

The Impact of Karl Bühler on Hungarian Psychology and Linguistics*

Due to his extremely varied and rich professional profile, it is very hard to classify the work of Karl Bühler (1879–1963). He was a pioneer of experimental psychology investigating thought processes, an early synthesizer of child psychology, and a theoretician, who tried to renew the psychology of language, and place the renewal of psychology into a complex vision of language. Further, with his analysis of the regulatory aspects of animal behavior and the role of selection in evolution he has become a mentor and first proponent of multilevel theories of selection in cognition. Thus, in a way, Bühler was also a mentor of the later evolutionary epistemology and evolutionary psychology (Pléh 2014). (See about his life the volumes edited by Eschbach 1984, 1988, and Musolff 1997.)

This paper is partly conceptual, partly historical/philological. My aim is to show how the different aspects of the rich oeuvre of Karl Bühler have become part of Hungarian linguistics, psychology, and philosophy in mid-20th century. That is the conceptual part. In some cases (that is going to be the historical aspects) I shall try to show the underlying factual aspect of the intellectual connections. I shall not try to give a thorough analysis of the work of Bühler, only relate to the issues of his work that have become relevant in the Hungarian context.

As Bolgar emphasized in Bühler's necrology, Bühler was a man with much varied interests, who always concentrated on the issues of *how*.

A catalogue of his concerns would include the psychologies of thinking, perception, language, and child development, as well as theories and systems. He did not look for a single operating principle, but in all his work he asked the question *how* [...] How does man think? How does he perceive? How does he communicate? [...] Rarely did he ask the question *what*. (Bolgar 1964. 677.)

* Much of this paper is based on a larger manuscript from a time I was working at Collegium de Lyon. The fruitful discussions with Elisabetta Basso on the philosophy of psychology helped to shape my vision.

I. THE IMPACT OF THE EARLY DENKPSYCHOLOGIE OF KARL BÜHLER IN HUNGARY

Bühler had a medical education as well as a philosophy degree, but he was drowning to psychology early on. As one of the leading researchers of the Würzburg school of thought processes at the turn of century, working there and later in Bonn and Munich as well with Külpe, Bühler had become a proponent for the psychological reality of abstract thoughts (Bühler 1907, Bühler 1908). The three basic features of the Würzburg research attitude were:

- Mental activities are guided by various *non-image-like (unanschauliches)* factors, such as attitudes.
- There are characteristic *rules of individual cognition* (thus logics is given a psychological interpretation).
- All these factors should be interpreted by implying that mental activity is always directed outwards, it is characterized by intentionality.

The attitude of the school is well characterized by Ogden (1951), by Humphrey (1951), and by the readers of Rapaport (1951), and Mandler and Mandler (1964), and Nyíri (1974) showed how it might be related to the general anti-psychologism born at the end of 19th-century philosophy. Regarding the substantial message, this school has challenged the elementaristic and sensualistic metatheory of mental life. Solving of problems is goal oriented and structurally organized, and (some) of thought content is structured, not merely an associative chain. There is a consciousness of rules, relations, and intentions (Bühler 1907, Rapaport 1951, Mandler and Mandler 1964, Mandler 2007). Another consequence of this attitude was questioning of the sensualistic bias of most empiricist philosophical tradition and pointing towards a more propositional organization of human thought processes. A modern version of this attitude is shown by Fodor (1996). All of these pointed towards a more systematic vision of thought and language processes, with a concentration on the notions of fields and tasks (Mandler and Mandler 1964, Pléh 1984) and towards a more objectivistic, supra individualistic interpretation of thought and meaning following on the steps of the anti-psychologist semantics of Husserl (1900), as interpreted by his mentor Oswald Külpe (1912) (see about these influences Krug 1929, Münch 1997, Kusch 1999).

This seemingly rather abstract endeavor had many challenging aspects and provocative consequences for modern psychology. One was methodical, that concerned the extended use of introspection and detailed report of the inner workings while subjects were interpreting for example the meaning of maxims or proverbs like *Not all that shines is gold*. This aspect created many controversies, the founding father of German experimental psychology Wundt (1907) questioning the entire method and classifying the studies as pseudoexperiments.

II. THE IMPACT OF THE DENKPSYCHOLOGIE OF BÜHLER IN EARLY HUNGARIAN THEORETICAL MONOGRAPHS

The early works of Bühler concentrating on the psychology of thought processes basically had two impacts in Hungary. First, they have become part of the intellectual discussion of the *organization of thought*, and the relations of logical and psychological models. Early on Valéria Dienes (1879–1978) a young follower of Bergson, the first woman to obtain a PhD in Hungary, and a critical analyzer of all of the modern psychology published a short synthesis where she analyzed the importance of the Würzburg tradition. This was an original synthesis that presented both Ivan Pavlov, Vladimir Bekhterev and the Würzburg school of the psychology of thought processes as the reformers of modern psychology. For Dienes, the key feature was the emphasis on *hidden factors* and functions. By hidden factors she meant that our mental life shows a number of organizational aspects that are not directly apparent, they are not transparent to the self-studying conscious mind. Thinking is governed by hidden rules – as claimed by Bühler (1908) and the Würzburg School – that we cannot get to know directly, only through their products, their mental outcomes. But the real winner for Dienes was Bergson who transformed the issue of introspection into the issue of intuition (Pléh 2005).

