parts, those Gestalten are the higher which embrace a greater multiplicity of parts*.... (von Ehrenfels, 1988a, p. 118, added emphasis)

Ehrenfels' comparison of the rose with the heap of sand was meant to indicate the centrality of manifoldness in determining the height of the Gestalt. A rose is a delicate unique structure that can be violated easily by pulling off rose petals one after another. In contrast, a heap of sand as a Gestalt would require diligent effort of hard work of distributing the heap into another form of non-heap of sand. As Ehrenfels suggested,

> A good method of for comparing the height of form is this: Imagine the forms under consideration (a rose, a pile of sand) to be demolished bit by bit, without plan. Whichever of the two forms goes through the wider range of alterations is the higher. (von Ehrenfels, 1948/1916, pp. 95-95)

Demolishing a sand pile has a low range of alterations (only one—dividing sub-piles of sand into smaller and smaller units, ending with single sand particles, at which the whole of the heap is gone). Demolishing a rose entails at least two alterations (pulling out the petals, breaking the stem). In terms of traditional graphic contrasts, the notions of purity and level can be expressed as in Figure 1.

Figure 1 presents the two coordinates (Level and Purity) as if these were two equal dimensions of quantitative kind. Ehrenfels himself may have given the hint towards adequacy of such presentation by using quantitative criteria (elimination of numbers of rose petals versus numbers of sand particles). It is also interesting that his criterion of determining the level was that of elimination of the parts (=detecting the resiliency of the Gestalt to loss of parts), not that of emergence of new Gestalt qualities. His use of the example of a melody—recognizing a melody

[3]The notion of Gestalt has a long history of uses in the German language, yet its relevance for psychology was introduced by Ehrenfels in 1890 (Zimmer, 2001). It implies continuity of figure and form. Its parallel terms—*fundierter Gegenstand* (Meinong) and *Einheitsmoment* (Husserl) have not found wide use in psychology.

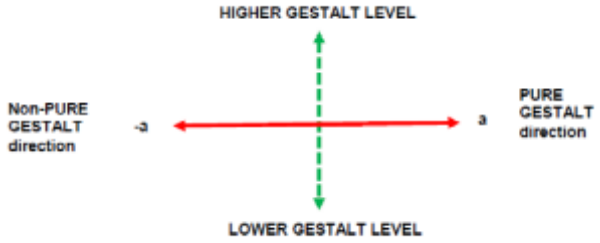

Figure 1. simple depiction of the relations between Gestalt Level and Gestalt Purity (after Ehrenfels).

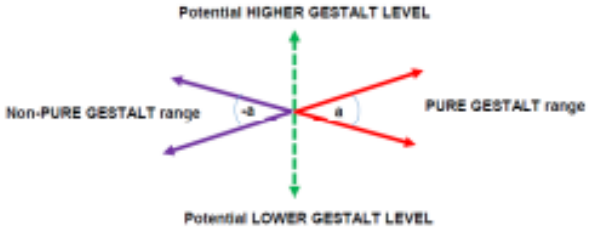

Figure 2. A stable Gestalt process that includes tension (a vs -a) but no transformation.

from few notes played before the rest get played—implies a formed Gestalt, rather than one in the process of formation. The latter would entail the look at how new musical forms emerge through musicians' improvisation (Klemp et al., 2008).

The general idea of Gestalts being of different levels is in line with the notion of flexible nature of forms (Ehrenstein, 1967)—all organismic forms exist as inherently transforming themselves, or as adaptable to external demands, and—most importantly—pre-adapting themselves to the potential future conditions. Yet Ehrenfels overlooked the active role of the person, or, paraphrasing William Stern four decades later—*there is no Gestalt without a Gestalt maker*. This latter correction makes the perspective on Gestalt purity and level connections productive for person-oriented perspectives in psychology

Paradoxes of Gestalt "Purity". The focus on Gestalt level and purity was invented by Ehrenfels late in his academic pursuits— in his *Kosmogonie* of 1916 (von Ehrenfels, 1948/1916, 1988a) and later at the end of his life (von Ehrenfels, 1988d). Aside from transformation of the Gestalt along the continuum of its level under the guidance of Gestalt purity, be posited the existence of a "pure form" of the Gestalt—an ideal form. As Ehrenfels described,

> ...ideal forms of the mathematically exact sphere and of the regular polyhedral are Gestalten of maximal purity, i.e. it is not even logically possible for the purity to be surpassed, but they are of relatively low Gestalt level (von Ehrenfels, 1988a, p. 119)

It is not surprising that Ehrenfels resorted to the ideal mathematical forms as depicting the ideal Gestalt purity. A real sphere guarantees "purity"– but reduces the "level". Speaking of development, Ehrenfels saw the opposite—increase in level and decrease in "purity":

> The process of ontogenetic development of the organism from seed to full maturity reveals—at least insofar as it is visible for us—an ascent in level, bound up with *a decline of purity of formedness, the latter brought about by the relatively chaotic effects of the environment* (ibid, added emphasis).

