

KLAUS F. RIEGEL AND DIALECTICAL PSYCHOLOGY: IN SEARCH FOR THE CHANGING INDIVIDUAL IN A CHANGING SOCIETY¹

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INTRODUCTION

When speaking of such terms as « dialectical » or « critical » psychology, one generally first thinks of the names of a number of well-known French, German and Soviet psychologists (for example Sève, Holzkamp, Rubinštejn, Vygotskij). Much less notoriety is enjoyed by the representatives of an influential and well-organised school which originated in the United States under the name of « dialectical psychology ». Klaus F. Riegel can be regarded as the enthusiastic and unusually productive initiator of this school. Its basis was laid in the latter half of the sixties, when a discussion about the foundations of psychology arose in America. Riegel realised the perils of a psychology in danger of losing its ties to a social-historical context.

Who was this man and what were his ideas? In order to answer this question, we shall first give a brief sketch of his life, and in doing so present a general introduction to certain concepts. We shall then describe his ideas concerning the history of psychology in relation to social developments. Then the discussion will centre upon his critical remarks on established (developmental) psychological theories, in which we shall look at Riegel's attempts to construct an alternative dialectical paradigm, examining more fully his methodological notions. Finally, through a citation-analysis, we shall underline the importance of Riegel and of American dialectical psychology.

¹ This article is a re-working of an article by Goossens and Van Ijzendoorn (1980) and of a chapter from the book by Van Ijzendoorn, Van der Veer and Goossens (1981).

BIOGRAPHICAL INFORMATION

Klaus Riegel was born in 1925 in Berlin, where he spent his youth. After the war, he started out working as a maintenance mechanic, but soon began studies in mathematics and physics. Two years later he left for America, acquiring his M.A. at the University of Minnesota (1955). After returning to Germany, he started on a thesis on the intellectual faculties of the elderly (Riegel, 1957). Shortly after its completion, he returned to the United States to continue his research in that area together with his wife. Among others, he conducted longitudinal research into the effect of aging on intelligence. He began to publish regularly, primarily in gerontological journals, and now and then on psycholinguistics.

At first glance, this would appear nothing out of the ordinary, simply the scientific career of a researcher interested in his subject and, entirely within scientific tradition, reporting regularly on his work. However, this impression is only partially accurate. During this time, Riegel must have read and thought an enormous amount about the foundations of his discipline, for after 1965, an essential change can be observed in the content of his articles. In 1965, he published an article on the effect of social differences on language use and in 1966, his first theoretical contributions to the journal *Human Development* appeared (Riegel, 1966). This is the beginning of a series of theoretical articles ultimately leading to an attempt to formulate a dialectical-psychological theory. At the same time, Riegel was active in the area of methodology; he not only wanted to include the changing individual, but also the changing society in his designs (Riegel *et al.*, 1967). Other methodologists, notably Baltes and Schaie, share his dissatisfaction with longitudinal and cross-sectional designs. Riegel was also occupied with the problem of the ahistorical character of (developmental) psychology. He himself sought a solution in the link-up with the historical sciences, which could profit from the methods of developmental psychology (and vice versa) (Riegel, 1967).

In 1970, he joined the editorial staff of the magazine he had so often published in: *Human Development* (previously: *Vita Humana*). Riegel now had a forum at his disposal for venting his ideas and highlighting the work of those thinking in similar directions. His own ideas concerning the social influence on

psychological development crystallised in part through the ideas of Rubinštejn, made accessible to English readers by the work of Payne (1968). In a now classic article (1972) he wrote on the relationships between science (and in particular developmental psychology) and society. At his instigation, annual conferences were held on dialectics. A «Network for Dialectical Psychologists» was established and a *Dialectical Psychology Newsletter* appeared. This was the birth of the American variant of dialectical psychology. Riegel collected his essays in *Psychology of History and Development* (1976), but died a year later at the height of his career. Two books were published posthumously: *Psychology, Mon Amour: A Counter-text* (1978) and *Foundations of Dialectical Psychology* (1979).

RIEGELS' VIEW OF THE HISTORY OF PSYCHOLOGY

«A spectre is haunting Western psychology; the spectre of scientific dialectics. The scaffold of the academic world is shaking; the time for its transformation is near» (Riegel, 1979, p. 14). With these elegant words, Riegel sounds the death-knell upon two, to him, failing traditions within developmental psychology, the «capitalistic» tradition and the «mercantile» tradition. What then is the core of Riegel's objections to these still current tendencies in theory development and research in developmental psychology?

For many years, Anglo-Saxon scientific study was dominated by the «capitalistic» orientation of Hobbes, Locke, Galton, Hall and Gesell. This orientation crystallised into a social-Darwinistic interpretation of onto- and phylogenetic development. According to Riegel, such slogans as «bellum omnium contra omnes» and «struggle for life, survival of the fittest» capture succinctly the essence of this interpretation. For psychology, this meant, for example, that in studying individual differences, the young white male adult, involved in business or industry, was to be regarded as the most successful «survivor», to be elevated to the criterion upon which all other individuals would be measured². If individuals or groups did not meet this standard, they were simply classified as backward, deviant

² Think of the glorification of the WASP, the white Anglo-Saxon protestant, regarded as the ideal worker. Compare also the YAVIS, the young, attractive, verbal intelligent and sociable person, whose prognosis for therapy is considered favourable on the basis of these characteristics.

etc. Children were thus only characterised *ex negativo* as imperfect adults, differing not in the qualitative but in the quantitative sense from the ideal adult. By empirical-descriptive means, attempts were made to describe trends and create standards by which individuals could be measured. Within this conception, development is a gradually increasing accumulation of knowledge and skills. That this orientation was able to dominate developmental psychology, especially in Anglo-Saxon countries, is in Riegel's view attributable to specific external, i.e. economic and cultural circumstances. In this connection, Riegel mentions the wide-spread myth in these countries of progress through unfettered competition, and the typical English predilection for hunting and breeding, as paving the way for a capitalistic perspective in developmental psychology.