Hildebrand-Dezső Várkonyi (1920) a young Benedictine psychologist, later a leader of the new psychology movement at the university of Szeged (see about his life and impact Szokolszky 2016) has written a relatively detailed review of the debates around non sensory thought. His conclusion, on the basis of a contextual analysis of the Würzburg studies and the studies of Binet on his own daughters was that while there is a phenomenological non-sensory thought, in its origin and context, thinking always has a sensory backing. “there always is an ideational background to thought: images follow thought as a shadow. Imageless, ‘pure’ thought we cannot recognize in ourselves” (Várkonyi 1920. 79).

A generation later, Ferenc Lehner (Lénárd) (1911–1988) in the same leading philosophy journal in Hungary at the time, analyzed in detail the *Denkpsychologie* work of Karl Bühler, Otto Selz and others. Lehner (1939) has mainly summarized the debates about the validity of the Würzburg findings. Lénárd has preserved this heritage of Karl Bühler in his later professional life, as well. He has referred to the Denkpsychologie of Bühler both in his short history of psychology (Lénárd 1946, Lénárd 1989) and in his monography on problem solving published five times (Lénárd 1984). In his history book, he in fact presented the Würzburg tradition as the first new psychology of the modern times. He detailed the methods and the basic non sensory content oriented research of Bühler in great detail (Lénárd 1946).

The presence of the thought psychology of Bühler, and its later combination with newer approaches of Gestalt psychology, and psychoanalysis, especially re-

garding the task aspects of thought were further exemplified by the exhaustive reader compiled in America by David (Dezső) Rapaport (1911–1960), a graduate both of Hungarian psychoanalysis and of the psychology seminar at Budapest University. The book brings back richly annotated translations of Bühler, Ach and other Würzburg people along with Lewin, the psychoanalysts, as well as Claparède, and Piaget. This classic edited book shows as the editor himself acknowledged, his Hungarian university education.

I had hoped that this volume would be published simultaneously with that of my teacher, Paul von Schiller, which was to rescue from oblivion some little-known European studies in the instinctual behavior of animals. But Paul von Schiller is dead, and I can only acknowledge again my indebtedness to him. (Rapaport 1951. ix.)

In his own theory of thinking proposed as the concluding chapter of his reader, Rapaport in his psychoanalytic attempts to find ways for adaptive thought processes combined with drive forces, relies in two notions coming from Bühler. The first is the differentiation between reproductive and productive thought, and the second is the central importance of the task consciousness as an organizing factor in higher level thought processes.

The other influences of the early Würzburg work of Bühler were mainly indirect, but resulted in published German works.¹ *Two PhD dissertations were defended in Würzburg by Hungarian students after Bühler has left*, but along the lines set up by him, both directed by Karl Marbe. Though, as he recalled in his autobiography, Marbe (1930) had many controversies with his mentor, Külpe, he still followed the line of using introspection to study thought processes, and to reveal the contentful flow of thought. His first Hungarian PhD student was Antal (Anton) Schütz (1880–1953), a Piarist priest, who obtained a doctoral degree in psychology in 1916 in Würzburg, with a research that followed the attitude of contemporary cognitive experimental psychology, that of the Würzburg School (see Pléh 2005). His dissertation was entitled *Zur Psychologie der bevorzugten Assoziation und des Denkens* (Schütz 1916a, 1916b, 1916c) (see about it in his autobiography as well, Schütz 1942). He was investigating the hidden tendencies determining associative recall. In his actual studies he was using mass verbal associations first done in Hungarian over a large number of subjects and stimuli. In the book version he analyzed the possible personal determinants of association, such as age, emotional status and psychopathology of the experimental subjects. What makes his studies related to the Würzburg School and specifically even Bühler that in his Hungarian survey paper he emphasized that among

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the different determinants of association a most important one is the task. The anti-mechanistic Würzburg scholars had shown to him that besides strictly associative factors thought related, emotional and volitional factors also play a role in verbal associations (Schütz 1916c).

Schütz has later found his place at the University of Budapest not as a psychologist, but as a professor of Catholic dogmatics, in line with his first degree. He has tried later on to forge a unique alliance between Catholic dogma and a critical appraisal of contemporary psychology (Schütz 1944). In his first academic inauguration talk about the relevance of the psychology of Aristotle today, he pointed out the importance of the objectivistic trend represented by Bühler to support the idea that “in our mental life there are atemporal elements beside the temporal ones, as emphasized clearly by Bühler and his school” (Schütz 1927. 63).