So—the "innocence" of the ideal form is lost in the course of life-span experiences. Or—no empirical observation of a form—various spherical objects in our environment—brings us further away from the absolute "purity" of the mathematically ideal sphere. Here the paradox—"purity" can only be ideally posited, but not empirically determined. The ideal sphere exists in our imaginative abstraction—and it is precisely there where it may be important for our experiences. Ideals are important as *ideals*, not as realities. Yet—if the person acts as the "Gestalt maker"—it is also the making of the ideals of purity that are made (and constantly re-made) by the person. By creating an ideal for Gestalt Purity a person may strive towards either increasing or decreasing of the Gestalt Level.

Gestalt level and purity are values in themselves. The ideals of form are the extreme—infinite—conditions towards which we strive, but which we cannot reach as the circumstances diminish our efforts. Here Ehrenfels brings in value criteria—where "purity" becomes central in the ideal world—yet it is lost in development. Gestalt purity can be a tool towards developing new Gestalt levels, but remains unattainable in itself. In real life, persons strive towards in principle unattainable beauty ideals and develop complex high fashion wrappings for themselves that are unwearable—yet their uniqueness guarantees their function in the mundane life.

Extending Ehrenfels: How can Constructed Ideals of Gestalt Purity Operate?

How can the unity of "purity" and "level" of Gestalt operate in the human *psyche*? In an effort to build up a functional model of Gestalt innovation ("vertical similarity" as described above) we can consider the "purity" of a Gestalt-in-formation as being created by the tension within the ideal—that of the *range* of options of possible purity (range a in Figure 2) in immediate tension with its posited inverse (non-purity, -a in Figure 2). The fixed stable tension between fields of (a) and (-a) guarantees stability of the Gestalt height that is maintained at a given level. Thus, in Figure 2 we recognize the field-based relations between the purity <> non-purity mutually related opposites, rather than force these opposites into the form of linear dimensions.

Conceptualizing these opposite directions as fields allows theoretically the recognition of uncertaintly—or "about-

ness"—of the purity directions. For instance—the floor of my room is "clean" (as I have cleaned it) but "not so clean" so as to let my child put discovered objects from that floor into her mouth. The tree growing outside of my window is beautiful—but I have no precise idea with which "beauty model" I am comparing it. The tension in my looking at it is built on the non-beauty of the scene if it were to be cut down to create a parking lot, or anything of the kind, in its stead. My imagination "fills in" the opposite ("what if instead of X there was Y?" or "what if X were to disappear") and gives rise to the psychological tension generated by the complemented opposite fields. The reality—the object "out there"—remains unchanged. The Gestalt level is not altered, but the tension is generated and persists. The tension between the opposites (a and -a fields) cannot be depicted in terms of binary oppositions since these eliminate it by enforcing strict classification (a or not a). Classical (Boolean) logic is not fitting for developmental sciences where opposites co-exist[4], lead to tensions, and to new forms.

Forms of Asymmetry: Status Quo via Active Level Maintenance. Tensions between opposite fields can be suppressed. The result is a form of mutuality of the opposites that looks as if it is not mutuality at all. Figure 3 depicts a hypothetical case of imbalance in the (-a<>a) tension—that of impending non-purity in opposition to the present fixed point of the Gestalt height.

In the example in Figure 3, no ideal purity that would be different from the present *status quo* exists. There is no striving for purity of the Gestalt outside of the here-and-now state, only "defense" against the tension from non-purity. This is exemplified in the *psyche* by the automatic and vigorous rejection of rule violations—personal or social. Intra-psychological moral reasoning operates through such defense systems—potential pleasures of life are excluded as "immoral" (and negotiated intra-personally—Nedergaard, Valsiner, & Marsico, 2015). As a result of such processes, the Gestalt level is forcefully maintained at the given level. No development is possible under such conditions of active maintenance of the given Gestalt level.