As opposed to England's colonial and capitalistic tradition, Europe's most important countries had, in particular, a strong mercantile tradition. There a new middle class arose, not as privileged as the wealthy landed aristocracy, but considerably better off than the working class. Riegel believed that the discrepancy between their social interests and their privileges ultimately led to the French Revolution. Competition was permitted especially within the classes, but not between (the differently hierarchically arranged) classes. According to Riegel, this gave rise to a « mercantile » tradition in which the value of differences in background could be appreciated. Children were no longer regarded as inferior adults but appreciated for themselves and regarded in the context of their peers. By nature, man was good; it was society that gave rise to differences. The most important exponent of these ideas was Jean-Jacques Rousseau. Fröbel and (later) Montessori followed in his footsteps, introducing a more child-orientated approach in education. Riegel believes that Spranger, too, was influential through his plea for an understanding attitude towards the adolescent sub-culture. Piaget was the last link in this chain of liberal scientific thinkers. Throughout, development is seen as stepwise discontinuous progress through a series of stages which cannot be compared to one another. « While competition within stages is conceivable, it is not of great importance and is rejected as driving force across stages » (Riegel, 1972, p. 134). Riegel thus suggests a correspondence between the sociological concept of class and the psychological concept of stage. Just as mobility from the lower to the upper classes was rarely possi-

ble, and the representatives of each class were regarded entirely on an individual basis, each stage of mental activity also had an entirely individual character. Because of the emphasis he laid upon the young child's « egocentric character », Riegel regards Piaget as one of the « mercantile » scientific thinkers. On the other hand, Vygotskij would belong to the « socialist » scientific thinkers because of his emphasis upon the social aspects of development.

Riegel regards the « mercantile » approach as a step in the right direction and does, indeed, welcome the growing interest among American researchers for this school. On the other hand he is not an advocate of a wholesale adoption of this approach, because « science and knowledge, as well as society in general, can advance only if the divergent viewpoints are integrated at higher and more abstract levels » (Riegel, 1972, p. 135). By elevating both viewpoints to a higher level, dialectical psychology must provide a solution. Development is neither an accumulation of information by an, in essence, passive organism, nor the spontaneous production of new ways of thinking. Characteristic of Riegel's synthetic concept is the notion that the individual should be regarded as an actively changing organism in a continually changing world and that both the individual and the environment in which the individual lives should be the object of study and research. Following upon the marxist anthropological notion that man changes the world through his labour and, in turn, is himself influenced by this changing world, the dialectic between the individual and the environment should be a major theme in the dialectical school. Riegel summarises his concepts in a diagram in which subject (individual) and object (environment) have either an active or a passive character. In doing so, he arrives at a classification into four schools, and it should be clear (from the above) that he has an affinity to the active subject in an active environment.

		Individual	
		passive	active
environment	passive	Locke/Hume Ebbinghaus	Leibnitz Piaget/Chomsky
	active	Mannheim Vygotskij/Skinner	Hegel/Marx Rubinštejn

FIG. 1. Classification of four trends in psychology.

In his attempt to uncover some trends in the history of psychology and to anchor it in social developments, Riegel tries to describe this history from an externalistic point of view rather than through the traditional internalistic 'Ideengeschichte'. He is not, however, entirely successful. Riegel's description is actually only in part externalistic, for the lines he draws from Darwin to Galton, Stanley Hall, Terman and Gesell, and from Rousseau to Fröbel, Montessori, Spranger and Piaget can be interpreted much more easily from an internalistic vantage point, that is as the assimilation of ideas of one scientific thinker (or group of them) by others³. Striking is that Riegel devotes no attention at all to behaviorism, a school which at that time was on the rise and which was based on entirely opposite notions of human behavior, namely on the influence of the environment. Riegel suggests that Darwin's ideas were received warmly by the aristocratic upper classes of the population, whilst it was the middle classes who were attracted to the notions of Rousseau. The question then arises why it were the Anglo-Saxon ideas that gained solid ground in America, despite the absence of a traditional aristocracy. It is not unlikely that the dissemination of ideas in America was particularly the result on increasing immigration from England, which suggests that it was not the aristocracy, (who did not, in fact, emigrate) but others who were responsible for this dissemination. In that sense, Riegel's analysis would appear to have some serious shortcomings, not transcending the level of general impressions. It is also curious that the philosopher Locke is not mentioned in connection with the opposing views of the Anglo-Saxon countries and the continent. And yet it was Locke who even before Rousseau claimed that children should be regarded as a separate category, which was not to be judged by

³ In addition, Riegel's classification of the researches mentioned seems a bit contrived. Stanley Hall, for example, was strongly influenced by the theory of evolution, but he certainly did not endorse the notion that development is a quantitative, cumulative process. On the contrary, he also distinguished stages in child development, namely infancy, childhood and adolescence. It would seem more instructive to view the controversies Riegel sketched in the light of the law of biogenetics. As is known, advocates of this law believed that in ontogenesis children must repeat certain stages from the history of humanity. Firstly, this resulted in an emphasis upon the nature of these phases themselves and secondly, in a passive attitude towards education (this was exactly Stanley Hall's attitude). However, this combination of the theory of evolution and thinking in terms of stages does upset Riegel's simplistic diagram.

standards deduced from adult behavior. Riegel's theses on the influence of social factors on the development of psychology are quite appealing but not very convincing. The epistemological diagram classifying the four tendencies also deserves critical attention. Piaget's classification in the upper right-hand compartment of the diagram, in which an active role is assumed for the individual but a passive one for the environment, is not entirely correct. In his early work, Piaget was very much interested in social conditions, as emerges from his discussion of Durkheim's ideas on the social context of moral convictions. In his later work, however, the image of a self-directed monadic individual becomes increasingly more prevalent (see Harten, 1977). Elsewhere we have also shown that Vygotskij cannot be accused of neglecting the active role of the individual (Van der Veer and Van Ijzendoorn, 1982). It is clear that Riegel's epistemological diagram is a Procrustean bed in which a number of important psychologists from whom Riegel himself drew inspiration, are in danger of being distorted almost beyond recognition. The diagram does, however, delineate the path he followed in developing dialectical psychology: from a critical reconstruction of Piaget's ideas to the fundamental dialectical foundations Rubinštejn provided psychology with. In the next paragraph we shall follow this path.