Schütz has gone beyond merely criticizing experimental psychology for its simplemindedness. The main point of the psychological ideas of Schütz was that scientific psychology has to be treated with great criticism (Schütz 1941, Schütz 1944). This point of view has some messages for professional psychology as well. The main idea of Schütz was that the processes of thought – in accordance with the theory of the Würzburg School – cannot be regarded as mere sensory accumulation processes: the essential moment of thought comes from the subjects’ particular computations or acts. This dynamics of acts was the key for him to avoid reductionism, to avoid reducing the mind to its elementary processes. Schütz (1944) considered positivism and evolutionary theory as barren and factually untenable ideas.

At the same time, he feels a curious attraction towards contemporary characterological movements. In one of his works, in his [second] academic inauguration talk (Schütz 1941), he tried to elaborate connections between schools or streams in logics and personality types of the representative researchers. In the same way as one can distinguish different types of thinking in people, one can distinguish different types of thought among scientific trends as well. Logical atomism, for example, is connected to a typical analytic personality, while holism in logics is similar to an integrative or unit-forming personality. In fact, it is a personal world view that appears in the disguise of logical schools, through the filtering effects of personality. [...] For Schütz, the[se ideas] supported his campaign against reductionistic psychology. In his view, only these synthetic ideas based on the integrity of personality will be able to create harmony between mind-guided Catholic ideas and modern psychology. (Pléh 2008. 175.)

The other student who obtained a PhD in Würzburg under Marbe was Imre Molnár (1909–1996) who has later on become the director of the Child Psychology Institute in Budapest between 1948 and 1962, later becoming the research institute of psychology of the Hungarian Academy of Sciences. As he recalled in

his sometimes not too factual autobiography, Molnár (1990), a Hungarian Jewish youngster from Nagyvárad (Grosswardein) in the Partium of Hungary then becoming part of Romania first wanted to become an actor or a movie director in Berlin, and enlisted to the university under fatherly request. He fell in love with psychology under the impact of Köhler, Lewin and Spranger. Moving to Würzburg, he obtained his PhD with Marbe studying the relationship between set phenomena and the issue of esthetic value. Marbe was earlier involved in the psychology of art as well, thus the interest of the disillusioned would be actor and the mentor has probably ell meet. The mostly conceptual-theoretical dissertation was related to the Bühler heritage in one regard. It revolved around the issue of the objective value in esthetics, with a conclusion that one cannot abstract from the person regarding the value of artwork. His German pen name was Emerich Molnár, and he published his dissertation in a high profile journal of the time, and even as a separate monograph (Molnár 1933a, Molnár 1933b). Marbe, who was by that time also an acknowledged industrial and marketing psychologist, certainly had an influence on the later career of Molnár who has become a leading figure in the stabilization of Hungarian industrial psychology with his textbooks and with his detailed studies of the psychophysiological stress reactions of weavers (Molnár 1982, Molnár and Stadler 1966).

The impact of the early work of Bühler also showed up in the school curriculum and in everyday talk about the mind, where textbooks like the one for high schools by Lénárd (1960) on may editions were crucial. His entire outlook followed the later Bühler. Youngsters were introduced to psychology as the study of (internal) experience, (external) behavior, and (World III) work (of art). But he also introduced early Bühler buzz words such as the concept of *Aha experience* (*Aha Erlebnis*), the sudden recognition of new insights and connections between ideas. Similarly, as one of his other 'brand words', in fact criticizing Sigmund Freud's supposed wish fulfilment image of man, another concept proposed by Bühler was also a shining start of Hungarian educational psychology. The notion of functional pleasure (*Funktionslust*): the recognition that functions are practiced because their practice itself is a source of pleasure. Bühler (1921, 1922, 1927) described it to be very crucial in child development but also in several aspects of human culture. "In humans the functional pleasure has become a central factor of development" (Bühler 1921. 150). In his elaborate system,

Bühler proposes a triad of fundamental 'drives' or motivation systems, stemming from three variations of the experience of pleasure: (a) pleasure coming from the satisfaction of need; (b) pleasure coming from activity, from functioning; and (c) pleasure coming from creative work (Bugental et al. 1966. 198).

These two expressions, *aha experience* and *functional pleasure* have become popular in Hungarian psychological terminology, without too much awareness as to their origins.