The example depicted in Figure 3 constitutes a generic form of highly "moralistic" society (or person). The present Gestalt level (status quo) is actively protected by way of uniting the ideal purity with the present state (A). Possible challenges to it—coming from the non-pure Gestalt range (-a) are rebuffed once they happen, or even before they emerge. The Gestalt maker exists thanks to constant pre-emptive defense of the present form. Not only is developmental transition not possible, *but it is actively not desired*.

[4]The unity and mutual feed-forward relations between opposites are at the very core of human existence. The central South-Asian hyper-generalized sign that organizes all of human conduct—the auspiciousness <> inauspiciousness opposition "… is not an exclusive binary [opposition], but on that lacks a fixed boundary between the two poles. Such lack of separation or boundary between signs allows them to carry meanings of dynamism such as the flow of time, processes of growth. Maturation, and decay, or a dynamic force like *sakti*" (Appfel Marglin, 1985, p. 79)

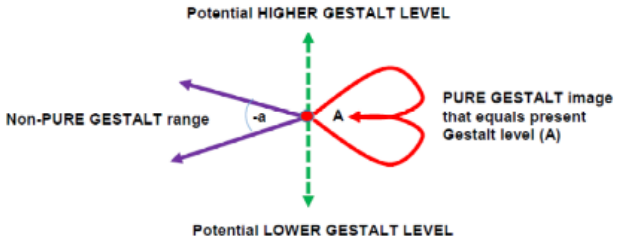

Figure 3. Maintenance of the present Gestalt level via linking the *status quo* with the ideal.

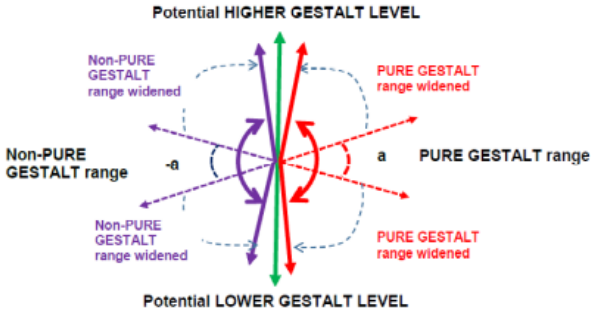

Figure 4. Widening the fields: increasing uncertainty of Gestalt purity.

Opening Developmental Opportunities: Widening of the Tension-Generating Fields. It becomes obvious (comparing Figures 2 and 3) that the Gestalt purity domain is central for potential development. If it is minimal (Figure 1) or blocked (Figure 3) development of the Gestalt level is not possible.

What would happen if the Gestalt purity field (both a and -a in Figure 2) were to be widened in the direction of alignment with the range covered by the Gestalt level (Figure 4). Interestingly such enhancement of opportunities need not lead to development at all—but rather to rapid change possibilities between different versions of the purity ideals within the widened field (a) with corresponding widening of possible tensions with field (-a). The result would be pluralism of "desires" without development. Our contemporary social practices of entertainment—ever-increasing choices for what "should" fill our "free time" just for the purposes of "spending it" may be a proof of such widening of opportunities without their turning into development (change in the Gestalt level).

In other terms—provision of widened opportunities does not by itself guarantee that these opportunities will be used for development. This may solve the (seeming) paradox that affluence is not necessarily guaranteeing innovation in personal or social lives, while poverty often does. All major artists (known as such now, by the record prices their art now draws at auctions) were poor or at least not well-to-do ordinary human beings with talents for artistic creation and deep desires to create.

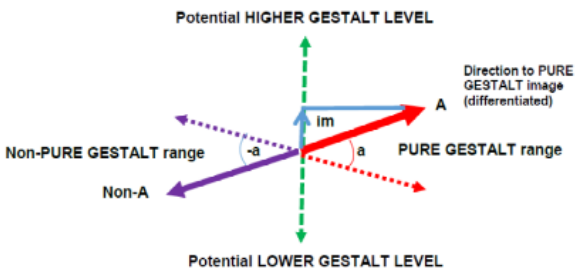

Figure 5. Gestalt process involving development.