RIEGEL AND PIAGET

The relationship between Riegel and Piaget deserves particular attention. Piaget's theories are an extremely important link to Riegel in the development of a dialectical psychology, as is illustrated by the fact that Piaget is the author most cited in *Foundations*. In principle, Riegel was not unreceptive to Piaget's theory of the senso-motoric stage. In this first stage of cognitive development, the dialectic between accommodation and assimilation is still very clearly present. On the one hand, the child adapts objects from the outside world to fit into available schemata (assimilation). At one point, for example, every object is clutched, whether the object lends itself to that purpose or not. The child quickly realizes that some objects are either too heavy, cumbersome, awkward or whatever. The result is an adaption of these schemata to such facts of experience (accommodation). For a long time, for example, children are

convinced that the amount of water in a tall, narrow glass is greater than that same amount of water poured into a short, wide one. They persist in that opinion even when they see it being poured. When that same amount of water is then poured into a third glass similar to the first, they are suddenly convinced that it is the same amount of water. The contradiction prevails until the concrete-operational stage, when the child acquires a schema for the transformation process and its reversibility. Piaget also devotes a noticeable amount of attention to the presence of dialectical thinking in the second, pre-operational stage. Children do not appear to be as concerned about contradictions in their appraisals of reality — according to Riegel with good (creative) results. When shown, for example, twenty wooden beads, of which fifteen are painted brown and five white, a child might conclude that there are more brown beads than wooden ones. This is because it is incapable of simultaneously taking account of all the different dimensions by which beads can be classified.

Piaget's error is assumed to be that he did not define the child's tolerance for contradictions as an example of creative dialectical thinking. To him, it is a (fortunately) passing phase which disappears in the transition to a higher stage through the experience of conflicts between behaviour and judgment (and between schemata: « décalage »).

To Riegel, this meant that Piaget analyses children's thinking as being more and more alienated, non-creative and non-dialectical. In the pre-operational phase, a child still understands that an object may possess a certain quality and not possess it simultaneously. It will not, for example, have difficulty in construing a creative explanation for the fact that some small objects float in water whilst others sink to the bottom. In a later phase, however, the child will regard this as an incongruous contradiction and start to look for unimaginitive rationalisations. One of these might be determining what the relationship is between the object's size and weight in comparison to the same relationship between a volume of water and its weight (the notion « specific gravity »).

Riegel continually advocates the retention of dialectical aspects of children's thinking. Unlike Piaget, he does not welcome this 'alienation of thinking' towards a rigid formal-operational reasoning in which there is no place for contradictions. This can be attributed to the Hegelian notion that dialectical

logic is superior to formal logic and as such should replace, or at least complement it. But whilst formal logic concerns the formal characteristics of language, dialectical logic is a working hypothesis for investigating real developments in the real world. According to this hypothesis, aspects of reality are in dialectical motion from thesis via antithesis towards synthesis. Dialectics are therefore concerned with the world of objects, whilst formal logic relates to the meta-level of assertions about reality. It is therefore erroneous of Riegel to believe that a child is thinking dialectically when it remains unconcerned about the contradictions contained, for example, in the statement that a small elephant is both large and small or that a express train travels both quickly and slowly. Indeed, making explicit the frames of reference implicitly contained within these statements results in an absolutely logical argument. We might then 'translate' the statement concerning the elephant as follows: in comparison to a big elephant, a small elephant is small, but compared to a large mouse, on the other hand, a small elephant is big. In short, Riegel wrongly places dialectics and formal logic on the same plane: that of the analysis of statements. Dialectical logic, however, is concerned with the world of objects and is as such unquestionably consistent with formal logic. It is therefore no problem at all to analyse by means of formal logic statements which attempt to describe the dialectical motion of reality (Klaus, 1972).

That Piaget's theory is not dialectical is, for that matter, also contested by a number of French researchers. Goldmann, a co-worker of Piaget in the late forties, has pointed to a number of interesting parallels between Piaget's work and the dialectical epistemology of Hegel and Marx (Goldmann, 1959). The similarities he points to in particular are the genetic approach and the unity of thought and action. As we know, Piaget was particularly concerned with the development of intelligence in ontogenesis. This same emphasis upon behavioral development is to be found in the Russian dialectical psychology of Blonskij and Vygotskij. These authors were inspired by the ideas of Hegel, Engels and Marx concerning the historical origins of human behaviour.

According to Goldmann, Piaget's emphasis upon the fundamental unity of thought and action is in complete agreement with Marx's ideas, in particular with respect to his cautioning against the notion that thought is something abstract, detached

from practical activity (« Tätigkeit »). Finally, Goldmann points out that in describing intelligence as the result of accommodation and assimilation, Piaget is in essence presenting the same portrait of human activity as did Marx. Marx, indeed, also wrote that man changes nature (assimilation) and through it, himself (accommodation). This analysis of Piaget's theory, recently endorsed by Garcia (Garcia, 1980), shows that whilst he was not a Marxist, Piaget displays some striking similarities to the thinkers of the dialectical tradition.