III. THE HUNGARIAN IMPACT OF THE VIENNA SCHOOL OF BÜHLER

After serving in the war as a medical doctor, and following Külpe to Bonn and Munnich, Bühler had become a professor at the Dresden Technical University, and then from 1922 to 1938 at the Institute of Psychology at Vienna University. Working together with his wife Charlotte Bühler, he turned this institute into one of the main centers of psychology in the German speaking world (Ash 1987, 1988). Bühler and his wife were sort of leaders of the Austrian pedagogy movement. Karl Bühler fulfilled two functions, one as a university professor and another as an adjunct leader at the Pedagogy Institute of the City of Vienna. The university life was the scene of the more theoretical and experimental works, together with people like Egon Brunswik (1934) and Lajos Kardos (1934), while the Pedagogy Institute was responsible for fostering a socialist inspired educational reform, both in teaching and in test development. Nyíri (1986, 1992) the Hungarian historian of philosophy provided a good survey of the Vienna intellectual scene to which the work of Bühler was integrated, and Bartley (2004) the historian of Wittgenstein and Popper, showed in particular the historical and social setting of these educational reforms, and that they mainly represented a move towards a less authority-based and more child oriented education.

Karl Bühler (1922) himself had a crucial role in working out the theoretical framework for child development studies in Vienna, with 5 German and 3 English editions of his developmental psychology textbook. His book, besides its general Darwinian outlook, was a basic textbook mainly about the preschool years. Compared to similar textbooks it had a number of interesting peculiarities: the constant use of comparative psychology examples and analogies in interpreting the instinct, habit, and intellect triad of children, the important role attributed to language and drawing, and an excellent portrayal of infant social behavior. The German edition of this book together with the test work of his wife, Charlotte Bühler (Bühler and Hetzer 1932) and her diary studies of youth have become standard references in Hungarian educational psychology for decades.

The institute lead by Karl Bühler had an excellent collection of students and assistants, and made contacts with many circles outside psychology as well, including the Vienna Circle of philosophers. The atmosphere of the institute is well described by the modern decision theorist, Gigerenzer:

The sparkling intellectual atmosphere of early twentieth-century Vienna produced Wittgenstein, Popper, Neurath, and Gödel – in addition to a string of other great thinkers. Among them was Karl Bühler, who, when he founded the Vienna Psychological Institute in 1922, was one of the foremost psychologists in the world. Egon Brunswik began to study psychology in Vienna in 1923 and soon became an active participant in Bühler's famous Wednesday evening discussion group; on Thursdays he went to Moritz Schlick's Thursday evening discussion group [...] In 1927, Brunswik submitted his doctoral thesis to Bühler and Schlick, the same two advisors to whom Karl Popper submitted his thesis a year later. (Gigerenzer 2000. 45.)

IV. THE BASIC THEORETICAL COMMITMENTS OF KARL BÜHLER IN VIENNA

As a professor in Dresden, and later for almost two decades in Vienna, Karl Bühler (1927) elaborated a sign-based theory of mental organization, a communication-based, semiotic theory of the mind. The features of his rich oeuvre can be summarized as a series of foundational theses, all colored with a strong evolutionary commitment. The evolutionary aspects are highlighted with italic letter type.

- (1) All behavior is regulated by signs. *There is no meaningless behavior.*
- (2) Human behavior is oriented to supraindividual meanings. *All human behavior has three aspects: experience, behavior, and reference.*
- (3) All behavior is characterized by holistic organization aimed at species-specific signals. *Structure, meaning, and goals characterize all behaviors.*

On the one hand, Bühler was in the uneasy position of defending the reality of abstractions in directing human life, and, on the other hand, he was at the same time defending naturalism with a strong Darwinian flavor. As part of incorporating selectionist explanations to different domains, Bühler (1922) also extended Mach's (1905) idea of seeing hypotheses, and trial and error everywhere. He proposed continuity between instinct, trial and error learning, and intellect, and the domain of selection is, respectively, the organism, behavior, and ideas. Already Thorndike (1896) interpreted trial and error learning using a selectionist terminology. The third level also appears in the famous experiments of Köhler (1921, 1925) on chimpanzees, where insight comes as a selection of 'ideas', as an entirely internal process, with no visible solution attempts.

The three systems of instinct, habit and intelligence always strive to construct a model of their environment. In this modeling activity, the role of Darwinian selection and its broader interpretation are pivotal for Bühler (1936a). He was the first to formulate two principles that dominate today's philosophy of mind

(Dennett 1994) and philosophy of neural processes (Changeux 1983; Edelman 1987): all behavioral organization is characterized by an early stage where a rich and redundant inventory of behavior is formed, with an excessive number of elements and associations, and a later, selective stage, where certain patterns are chosen on the basis of environmental feedback.

The main point about the relationship between the three levels – as expressed rather definitively by Karl Popper (1972), a disciple of Bühler – that instead of risking survival as in Darwinian evolution, we are only risking our ideas in intellectual selection. The three levels also differ in their flexibility, but the organizing principle is the same for all of them: initially, there is an attempt to develop a variety of responses to an environmental challenge, which is later reduced based on the feedback from the environment.