Gestalt Purity Guiding Development: Transforming Gestalt Levels. Development in the Gestalt level requires transformation of the direction of the Gestalt purity range and its concentration (Figure 5). Here the imaginary becomes real—the Gestalt level is heightened through the imagination of Gestalt purity. Note that the horizontal axis in Figure 5 pertains to the ideal (imaginary) domain ("purity") while the vertical axis (potential Gestalt Level) would depict the manifestation of any alteration of the tension in the imaginary domain that re-structures the Gestalt. Maintenance of the *status quo* of the given Gestalt at the given level over time is thus a dynamic process, not an ontologically given state (Figure 3 above). Development—in the form of altering the Gestalt level—entails setting specific ideal future states in the Gestalt purity domain (A in Figure 5) and acting accordingly. The re-oriented and fixated Gestalt purity image is seen to feed into the desired alteration of the Gestalt level (im) which is supposed to bring with it the heightening of the actual Gestalt levels. Note that in Figure 5 that heightening of the Gestalt level remains quantitative.

Nowhere else but in the public presentation of the beauty images of the human body can we observe such shifts easily. The tension in immediate *Einfühlung* into a body—one's own or that of another person—is constantly operating with the fuzzy field opposition "beautiful <> non-beautiful". No specific criteria need to be definable—the generalized feeling can be sufficient.

What could have been contested before as "amoral presentations" ("pornographic", etc.) may under some social circumstances of changing the purity images of social imagination be turned into images of higher Gestalt levels in accordance with the beauty image shifted at the time (Figure 6). The emergence of the Rococo beauty ideals[5] in the context of 18^{th} century France led to the presentation of the human body in figurative art in new ways. The imaginative strive towards a new beauty ideal feeds into social representation of the body[6], and, encoded into art, became preserved for the future generations. Shifts in artistic and musical styles ahead of the acceptance by wide public are

Figure 6. The *Blonde Odalisque* by François Boucher (1752).

well documented in art histories. Here I emphasize the importance of such social innovation—through artists' imagination—that, once objectified in the (often "scandalous[7]") art objects, end up leading the transformation of the Gestalt level in society, and in persons. Imagination is the process that lads to new forms of meaningful reality.

Gestalt Purity Guiding Development: Lowering of Gestalt Levels. Development is not only a process of increase in the Gestalt level. Equally important is the possibility of lowering it when the circumstances need it. The process involved is similar to that described in Figure 5, only in the reverse direction (Figure 7). The Gestalt purity opposition (-a <> a) leads to the differentiation of concrete direction in the value opportunities field, guiding to the lowering of the Gestalt level (-im).

Human lives involve many occasions at which the primacy of heightening of the Gestalt level gives way to its opposite. Human destructive tendencies are well documented through historical accounts of wars, genocides, inventions of the guilliotine and nuclear bombs, as well as needing to adapt to natural disasters of epidemics, earthquakes and famines. All of these involve the regulation of the Gestalt level downwards. The Gestalt purity domain becomes differentiated in the direction that makes destruction possible. Kurt Lewin (1917) described his experiences in World War I moving towards the front line—the functions of objects transformed for the persons by way of coming close to the arenas of military activities.

In fact we adjust the direction of the Gestalt purity vector dynamically every day. We create beautifully decorated objects for everyday use, and mercilessly throw the leftovers into the garbage. At times we fail to re-adjust the

[5]In Figure 6, the viewer needs to pay attention to the depiction of the folding of the bedclothes, rather than to the primary presentation of the body as body.

[6] Heavily contested by Boucher's contemporaries—Denis Diderot dismissing him as a painter who, in most vulgar ways, cannot paint anything but female buttocks—quite untrue presentation of the artist's full portfolio.

[7]Very often the first social introductions of (later) "classic" art have been marked by public scandals. Pablo Picasso was once asked how he could have decided to start depicting female bodies in terms of a conglomerate of cubes. His answer—that he knew quite well that women were not cubic forms but that, as artist, he could not do otherwise but to paint them in cubist terms, reveals the transformation of the Gestalt purity notion, from person (artist) to later acceptance by society.

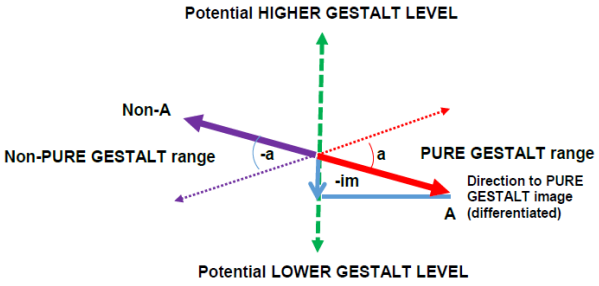

Figure 7. The lowering of the Gestalt level.