And yet Riegel felt obliged to neutralise the so-called anti-dialectical character of Piaget's theory by adding a fifth, dialectical stage to Piaget's classical stages, suggesting the transition through one or more of the « traditional » stages as a condition for reaching that stage. In other words, the highest level of dialectical thinking can be reached both through the senso-motoric stage and through the pre-operational, concrete-operational or formal-operational stages. By adding this fifth stage, Riegel believed it was possible to expand considerably the opportunities for equivalent inter-individual development. Through formal operations, Riegel believes, a scientist must enter the stage of dialectical operations in order to conduct creative scientific work. The manual laborer might achieve that dialectical stage by mastering concrete operations. The artist could learn to master the dialectical skills necessary for his or her activities even through the pre-operational level. Finally, Riegel believed that the lover might suffice with a dialectical intelligence acquired through the senso-motoric stage. Unfortunately, Riegel fails to make his theory more convincing by not conducting a further, more concrete analysis of the qualification requirements for the different professions and activities. There is absolutely no empirical basis for this theory. Here, too, we see the strongly impressionistic nature of his work ⁴.

Riegel also remarks that through his amendments of Piaget's theory, intra-individual variations in intellectual functioning are also more easily explained. Indeed, the different stages do not exclude one another. In principle, each individual can and

⁴ In his resistance to formal logic as a terminal stage of human thought, Riegel shows a striking resemblance to V.V. Davydov (see, for example, Davydov, 1972). Riegel's affinity to the cultural-historical school was also brought out at a recent Vygotskij congress in Moscow (Davydov (ed.), 1982). That Riegel did not explicitly refer to Vygotskij is due to the inavailability of translations of his methodological and scientific-theoretical words.

should be able to function at all levels (the idea of the all-round personality). To do household chores, a scientist needs concrete-dialectical operations, to make love senso-motoric dialectical intelligence. However, Riegel errs in assuming that intra-individual differences cannot be explained within the framework of Piaget's theory. In this connection, he neglects to point out Piaget's important notion «*décalage*», i.e. intra-individual differences in development level depending upon experience. This phenomenon of «*décalage*» has an important place in Piaget's theory of the dynamics of development, his equilibrium theory. It has also acquired a key position in didactic theories based on Piaget's theory. Riegel, however, repeatedly remarks that it is impossible to draw didactic conclusions from this theory. The child is either in an earlier stage, so that due to assimilative tendencies stimulation is ineffective, or in a later stage where stimulation is superfluous⁵. In doing so, though, Riegel completely loses sight of the frequent occurrence of a person's functioning at a higher level in one area, and at a lower one in another-unknown to him-area. This «*décalage*» results in a state of tension and implies therefore opportunities for development didactics can employ (Piaget, 1976). This also applies to inter-individual «*décalages*». Kohlberg's didactics for moral education, for example, could in certain respects be characterised as an arsenal of methods for eliminating inter — and intra — individual horizontal «*décalage*» (van Ijzendoorn, 1980). Finally, it should be mentioned that Riegel's description of Piaget's didactic paradox assumes only the presence of assimilative tendencies whilst ignoring accommodating tendencies so essential in this respect.

In short, Riegel criticizes Piaget for his neglect of the dialectical character of creative and mature thought and adds that Piaget allows too little room in his theory for parallel inter — and intra — individual differences. With respect to the first criticism, we have pointed to Riegel's inaccurate interpretation of dialectical logic. Riegel's second objection is related to his lack of knowledge of the phenomenon of «*décalage*», an entry noticeably absent from the indexes of his books.

⁵ With this, Riegel in fact raises the same objection as Vygotskij to 'passive education' or 'passive upbringing' in which the educator must wait passively until the child is mature enough for the next stage of mental development (Vygotskij, 1982).

The critical reconstruction of Piaget's theory did provide Riegel with a dialectical picture of the internal dynamics of human development, but it did not result in explicit themes for the influence of the social context in dialectical psychology. But as we saw earlier, Riegel still sought descriptions of and explanations for the changing individual in a changing society. He now developed his alternative in this direction by consulting Rubinštejn. The assumption of Rubinštejn's theory is that at birth, the individual's development is primarily determined by biophysical processes, but that in the course of the chronological growth of intellectual activities, cultural and social processes play an ever greater directive role. In addition to these interactions between the individual and society, there are also interactions between biophysical and individual intellectual activities. The former interaction system represents the historical dialectic, the latter the material dialectic. Riegel believed that an individual's thoughts, actions and emotions could transform those of others living contemporaneously or subsequently, but with respect to contemporaries, the reverse is also possible. With the dynamic interaction of the internal and external dialectic, man not only transforms the external world in which he lives. He in turn is also transformed by the world he and others have created (Marx). A dialectical theory should be concerned with simultaneous development along four (interwoven) dimensions: the internal-biophysical, the individual-psychological, the socio-cultural, and the external-physical dimensions. As opposed to Rubinštejn, Riegel believed that environmental influences should be divided into two aspects: in addition to the socio-cultural aspect, behaviour could also be effected by natural disasters, the geographical location and the climate.

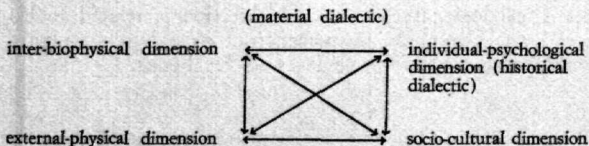


FIG. 2. Riegel's critical reconstruction of Rubinštejn's dialectic: the double dialectic.