There is no demarcation line between human mentality and animal mental life. Intention-based, teleological, and holistic organization is true of all behaviors, and it creates unity between the work of biology and that of the psychology. Table 1 shows how Bühler distinguished between the different levels of behavioral selection.

Table 1. Three levels and pools of selection according to Bühler (after Pléh 2014).

<i>Features</i>	<i>Instinct</i>	<i>Habit</i>	<i>Intellect</i>
Pool of selection	Individuals	Behaviors	Thoughts
Roads to selection	Darwinian selection	Reinforcement	Insight
Proofs	Species-specific behavior	Associations, new combinations	Detour
Representative author	Volkelt, Driesch	Thorndike	Köhler
Organization	“Naturplan”	Associative net	Mental order

Karl Bühler made these principles and levels central to his idea about child development as well. The three levels appear in children in a gradual manner. As his interpreters underlined it:

The process of humanization is structured into three ‘stages’ (a) that of the dominance of instinct during the first weeks after birth; (b) that of ‘training’ [*Dressur*]; and (c) that of the beginning of an intellectual life, which is distinguished by the use of tools. It is hypothesized by Bühler that these different stages are determined by the maturation of different brain areas, especially that of the brain stem and the cortex with its various functional units. (Bugental et al. 1966. 197.)

On the technical side, however Bühler had doubts about the ‘intellectual’ nature of the chimpanzee achievements shown by Köhler, since he believed that real intellect needs reorganization, perspectives, and doubts. Most interestingly, he connected his theory of motivation as well to the three proposed levels. Trial

and error is made possible by functional pleasure, and human intelligence is made possible by creative drives.

These main visions appeared already in his work on the interpretation of perception (1922b), which is in a way a continuation of the communication based theory of perception proposed by Helmholtz a generation earlier (Pléh 2008). In his view, all perceptual processes should be interpreted from the point of signing. Basically he claimed that the stimuli have a subjective appearance, and an object reference must be ‘computed’ by the mind based on it. The stimulus is always ambiguous regarding its referent object. For the computation of the real world, the entire signal context should be considered. This attitude allowed for the experimental and mathematical verification by his students, as shown by the constancy experiments of Brunswik (1934) for size, and Kardos (1934) for lightness.

Perceptions furthermore always have a signal function that goes beyond the mere stimulus. As signals, they should be related both to the objects evoking the percepts, i.e., the causal agents responsible for them, and to the evoked behavior of others. Linguistic signs are special since they also relate to the supraindividual rule-systems that are responsible for them. The sign based (semiotic) interpretation of perception is crucial for Bühler to show that all kinds of behaviors (including on lower levels) necessarily have different aspects, not unlike the linguistic signs he studied later in detail.

The issue of the proper place of Gestalt principles was central for Bühler’s interpretation of perception. Bühler was among the first systematic proponents of a Gestalt-based organization in perception and mental life (Bühler 1913), although at that time he was mainly interested in Gestalt organization in artistic forms. Interestingly enough, the book of Bühler was reviewed early on in Hungary by Gyula Kornis (1915), his later professional friend. Kornis emphasized that Bühler saw the independence of Gestalt organization, but at the same time a unity of analytic and synthetic processes in it.

The Berlin *Gestalt* School did not acknowledge Bühler sufficiently, because the experimental attitude of Bühler has been too analytic for them. Bühler followed classical psychophysical methodology, when trying to reveal *Gestalt* organizing principles in visual displays. According to the Berlin school, Bühler did not recognize the primacy of Gestalt organizing principles, such as pregnancy. While Bühler and his students (Brunswik 1934 and Kardos 1934, 1935) studied Gestalt organization and particularly constancy phenomena, they did not follow the Berlin school in all regards. They did not believe in ‘direct perception’, and they allowed for much more computations, based on the stimulus array, and a comparison of different fields or domains to arrive at an object representation.

Bühler returned to the *Gestalt* issue at the end of his life (Bühler 1960, 1961). For Bühler, even when he returned to the issue at the end of his life, Gestalt or-

ganization was a biological function. As Cattaruzza (2015) analyzed his approach in detail, Bühler compared and treated psychological and biological functions together. In his examples of animal behavioral coordination, he always interpreted animal behavioral regulations as complex, *Gestalt*-based sign functions. As a matter of fact, much later he even tried to relate his *Gestalt* convictions to the new cybernetic organizing principles (see about this Garvin 1966).

V. THE HUNGARIAN IMPACT OF BÜHLER IN VIENNA

Table 2 summarizes the impact of Bühler on a next generation, setting the Hungarians with bold.