Gestalt purity direction for objects once used and currently useless—throwing away books (in contrast to old newspapers), old clothes or Christmas cards once received may become a personal ordeal.

Lowering of the Gestalt levels of objects that accompany us in our lives is already present in the natural order of our environment—except for self-organizing (open) systems, all other objects deteriorate over time. In full agreement with Ehrenfels' Gestalt level determination criterion of step-by-step demolition of a whole, a rock at the seaside is turned into sand over millenia of its encounter with the sea. Volcano eruptions can devastate the surroundings very rapidly. Both slow and rapid lowering of the Gestalt levels are regular parts of our natural world. In nature, there is a tension of unified opposites around the determination of the Gestalt levels. In our observations of nature,

> Even the charm of alpine forms—which are, after all, for the most part, clumsy, accidental, artistically insipid—rests on the felt counterplay of two cosmic tendencies: volcanic eruptions or gradual stratification have built the mountain upward; rain and snow, weathering and landslides, chemical dissolution, and the effects of gradually intruding vegetation have sawed apart and hollowed out the upper ledge, have cast downward parts of what had been raised up, thus giving the contour its form. (Simmel, 1959, p. 261)

It is the lowering of the Gestalt level that—under guidance of the Gestalt purity differentiation—can become set as valuable in itself for our human activities. A human-made object—an architectural whole that is abandoned or destroyed by human action—becomes a ruin. The notion of ruin is applicable to human-made objects—an old abandoned house is seen as a ruin (e.g. houses in Pompei), while the volcano that damaged itself while erupting and turning a city into ruins is not considered a ruin itself. In our human construction of Gestalt purity, we have leeway to treat a ruin as a wasted objects (that could be demolished in order to build something else on the spot), or—to give value to the destroyed object and treat it as an ideal of some kind of purity. Thus,

> …there is a picturesque beauty [*malerische Schönheit*] in the ruin. The rigour of the tectonic form is broken up, and while the wall crumbles and holes and fissures arise, a life quickens and shimmers over the surface. And when the edges become restless and the geometric lines and order disappear, the building can unite in a picturesque whole with the freely moving forms of nature, with trees and hills, which is impossible for non-ruinous architecture (Wölfflin, 1950, p. 24; 2004, p. 39)

We can turn decay into beauty—ruins that are visited by tourists who take photographs of the decayed objects—considering them beautiful– an act of differentiation of the Gestalt purity opposition. Turning ruins into objects of artistic depiction in the painting tradition of the 18^{th} century made the focus on decay into a part of the Gestalt purity. The emerging tradition of painting of ruins, often together with landscapes, indicates the creation of a qualitatively new object with higher Gestalt level (Figure 8).

The transformation of the Gestalt level becomes particularly interesting when an artist rushes to the scene of a disaster in order to paint it. Hubert Robert (born 1733, died 1808) who has earned his reputation in 18^{th} century French painting as the "master of ruins", did precisely that (Dubin, 2012). His painting of the fire of the Paris Opera, and imaginary painting of the Louvre as if it were a ruin, are examples of turning destruction into aesthetically constructive value. This followed a number of Italian and French artists beginning to depict their imagery of natural disasters (e,g. the eruption of a volcano). Calamity scenes became aesthetically relevant, and the depiction of destruction acquired the status of beauty.

The psychological mechanism of such reversal of the destruction into construction in the making of beauty is simple. In the 18^{th} century emerging philosophical discipline of aesthetics (started by Alexander Baumgarten in 1735, followed by Immanuel Kant in the second half of the century) the contrast between the *beautiful* and the *sublime* was introduced. The sublime entails fascination together with horror—a perfect predicament for proliferation of paintings of ruins and natural disasters. The question of transition from the sublime into the beautiful has remained central for the capturing of the attention of museum goers and television viewers. Images of public decapitations on contemporary television screens fill us with horror, while museum images of Judith displaying the head of decapitated Holofernes guide our sublime towards accepting the scene as part of beautiful arts.

Where Ehrenfels Failed: Qualitative Leap in Gestalt Levels. Ehrenfels did not cross the borders of his time— back in history (to early 19^{th} century *Naturphilosophie*). The notion of dialectical leap was round in the latter since late 1790s, in the thinking of Fichte and Maimon (Valsiner, 2012). The formal issues of quantity turning into quality were philosophically treated in the tumultuous years of romantic science in the beginning of the 19^{th} century, and then abandoned as philosophers' exaggerations of no clarity.