Riegel now sees development as the co-ordination or synchronisation of any combination of two dimensions and ultimately of the accumulation of progressions along each dimension. However, co-ordination and synchronisation are not always possible. When synchronism is absent, the result is a crisis or a conflict. However, such a conflict should not be viewed negatively. A crisis is a constructive confrontation in which contradiction or lack of harmony are the source of new changes, both in the individual and in society. We shall illustrate the above by discussing a number of his examples. At the internal-biophysical level, the heart and lungs can function synchronically under normal conditions, but when the person in question is fatigued, they might conflict with one another. But because this concerns a conflict within one dimension, there is no question here of development. An individual may be biologically mature enough for marriage, but because the right partner has not yet been found, not mature at the individual-psychological level. It is also possible that the individual-psychological and biological levels are synchronised, but that the housing market is tight so that socio-cultural circumstances are at odds. If a natural disaster occurs, the external-physical circumstances might spoil the plan. Riegel claims that everything is continually changing and rarely in perfect harmony. From a psychological point of view, dealing constructively with conflicts means progress. But in Riegel's sketchy approach, what he exactly means by « dealing constructively with conflicts » and what conditions must be met in order not to experience and deal with asynchronisms in a destructive fashion remains obscure. Probably in part due to Riegel's desire not to tie himself to a (closed) vision of man and society, even the criteria for judging whether or not a constructive solution for an asynchronism has been found remain implicit. In the above example of asynchronism, for example, it indeed makes some difference whether the solution is sought in the area of social action or in the private domain. But at this point, Riegel refrains from making any judgment. What in any case is commendable in Riegel's theory of double dialectics is its implicit call upon developmental psychology to replace its one-sided emphasis upon the interaction between the internal-biophysical and the individual-psychological aspects in particular with an interdisciplinary approach devoting equal attention to all four aspects.

Riegel's call upon developmental psychology to devote more attention to the double dialectic, finally making it actually possible to describe the changing individual in a changing environment, would have had little cogency were it not for his concern for the methodological realisation of his dialectical theory. Such traditional research designs as the longitudinal or cross-sectional designs are inadequate. The dialectical alternative integrating these two well-used designs at a higher level is the so-called mixed-longitudinal design. Riegel derived this design largely from the pioneering work of Baltes (1965) and Schaie (1968). It dovetails perfectly with Riegel's attempts in particular to draw into the research design the social context in which certain developments occur. We shall now attempt to illustrate the advantages of the mixed-longitudinal design above the prevalent designs. Imagine we wish to follow the development of a certain type of behaviour (for example language use). Let us look at Fig. 3.

Year of measurement	Age	
	20 years old	70 years old
	Year of birth	
1920	1900	1850
1970	1950	1900

FIG. 3. Different sources of variance in developmental psychological research.

On this basis, several comparisons are possible. A cross-sectional design is characterised by a comparison of two cells in the same row. In 1920, then, you might compare twenty year-olds and seventy year-olds, people born in 1900 and 1850 respectively. In 1970, you could do the same with people born in 1950 and 1900 respectively. By keeping the time of measurement constant (namely 1920 or 1970), the comparison provides both age differences and generation differences (also called « cohort differences »). In other words: cross-sectional designs take both age differences and generation differences into account. The two cannot, however, be separated. A

time-lag design consists of a comparison, for example, of the language use of twenty year-olds in 1920 and in 1970 or of seventeen year-olds in 1920 and 1970, a comparison then of two cells in the same column. This comparison is contaminated by differences in time of measurement and generation. The generation that was 20 years old in 1970 was born in 1950, whilst the generation of twenty year-olds subjected to the test in 1920 was born in 1900. The same applies for the seventeen year-olds. In other words: time-lag designs furnish results in which the variance is determined by differences in the time of measurement and generation. The role that the two types of differences play individually cannot, however, be distinguished.

A longitudinal design boils down to a comparison of the same group at two different points in time (in the diagram, the participants born in 1900; they are subjected to the test in 1920 and in 1970 at twenty and seventy years old respectively: the diagonal from upper left to lower right). A longitudinal research design thus furnishes results contaminated by both age and time of measurement differences. Thus none of these approaches provides immediately an unadulterated estimate of age, generation or time of measurement differences. A combination of the three designs results in three comparisons with three unknowns, namely effect of age, time of measurement and generation differences. These effects can therefore be determined exactly. We then have a so-called « mixed-longitudinal design ». Psychology can then describe individual developments, sociology can sight the cohort differences and the historical sciences can chart the developments in the course of (chronological) time. A concrete example: the feasible but fictitious results of a cross-sectional intelligence-study could be represented with a curve showing a decrease in intelligence with the increase of age.

This curve could easily be interpreted as a correspondence of a continued regression of intellectual functioning with advancing age. Quite apart from the relative value of IQ-tests, it should be noted that the results could very well be an artifact of the selected design. Such a cross-sectional study does not, indeed, take account of generation differences. Tuddenheim, for example, determined that the median of test scores of recruits in the Second World War corresponded with the 84th percentile of the distribution of the same scores drawn from research among recruits in the First World War. These diffe-

rences can, however, be attributed to historical-social changes, for example in education, prosperity, communication media etc. (Riegel, 1976, p. 4). In cross-sectional research, however, regression resulting from historical changes is, as it were, built into the design. An « historical » and « asocial » developmental psychology appears to be fertile soil for such economical designs. But from a scientific point of view, they are hardly practicable. On the other hand, the mixed-longitudinal design does allow for conclusions concerning, for example, the influence of historical-social and external-physical changes on individual-psychological and internal-biophysical development. And so it is, indeed, a good basis for the interdisciplinary dialectical research Riegel was such an enthusiastic proponent of. And indeed, this « dialectical psychological » design has found acceptance, both in the United States and in Europe (Elder and Rockwell, 1979). It should be noted here that a discussion has recently sprung up about the statistical merits of mixed-longitudinal research (Adam, 1978). This technical problem aside, though, Riegel's attempt at a methodological crystallization of his dialectical theory is to be admired. With this, he is one of the few critical psychologists who did not suffice with criticizing the customary methodological arsenal but also provided constructive alternatives for realising his ideas. Despite his general and impressionistic approach to problems in the history and theory development of dialectical psychology, in the area of methodology he is unexpectedly precise in formulating his view on good, dialectically responsible research. Indeed, the mixed-longitudinal design does seem capable of realizing the intended goal — a description of the changing individual in a changing environment.

MERITS AND CRITICISM

In this closing paragraph, we should like to review some of the main themes of Riegel's theory and summarize the critical notes. We shall also point out the merits unmistakably present in his work.