Table .2 Students and followers of the Vienna Karl Bühler and some of their ideas (after Pléh 2008)

<i>Topic</i>	<i>Student, follower</i>	<i>Continued topic</i>
Sign functions in perception and Gestalten	Ludwig Kardos, Egon Brunswik	Constancies, sign theory of perception
Teleology of animal behavior	Konrad Lorenz, Paul (Harkai) Schiller, Kardos	Releasers, behavioral evolution
Language functions	Popper, Lorenz, Jakobson, Gyula Laziczius, Iván Fónagy, Kardos	Anthropogenesis, language functions, culture, World III.
Selection in development	Lorenz, Karl Popper, F. Hayek, Harkai	Selectionist theory of knowledge, competition of ideas

During the Vienna years, Bühler had different types of contacts with Hungarian science.

- formal, official contacts
- mentoring Hungarian students and “postdocs”
- influencing the intellectual outlook of Hungarian psychology
- the impact of Bühler’s theory of language on Hungarian linguistics

As for the official contact between and Hungarian intellectuals, he certainly had some contacts with influential figures of the time. The society section of the Hungarian Philosophical Association published in their journal, *Athenaeum* in 1937 we learn that Bühler had a talk in 1936 in Budapest, on *The Future of Psychology*, that he was probably talking about his multilevel theory of behavior published in German the same year (Bühler 1936a).

In 1937 he was elected to be an external member of the Hungarian Academy of Sciences, on the promotion of Gyula Kornis, a most influential conservative philosopher, Anton Schütz, and Gyula Moór, a Neokantian legal philosopher.

The promotion emphasized his role in developing the psychology of higher mental processes, in relation to language and mental development. Specifically, as a follower of Külpe he proposed a new vision of non-sensory mental acts, relying on systematic introspection of the subjects. The promotion also emphasized his stage theory of mental development (instinct, habit, intellect). They also referred to his Gestalt studies and theory of color vision (Magyar Tudományos Akadémia, 1937).

As the archival material of Gyula Kornis kept at the Hungarian Academy Manuscript collection shows, they were in friendly, though not intimate terms, visiting each other's seminars in the 1930s. Kornis has referred to Bühler in many of his writings, mainly to Bühler's studies of thought processes. Bühler remained in close contact with his Hungarian psychologist colleagues later on as well. After he was imprisoned by the new authorities following the Anschluss of Austria, and he had to leave Vienna, he arranged for his reprint collection to be taken over to Budapest. As Kardos, his doctoral student recalled to me, as a Jew Kardos did not dare to go back to the Vienna of the IIIrd Reich, thus Ferenc Lénárd, who was an *Ungardeutsch* safe to travel was actually responsible for the transfer (Kardos 1984, Pléh 1985b). The collection, organized in the early 1950s by Ilona Barkóczi and Zsolt Tánzos is still in the possession of Loránd Eötvös University Institute of Psychology that has taken over the old library of the Psychology Seminar of Pázmány Péter University in the 1950s. Incidentally, the exile library of the Bühler couple – that has a few entries from the Vienna years – was repatriated to Austria, and is being professionally catalogued (Felsner et al. 2016). The same still awaits for the reprint collection, referred to in Budapest as the *Bühler separatum* collection.

VI. PERCEPTION RESEARCH OF LAJOS (LUDWIG) KARDOS

The most direct influence of Karl Bühler in Vienna towards Hungarian psychology came from his perception research. Although Brunswik the other Vienna perception pupil of Bühler would also be considered to be Hungarian, he was in fact coming from the upper Hungarian (today Slovakia) branch of the Brunswik family famous in Hungarian intellectual history, and was raised in Vienna as son of a government employee, and was never part of Hungarian psychological and intellectual life. The real Hungarian influence was on Lajos (Ludwig) Kardos. Kardos (1899–1985) has been both the mentor and the savior of Hungarian experimental psychology in the 1950s–1960s acting as a chair of psychology at Budapest Eötvös University between 1947 and 1972, at a time when psychology was less then welcome as a discipline (Pléh 2008, 2013), and there he developed a locomotion based theory of animal memory. However, in his early years in Vienna, he has become a leading follower of Karl Bühler in perception research. Kardos was a liberal

left wing youngster, who has become part of the Jewish exodus in the 1920s due to *numerus clausus*, and he started and finished his university studies in Vienna. *Numerus clausus* was the first practically anti-Semitic law in Hungary that was trying to limit the proportion of Jewish students to 6%, which was the proportion of Jews in the general population of Hungary at that time, while the actual rate of Jewish students was 25–40% in the 1910s in different faculties (Kovács 1994). Kardos studied both medicine and mathematics at the University of Vienna, obtaining his medical degree in 1925. But the real turning event of his life was that in the 1920s he became a student of Karl Bühler (Kardos 1984a, Pléh 1985b, Murányi 1985). After defending his thesis he published it in Nazi Germany (Kardos 1934), with some benevolent lying from Bühler as Kardos mentioned in an interview (Pléh 1985). As Dejan Todorović pointed out to me,

The book was dedicated to Karl Bühler, and in the preface Kardos extends thanks to various people including Bühler, Spearman, Woodworth, Brunswik, Heider, MacLeod, and especially Koffka, for “long and deep discussions”. This shows that he was in communication with leading researchers in the field at that time. (Todorović 2010.)