The adjustment of the Gestalt level—upward or downward—entails the encounter with qualitative "leaps"—the

Figure 8. Landscape with ruins (Hubert Robert, 1772, pen, Getty Museum).

given Gestalt takes on a new quality. A child playing with sand on a beach builds a sand castle—a qualitatively new form of higher Gestalt level than that of a pile of sand (to continue Ehrenfels' example). An iconoclast beats upon an ancient sculpture to turn it into a pile of sand—thus lowering the qualitative form of the sculpture to that of a pile of sand. Such transformation happens at some border zone (threshold) which, when passed, turns the Gestalt into a qualitatively new form (Figure 9). New qualities of Gestalt level emerge—and, together with them—new vectors in the differentiation of the Gestalt purity become applicable. An iconoclast does not damage the sculptured "patrimony of humanity" by chance, but by purposeful elimination of the infidelity of the public visibility of the given form. The purity goal set is that of elimination, not of maintenance.

Figure 9 allows us to precisely specify where developmental science finds its object of study—that of the processes that take place on the thresholds of qualitative transformations of the Gestalt levels—towards higher, as well as towards lower, forms.

The key feature of such transformations is the leading function of the differentiation of Gestalt purity. In other terms- human beings set up specifiable directions (ideals) for meaningful action as the result of negotiation of tension

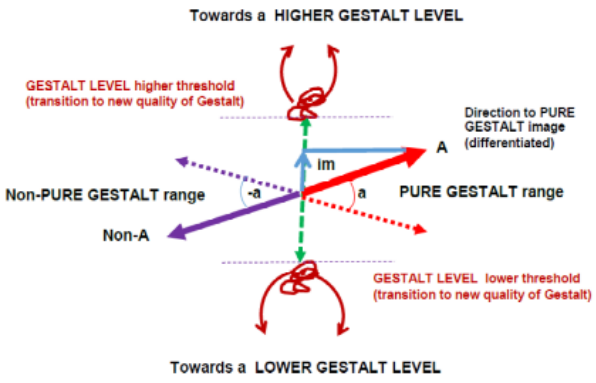

Figure 9. The Gestalt Level and Gestalt Purity relation with level transition threshold (how quantity turns into quality).

fields of pure <> non-pure Gestalt and use these as guidelines for heightening or lowering of the Gestalt level in a particular situation—including the synthesis of the present form into a new one, or breaking of the present form into one of lower Gestalt level. The ease with which we throw previously functional objects into garbage containers testifies to the latter transformation. Equal ease of making some of such objects into "antiques" (Kopytoff, 1986) and establishing economic exchange relations to govern their longevities indicates the transformation of the former kind. A Meissen porcelain plate from 18^{th} century is of qualitatively higher level of Gestalt than a paper plate for one-time use at a 21^{st} century barbecue party. Yet the number of actions that it takes to eliminate either of these qualities—breaking them into pieces—is similar. It is the cultural meaning system—established through the tension of Gestalt purity opposition—that makes new qualities of the Gestalt level. A religious ritual that turns ordinary water into "holy water" does not alter the quality of water as such, but qualitatively transforms the Gestalt level of that particular water into a new state. On the side of lowering the Gestalt level of the water we are immediately changing our conduct if we suspect that our water source is "contaminated". Centrality of such qualitative transformations makes the search for appropriate mathematical modelling tools into a complicated task.

Mathematics and Person-Centered Development: Needs for Imagination

Psychology's limited uses of mathematical systems has been a surprise for mathematicians (Rudolph, 2013)—why psychology operates with real numbers (and assigns them to non-real phenomena—with the use of rating scales as a widespread example- Wagoner & Valsiner, 2005) while there are many alternative in the realm of mathematics. Immanuel Kant's curse for psychology's future seems to be proven true by the very selective borrowing of mathematics by psychology over the 20^{th} century. One of the ignored potentials is the move from real to complex number system. Such extension does not deny the value of real numbers, but widens it by adding greater interpretive potential to it.