Long before the recent revival of the externalism-internalism debate, Riegel had already made an admirable attempt to analyse the historical and social determinants of (developmental) psychological theory development. His assumption was that

whilst theories and schools possess dynamics of their own, they certainly do not develop in complete isolation. He illustrated this with a pictorial essay of the differences between the continental and American fields of psychology, tracing them to the differences between a more mercantile or a more capitalistic social context. Unfortunately, he did not find the time to shape and test these descriptions of general trends with more thorough investigations of the history and sociology of psychological research.

Riegel rightly assumed that in human development, turbulent periods and periods of relative calm and stability alternate, though he perhaps laid too much emphasis upon crisis and conflict. From Rubinštejn he derived three fundamental aspects of development, i.e. the internal-biophysical substratum, the individual-psychological aspect and the socio-cultural aspect and shows how this results in a subtle theory of double dialectics. To the above mentioned three aspects, he himself added a fourth, the external-physical aspect, and argued that the dynamics of human development should in particular be sought in the asynchronisms between these different aspects. Unlike Rubinštejn, who emphasized the material substratum of every development, Riegel did not believe it opportune to attribute a special role to any of the four aspects. The conclusion might therefore very well be drawn that in doing so, Riegel places himself outside the dialectical-materialistic tradition. In view, however, of the state of knowledge with respect to the determinants of ontogenesis, the question can be raised as to what extent such an emphasis upon the material substratum can be justified on other than an apriori basis.

Riegel derived a great deal from Piaget's theory of development. For it is, indeed, in this theory that such great emphasis is laid upon the importance of unbalancing factors for a proper understanding of human development. Riegel goes a step further by almost completely denying the existence of states of equilibrium and reducing all development to conflicts. This can only be explained in view of the specific American misconception of Piaget's theory as a maturation and stage theory. At the same time, Riegel attempts to supplement Piaget's theory of cognitive development with a fifth stage, to be attained through all the other stages, namely the stage of dialectical cognition. However, this addition is based upon the erroneous assumption that dialectical and formal logic can be compared.

Unlike many other dialectical psychologists, Riegel can boast of a long career as an empirical researcher. That we have not devoted much attention in this article to this aspect of Riegel's work can be attributed to the fact that none of his studies appears to relate very well to his scientific theoretical and methodological starting-points. He did, though, take pains to absorb himself in the question of which research designs were most suitable for the dialectical research he so desired into the changing individual in a changing society. As we saw earlier, he had good grounds for rejecting the popular cross-sectional, longitudinal and time-lag designs and for opting for a mixed-longitudinal design, in which both cohort and age differences as well as influence of the time of measurement could be investigated.

It may be concluded that Riegel was unsuccessful in constructing a coherent theory of dialectical developmental psychology, and unable to convert a number of fundamental meta-theoretical and methodological assumptions into convincing research practice. But it is very much to his credit that he made a number of very critical notes on the American empirical « fact-finding » tradition. He was responsible for the theory's gaining more ground within scientific work and in addition for staging at times harsh confrontations between prevailing notions and Soviet psychology.

It would be beyond the scope of this article to further discuss the work of others who, following in Riegel's footsteps, were supportive of dialectical psychology. Riegel's death certainly did not bring the movement to a standstill. In this article we purposely focused upon one of the movement's central figures. Only lack of space prevented us from also focusing the spotlights on other leading representatives (Buss, Wozniak, Younnis, Meacham, Lawler, Vandendaele).

In order to illustrate Riegel's enormous productivity and influence, we shall close this article with a citation-analysis.

CITATION-ANALYSIS (as of January 1980)

A number of prefatory remarks:

- a) The reader should regard this analysis as an operationalisation of our assertions concerning Klaus Riegel's influence.
- b) These citations are drawn exclusively from articles (to

the exclusion of books, dissertations and research reports). Nonetheless, Riegel has been cited in no less than 325 publications. This is both an underestimate (because other literature has been disregarded) and an overestimate, because Riegel often cites himself.

c) *Foundations of Dialectical Psychology* has not been included in this citation-analysis; *Psychology, mon amour*, his last publication is included (a book is also regarded as one publication).

d) 87 publications of Riegel are known to us. As is clear from Table 1, from 1958 on, Riegel published with great regularity.

TAB. 1

Years	Number of publications
58 - 62	11
63 - 67	16
68 - 72	28
73 - 77	30
Posthumous	2
	<hr/> 87

High-points were 1967 (5x), 1968 (7x), 1970 (5x), 1972 (9x), 1973 (12x), 1975 (8x) and 1976 (7x).

In Table 2, a survey is given of the number of citations per year (the years 1958 through 1974 are presented as one figure).

TAB. 2

Years	Number of citations
1958-1974	98
1975	12
1976	68
1977	41
1978	64
1979	50
	<hr/> 333 (8 counted twice)

This table shows that the interest in Riegel grew in the last years in particular. The number of citations in the last two

years even exceeds the frequency of the much longer period 1958-1974. In part, this is due to an explosive increase in Riegel's productivity: nearly 60 publications in less than 10 years!

Finally, a survey is given of the most important articles, those cited at least 10 times.