Starting as a student of Karl Bühler Kardos worked on constancy phenomena (Brunswik and Kardos 1929, Kardos 1930), and he became well known through his monograph on the role of shadows and lightness constancy in object perception (Kardos 1934). He was among the first perceptual psychologists to combine the attitudes of careful experimentation with courageous mathematical modeling, basically claiming that constancy can be rendered with a mathematical model comparing the light input from a surface with that coming from the neighborhood (Kardos 1934, 1935).

According to Kardos, color and lightness constancy phenomena are a key to object perception. He has taken over his interest towards color and lightness constancy as well as the theoretical attitude of treating perception as a signal issue from Bühler (1922b). Constancy itself can be rendered with a mathematical model comparing the light input from a surface with the average light coming from the neighborhood. As Alan Gilchrist (2010) pointed out to me in personal correspondence

The idea that lightness depends on a comparison of target and surrounding luminance was, I think, widely accepted among at least Gelb, Koffka, and others. The central idea of Kardos was that “neighborhood” was much more concrete. It was not a matter of distance from a target surface, but rather a frame of reference. He used the terms relevant and foreign “field” as in field of illumination. Furthermore it was not the kind of vague idea others had. He defined how a field is segregated within a complex image – two factors: penumbra, and depth boundaries (corners and occlusion boundaries). (Gilchrist 2010.)

The treatment of constancies by Kardos is a rather striking combination of phenomenological analysis, careful experimentation about contextual effects, and an innovative application of higher mathematics. In his phenomenological analysis there is careful consideration of notions like object, field, sign, and the like. Phenomenology for Kardos was by far not a license for loose talk. Rather, it was rather a combination of conceptual analysis and presentation of primary experiences. “In the natural, lay attitude directed towards ‘object properties’ vision provides a phenomenal field in which there is no real articulation between shadows and parts without a shadow similar to a figure–ground organization” (Kardos 1934. 23).

This attitude is the reason his treatment continues to be central even in contemporary theories of lightness constancy. The modern synthesis of Alan Gilchrist (2006) about black and white perception is basically centered on the interpretation of the Kardos experiment and his models.

Kardos proposed that the lightness of a surface is co-determined by both its relevant field of illumination and the foreign field of illumination, although the main influence is that of the relevant field. The relevant field is the field to which a target surface belongs; the foreign field is the adjacent field of illumination. Perhaps his most important insight was that failures of constancy are the expression of the influence of the foreign field. He studied the competing influences of these fields where they are most equal in strength: in perceptually segmented but weak frameworks. (Gilchrist 2006. 65.)

In a way, Kardos belongs to the rare type of historical heritage who’s work (at least his work on perception) is not merely of historical interest today, but forms part of contemporary mainstream perceptual psychology.

In a peculiar manner, Kardos has later on fell for information theory, and was among the first psychologists in Hungary to use the cybernetic idiom to characterize the mind (Kardos 1964), and elaborated a complex neuro-cybernetic proposal for the origin of mental life (Kardos 1980). Kardos has felt the continuity of the signaling theories of his mentor in his own perceptual research. In the 1984 Hungarian translation of his 1934 monograph, he felt pity for his missing of cybernetic notions that would turn the phenomenological language into a more mathematically neutral idiom.

How much easier would have been my task (in 1934) had I available the conceptual apparatus of present day information theory and cybernetics! [...] How easier would it have been to state that our color experiences are informations about some optical aspects of objects, and to state that stimuli work as information channels characterized by noise. (Kardos 1984. 13.)

VII. BEHAVIORAL TELEOLOGY NOTIONS OF BÜHLER IN HUNGARIAN COMPARATIVE PSYCHOLOGY

Bühler outlined his mature theoretical position in an influential book on the supposed crisis of psychology, which was published in 1927. Bühler proposed a vision of mental life that was modeled on language. He considered three entities, out of which two were agents. The Subject, with his first person experience, the Partner, with his second person experience, whose behavior the Subject tries to modify, and the Object of the situation, which the behavior reacts to and which the behavior is coordinated with. From the point of view of the history of ideas, in the 1920s and 1930s Bühler tried to overcome in a sometimes eclectic, but certainly in a liberal way the controversies among the internalist, the behavioral, and the culturalist approaches to the human mind, and the task of psychology (Bühler 1922a, 1927, 1934, 1936a, 1990). He belonged to the class of those Central European scholars who were looking for a meaningful unity in their science, while being aware of the divisive naturalistic and spiritualistic trends. The much cited quote below shows how relevant his attitude is even for contemporary debates of the study of the human mind.