A complex number is given by a unity of the real and imaginary component:

$$Z = X + iY$$

Where X is the real number and iY the imaginary component. In graphic terms the complex number is presented in Figure 10

It becomes clear that if the imaginary component (iY) is absent ($i = 0$) the complex number becomes a real number. Conversely, if the real number component is absent ($x = 0$) we are left with the completely imaginary number. The power of complex numbers is the possibility to derive both real and imaginary components within unified framework. This is an advantage for any psychological theory that attempts to accept the mutuality of the real and the imaginary within the same formal scheme. Developmental

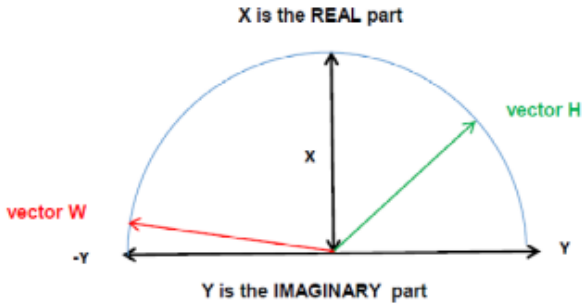

Figure 10. A depiction of the structure of complex number (with added vectors).

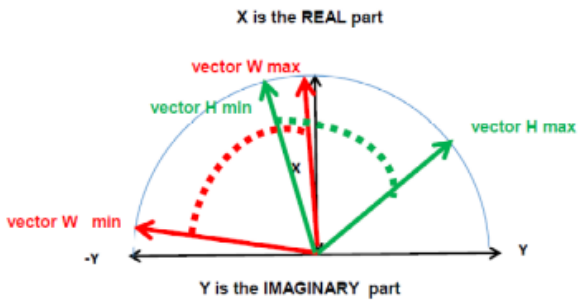

Figure 11. Hypothetical examples of "vector jumps" within the field of complex number.

science is by necessity—reliance on irreversible time—in need for such change of the conventionally accepted number system. The future—immediate or long-term—is available only through imagination, even if such imagination is informed by the past. Yet even the past is not (fully) real—given the reconstructive nature of our memory. We re-construct the past in order to attempt to pre-construct the future.

The two hypothetical vectors added to the standard (even if transposed 90 degrees) depiction of the complex number– H and W – illustrate the ways in which the "stream of consciousness" (along the lines of William James) can be depicted within the model. It would take the form of vector dynamics moving rapidly through near-panic dominance of the imaginary (vector W min to vector W max) to the relatively balanced interplay of the real and the imaginary (vector H min to vector H max) as depicted in Figure 11.

The hypothetical case W depicts a person who is completely involved in constructing one's life-world in variable yet always gloomy ways. Such ideation my come close to reality (vector W max) but still retains its gloomy imagination. On the other extreme (vector W min) the person is almost completely "out of touch" with reality. In contrast, the dynamics of "vector jumping" in the life of hypothetical case H includes some negative ideations (vector H min crossing the "reality line" X to the -Y direction) while maintaining in most of the intra-personal variability at least a moderately positive outlook at life.

Such "vector jumping" in time can be analyzable by the idiographic techniques suggested by Molenaar that can reveal general nomothetic processes. This would entail temporary direct access to the real (e.g. the "jumping vector" aligned with the X axis in Figure 11) only to move on to the imaginary, either on the left (negative) or right (positive) side of the complex number plane. Both temporary ecstatic fascinations and equally transient panic states are parts of the same normal dynamics between the real and the imaginary. Depressive states would amount to rigidity in the narrowing of the vector movement within the left side of the complex number plane in Figure 11. Moving in formal analysis away from assuming the primacy of real numbers (usually rendered as "measurement" of supposedly existing properties of the imaginary) to that of models based on complex numbers may allow us formal modeling possibilities that would otherwise be unavailable.

Number as a Conceptual Framework. What we have here under the label "number" is not number in its ordinary (real) sense, but rather a minimal mathematical whole (abstract Gestalt) that allows our abstract thinking to keep united different aspects (e,g, the imaginary and the real) which otherwise would be subjected to exclusive separation. Keeping such unity is counter-intuitive—no surprise that in the history of mathematics the notion of imaginary numbers has carried derogatory value.

Given the unity of the real and the imaginary in the human *psyche*, it is precise the complex number system that could be usable for psychology It allows to consider together the real (what is) with the non-real (what is not yet, or what is no longer). Imagination in the human *psyche* drives the reality of human development—from children's play to adolescents' soul-searching to adults' deep commitments to often ephemeral entities such as gods, kings, presidents, and the ephemeral ideas such as "social justice", "patriotism", and the like.

However, for the use of developmental models, the complex number (as all other mathematical notions) is free of irreversible time. This is a major disadvantage, since past (reconstructive memory) and future (imaginary scenario of what might be) are not symmetric across the present time moment. This would add the time dimension (Past-Future) to diagram in Figure 10—see Figure 12.