1960, R.M. Riegel, A study of changes of attitudes and interests during later years of life. *Vita Humana*, 3, 177 (10x);

1965, University of Michigan Report, Internal publication (16x);

1967, R.M. Riegel and G. Meijer, Socio-psychological factors of aging: a cohort sequential analysis. *Human Development*, 10, 27 (24x);

1970, R.M. Riegel, Relational interpretation of the language acquisition process. G.B. Flores d'Arcais and W.J.M. Levelt (Eds.) *Advances in psycholinguistics*. Amsterdam: North-Holland, pp. 224-236 (14x);

1972, R.M. Riegel, Development, drop and death. *Developmental Psychology*, 6, 303-319 (47x); The influence of economic and political ideologies upon the development of developmental psychology, *Psychological Bulletin*, 78, 121-141 (42x); Time and change in the development of the individual and society. In H.W. Reese (Ed.), *Advances in child development and behavior*, New York Academic Press (18x);

1973, Developmental psychology and society: Some historical and ethical considerations. In J.R. Nesselrode, H.W. Reese (Eds.), *Lifespan developmental psychology. Methodological issues*. New York: Academic Press (20x); Dialectic Operations: the final period of cognitive development. *Human Development*, 16, 346-371 (51x);

1975, From traits and equilibrium toward developmental dialectics, in: W.J. Arnold and J.K. Cole (Eds.), 1974-1975 *Nebraska Symposium on Motivation*. Lincoln: University of Nebraska Press (30x); Towards a dialectical theory of development. *Human Development*, 18, 50-64 (13x);

1976, The dialectics of human development. *American Psychologist*, 31, 687-700 (26x); *Psychology of history and development*. New York: Plenum Press (11x).

REFERENCES

- ADAM, J. (1978). Sequential strategies and the separation of age, cohort and time-of-measurement contributions to developmental data. *Psychological Bulletin*, 85, 1309-1316.
- BALTES, P.B. (1968). Longitudinal and cross-sectional sequences in the study of age and generation effects. *Human Development*, 11, 145-171.
- DASBERG, L. (1979). *Grootbrengen door kleinhouden*. Amsterdam: Boom.
- DAVIDOV, V.V. (1972). *Vidy obobštenija v obučenii (logiko-psichologičeskie problemy postroenija učebnyh predmetov)*. Moscow: Pedagogika.
- DAVIDOV, V.V. (1981). *Naučnoe tvorčestvo L.S. Vygotskogo i sovremennaja psichologia*. Moscow: APN SSSR.
- ELDER, G.H., ROCKWELL, R.C. (1979). The life-course and human development. *International Journal of Human Development*, 2, 1-21.
- GARCIA, R. (1980). Dialectique, psychogenèse et histoire des sciences. In J. Piaget, *Les formes élémentaires de la dialectique*. Paris: Gallimard.
- GOLDMANN, L. (1959). *Recherches dialectiques*. Paris: Gallimard.
- GOOSSENS, F., VAN IJZENDOORN, M.H. (1980). Een Duitser in Amerika. Kritische analyse van en methodologische werk van Klaus F. Riegel. *Psychologie en Maatschappij*, 12, 384-408.
- HOUTEN, H.C. (1977). *Vernünftiger Organismus - oder gesellschaftliche Evolution der Vernunft. Zur Gesellschaftstheorie des genetischen Strukturalismus von Piaget*. Frankfurt-am Main: Syndikat.
- IJZENDOORN, M.H. van (1980). *Moralität und politisches Bewusstsein. Eine Untersuchung zur politischen Sozialisation*. Weinheim/Basel: Beltz.
- IJZENDOORN, M.H. van, VEER, R. van der, GOOSSENS, F. (1981). *Kritische Psychologie. Drie Stromingen*. Baarn: Ambo.
- KLAUS, G. (1972). *Moderne Logik. Abriss der formalen Logik*. Berlin: VEB Deutscher Verlag der Wissenschaften.
- PAYNE, T.R. (1968). *S.L. Rubinstein and the Philosophical Foundations of Soviet Psychology*. Dordrecht: Reidel.
- PIAGET, J. (1976). *Genetische Epistemologie*. Amsterdam: Boom.
- RIEGEL, K.F. (1957). *Untersuchung über intellektuelle Fähigkeiten älterer Menschen*. Dissertation, Hamburg.
- RIEGEL, K.F. (1966). Development of language: Suggestions for a verbal fall-out model, *Human Development*, 9, 97.
- RIEGEL, K.F. (1967). History as a nomothetic science, *Journal of Social Issues*, 25, 99.
- RIEGEL, K.F., RIEGEL, R.M., MEIJER, G. (1967). Socio-psychological factors of aging. *Human Development*, 10, 27.
- RIEGEL, K.F. (1972). Influence of economic and political ideologies on the developmental psychology. *Psychological Bulletin*, 78, 129-141.
- RIEGEL, K.F. (1976). *Psychology of history and development*. New York: Plenum Press.
- RIEGEL, K.F. (1978). *Psychology, mon amour: A Countertext*. Boston: Houghton Mifflin.
- RIEGEL, K.F. (1979). *Foundations of dialectical psychology*. New York: Academic Press.

- SCHAFER, K.W. (1965). A general model for the study of developmental problems. *Psychological Bulletin*, 64, 91-108.
- VEER, R. van der, VAN IJZENDOORN, M.H. (1982). *Vygotskij's theory of the higher psychological processes: Some criticisms*. Leiden: Report 8130.
- VYGOTSKIJ, L.S. (1982). *Sobranie sočinenij. II. Problemy obšej psichologii*. Moscow: Pedagogika.