This addition would turn the diagram not into a sphere, but into a unity of two fields meeting at the present moment (as both the future and the past are open ended). In formal terms it entails

$$Z = X + iY + jP$$

where jP is the value of backward imagination—reconstructive memory (Bartlett, 1928). The imaginary component of the future (iY) is not isomorphic to that of the past—which is one of the supportive moments for non-ergodicity of developmental processes (Molenaar, Huizinga, & Nesselroade, 2002) which leads to the imperative of generalization from individual cases (Molenaar, 2004). Developmental processes cannot be modeled via Hamiltonian quaternions either—where adding the

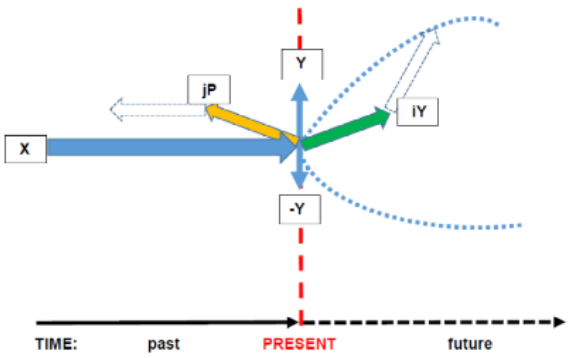

Figure 12. Formal meeting of the past and future of the Gestalt.

fourth (time) dimension to the model the time remains symmetric around the present moment. Irreversible time is asymmetric between past and future across the constantly moving line of the present. Using complex number idea as the basis for modeling developmental processes allows us to look at the leading role of processes of imagination in the transformation of the Gestalts of the *psyche*. The modified idea opens the possibility for considering only past imagination relating to present ($i = 0$) or only future "dreaming" ($j = 0, X = 0$). These are outer limiting cases for otherwise past-to-future construction of novelty[8].

General Conclusion: Looking from Inside Out

Any person-oriented or person-centered (Valsiner, 2015) perspective starts from the subjective domain of the dynamics of experiencing. This imaginative reality of subjective phenomena leads to the look for formal models through which their functioning could be explained better than in terms of common sense. Once established, these formal models need to lead to discoveries of general lawfulness in phenomena either not accessible to our methods, or to those we easily categorize into classes that seem irreconcilable with one another.

The contrast between the "real" and the "imaginary" has been one of the central arenas where the exclusive categorization urge has misfired. The second is the reduction of the form of our experiences into static categories. Collapsing what is merely similar into what is considered to be "the same" has hindered access to mechanisms of novelty construction. By treating the new-but-similar event as if it were "the same" the theoretical door is closed for conceptualizing any feature of change, and of development. The importance of similarity determination is in its opposite—determination of the ways of non-similarity creates the arena for developmental investigation. Non-similarity in relation to similarity sets the tension that developmental science needs to investigate. Or—from the person's perspective—it is the constant creation of novel meanings, together with their re-casting in terms of "similarity" to what one seems to know from the past, that constitutes the continuity of the personal life worlds through the constant invention of subjective non-continuity.

Returning to two forgotten aspects of thinking in terms of Gestalt—these of "Gestalt purity" and "Gestalt level" has made it possible to find similarities between the original thinking of Christian von Ehrenfels a century ago and qualitative mathematics of complex numbers that is still to enter into psychological science. There is a mild irony that the theory of complex numbers—including both real and imaginary components in its formulation—is in itself older (end of 18^{th}-beginning of 19^{th} century) than the Gestalt philosophy that characterized psychology around the end of the 19th century. Psychology seems to be a slow learner, not letting the richness of mathematical imagination into its reality domain. Perhaps Immanuel Kant was indeed right in his cruel verdict that psychology cannot be a science. Our contemporary discourses often take us in a similar direction (Smedslund, 2016). Yet it may be better avoiding grand judgments and find ways in which new openings into seemingly perennial questions can be imagined. This way our theories may become useful for reality.

[8]It is not prediction of the future from the past, but past events—through their reconstruction—*feeding forward* into the future,that is implied here. It is expected that past recollected life events lead to ruptures in the construction of the future (Zittoun et al., 2013), or—developmental continuity is discontinuous.

Acknowledgements

This paper was prepared with the support of Danske Grundforskningsfond for the Niels Bohr Professorship Centre at Aalborg University. Suggestions by Luca Tateo on a preliminary version of this paper are gratefully acknowledged.

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