APPENDIX: SELECTED BIBLIOGRAPHY OF KLAUS RIEGEL

- RIEGEL, K.F., RAMSEY, R.M., RUTH, M. (1967). A comparison of the first and second languages of American and Spanish students. *Journal of Verbal Learning and Verbal Behavior*, 6, 536-544.
- GEKOSKI, W.L., RIEGEL, K.F. (1967). A study of the one-year stability of the Michigan free and restricted association norms. *Psychonomic Science*, 8, 427-428.
- RIEGEL, K.F. (1968). Comparison of restricted associations among six languages. *Journal of Social Psychology*, 75, 67-78.
- QUATERMAN, C.J., RIEGEL, K.F. (1968). Age differences in the identification of concepts of the natural language. *Journal of Experimental Child Psychology*, 6, 501-509.
- RIEGEL, K.F. (1968). Investigations of verbal performances and their changes. *Zeitschrift für experimentelle und angewandte Psychologie*, 15, 649-692.
- RIEGEL, K.F. (1968). Some theoretical considerations of bilingual development. *Psychological Bulletin*, 70, 647-670.
- RIEGEL, K.F. (1969). Changes in psycholinguistic performances with age. In G.A. Talland (Ed.), *Human aging and behavior: Recent advances in research and theory*.
- ZIVIAN, M.T., RIEGEL, K.F. (1969). Word identification as a function of semantic clues and associative frequency. *Journal of Experimental Psychology*, 79, 336-341.
- RIEGEL, K.F. (1969). History as a nomothetic science: Some generalizations from theories and research in developmental psychology. *Journal of Social Issues*, 25, 99-127.
- LACHER, M.R., RIEGEL, K.F. (1970). Word recognition thresholds as a function of instructions, type of word relations, and associative frequency. *Journal of General Psychology*, 83, 23-33.
- STERN, E.J., RIEGEL, K.F. (1970). Comparisons of the restricted association of chronic schizophrenic and normal control subjects. *Journal of Abnormal Psychology*, 75, 164-171.
- RIEGEL, K.F., ZIVIAN, I.W.M. (1972). Study of inter- and intralingual associations in English and German. *Language Learning*, 22, 51-63.
- RIEGEL, K.F. (1972). Influence of economic and political ideologies on the development of developmental psychology. *Psychological Bulletin*, 78, 129-141.
- RIEGEL, K.F., RIEGEL, R.M. (1972). Development, drop, and death. *Developmental Psychology*, 6, 306-319.
- RIEGEL, K.F. (1972). Time and change in the development of the individual and society. H.W. Reese (ed.), *Advances in child development and behavior*. VII. New York: Academic Press.

- RIEGEL, K.F. (1973). An epitaph for a paradigm: Introduction for a symposium. *Human Development*, 16, 1-7.
- RIEGEL, K.F. (1973). Language and cognition: Some life-span developmental issues. *Gerontologist*, 13, 478-482.
- RIEGEL, K.F. (1973). The final period of cognitive development. *Human Development*, 16, 346-370.
- RIEGEL, K.F. (1973). The recall of historical events. *Behavioral Science* 18, 354-363.
- RIEGEL, K.F. (1973). Developmental psychology and society: Some historical and ethical considerations. In J.R. Nesselroade and H.W. Reese (Eds.), *Life-span developmental psychology: Methodological issues*. New York: Academic Press.
- RIEGEL, K.F. (1973). On the history of psychological gerontology. In C. Eisendorfer and M.P. Lawton (Eds.), *The psychology of adult development and aging*. Washington: American Psychological Ass.
- RIEGEL, K.F., GARDNER, H. (1974). Quest for mind: Piaget, Levi-Strauss and structuralist movement. *Contemporary Psychology*, 19, 811-813.
- RIEGEL, K.F., ANGLEITNER, A. (1975). The pooling of longitudinal studies of aging. *International Journal of Aging & Human Development*, 6, 57-66.
- RIEGEL, K.F. (1975). Toward a dialectical theory of development. *Human Development*, 18, 50-64.
- RIEGEL, K.F. (1975). Subject-object alienation in psychological experiments and testing. *Human Development*, 18, 181-193.
- RIEGEL, K.F. (1975). From traits and equilibrium toward developmental dialectics. *Nebraska Symposium on Motivation*, 23, 349-407.
- RIEGEL, K.F., ROSENWALD, G.C. (1975). *Structure and transformation: Developmental and historical aspects*. New York: Wiley-Interscience.
- RIEGEL, K.F. (1976). Dialectical operations of cognitive development. *Contributions to Human Development*, 2, 60-71.
- RIEGEL, K.F. (1976). A note on the modifiability and reversibility of development and aging. *International Journal of Aging & Human Development*, 7, 259-272.
- RIEGEL, K.F. (1976). All the trouble with linguistics. *International Journal of Psycholinguistics*, 172, 95-104.
- RIEGEL, K.F. (1976). The systematization of dialectical logic for the study of development and change: An introduction. *Human Development*, 19, 321-324.
- RIEGEL, K.F. (1976). Dialectics of human development. *American Psychologist*, 31, 689-700.
- RIEGEL, K.F., MEACHAM, J.A., eds. (1976). *The developing individual in a changing world: I. Historical and Cultural issues*. Chicago: Aldine.
- RIEGEL, K.F., MEACHAM, J.A., eds. (1976). *The developing individual in a changing world: II. Social and environmental issues*. Chicago: Aldine.
- RIEGEL, K.F. (1976). *Psychology of history and development*, New York: Plenum Press.
- RIEGEL, K.F. (1977). Past and future trends in gerontology. *Gerontologist*, 17, 105-113.
- RIEGEL, K.F. (1977). The dialectics of time. In N. Datan and H.W.

- Reese (eds.), *Life-span developmental psychology*. New York: Academic Press.
- WERTHEIMER, M., BARCLAY, A.G., COOK, S.W., KIESLER, C.A., KOCH, S., RIEGEL, K.F., RORER, L.G., SENDERS, V.L., SMITH, M.B., SPERLING, S.E. (1978). Psychology and future. *American Psychologist*, 33, 631-647.
- RIEGEL, K.F. (1978). *Psychology, mon amour: A countertext*. Boston: Houghton Mifflin.
- RIEGEL, K.F. (1979). *Foundations of dialectical psychology*. New York: Academic Press.

Summary - Klaus F. Riegel (1925-1977) can be regarded as the enthusiastic initiator of an American 'school' of dialectical psychology. He criticized traditional psychology for losing its ties to the social-historical context. He tried to construct an alternative dialectical paradigm, deriving a great deal from Rubinstein's and Piaget's theory of development. His ideas concerning the history of psychology, his criticism of established psychological theories, and his methodological suggestions will be critically examined. Through a citation-analysis, the importance of Riegel and of American dialectical psychology will be underlined, and a selected bibliography of Riegel is added.

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