When someone raises a new topic, why does he have to look down scientifically on his neighbor? In the large house of psychology there is room for *everyone*; one could direct his spectacles on the skyline of values from the attic, others could at least claim for themselves the basement of psychophysics, while the walls are intended to out the entire enterprise into the causal chain of events.” (Bühler 1927. 142.)

Bühler started from the idea that the foundations of traditional psychology had been challenged due to the severe criticism of associations. The structured principle of the Gestaltists, the search for an underlying, non-conscious order by the psychoanalysts and the Würzburg *Denkpsychologie*, the idea of elementary behavioral organizations proclaimed by the behaviorists, and a search for spiritual organization in Spranger all challenged elementarism and association as an explanatory principle. In the market of ideas all of these novelties presented themselves as exclusive. In reality, however, they were supplementary to each other.

Karl Bühler postulated three ‘concentric’ levels of selection:

For me, in Darwinism the concept of play field seems to be productive. Darwin has basically known only one such play field, while I point to three of them [...] These three play fields are: instinct, habit and intellect. (Bühler 1922. VIII.)

Early ethologists, with whom Bühler was familiar, such as Heinroth, Uexkühl and Konrad Lorenz, clearly described three factors in the unraveling of animal behavior (see Lorenz, 1965, for a review). The first is the postulation of species

specific behavioral patterns. The development of these patterns is predetermined, and is a characteristic of the species in evolutionary terms, but it also requires critical, environment-dependent experiences. In addition, exactly due to the existence of innate/internal biological programs, the animal can never be described as a passive, merely reacting creature: its entire behavioral range is an expression of internal behavior program-patterns.

Karl Bühler tried to unify psychology by relying on these early ethological principles. The key element in this unification account was the idea that all behavior – from the simplest animal behavior to human culture-creating behaviors – is assumed to be meaningful. As a matter of fact, Bühler on the evidence of his unpublished manuscripts, went back to the crisis issue several times, but less with a negative, and rather with a positive message. He hoped to prove both on factual and historical material that psychology has a double commitment, it does belong to the biological sciences, but at the same time to the mental sciences. In this later aspect it does define the attributes and modes of human existence. For example it gives a categorial analysis of language, and for the modes, the issue of gender or age differences (Bühler 1969. 180).

VIII. THE WORK OF HARKAI SCHILLER

This meaning and intention or teleology centered vision of animal and human behavior had a decisive influence on Hungarian theoretical and comparative psychology. Paul von Harkai Schiller (1908–1949), or under his English pen name, Paul von Schiller was the most important theoretical and experimental psychologist in Hungary to take up this message of the heritage of Karl Bühler. As the careful analysis of both Magda Marton (1996) and Dewsbury (1994, 1996) clearly showed Harkai was a groundbreaking researcher of an international status in his attempts to connect comparative psychological thought with a semiotic and Gestalt based notion of behavioral organization.

His one and a half decade long work in Hungary in a historical sense was crucial in establishing experimental psychology at the Faculty of Arts at Pázmány University in Budapest, being responsible for the organization of a psychology Seminar, with many doctoral student, including David Rapaport. (See about this broader framework Lénárd 1946, Pléh 1997). His attitude tried to combine *epistemological philosophical issues with the experimental methodology of natural sciences*. He formed his research attitude during his postdoctoral travels to Köhler in Berlin, and Bühler in Vienna. His entire attitude of trying to reveal holistic and at the same time teleological organization in behavior showed the impacts of the Berlin Gestalt, the meaning based proposals of Bühler, the comparative ideas of early ethology, especially Lorenz, and the action based developmental theory of Piaget (Pléh 2005).

The first peculiar feature of his work is an empirically and theoretically motivated renewal of Aristotelian functionalism. For Harkai *The task of psychology* (1940, modified German version Schiller 1947) is to overturn traditional Cartesian dualism, the postulation of a “multi-level man”, a vision that supposes the reality of a mental world on the same abstraction level as physiological processes. Harkai juxtaposes with this image a view of biological man, which is in fact the renewal of an Aristotelian thought by proposing that body and soul, physiology and psychology are not two different levels. Mental phenomena are a particular organization of human bodily or physiological processes. This peculiar biological functionalism links him in the history of Catholic psychology to the works of Mercier (1897/1925), a Belgian neo-Thomist “modernizer”, who – well aware of the facts of experimental psychology of the time – advocated the unity of body and mind. Mercier contrasted this view with that of Wundt who basically defended Cartesian dualism in a modern setting. For Harkai it was also pivotal that there is continuity between Cartesian dualism and the ideas of Wundt (1903).

As far as the impact of Bühler is concerned in his work, Harkai analyzed the early Bühler and the Würzburg school and related efforts (Meinong, Marbe, Watt, Messer, Bühler, Ach, Külpe, Selz, Höningwald) already in his doctoral thesis as bringing the victory of the introspective methods and the non-sensory elements. In his vision that lead to a “clear differentiation in our mental life between acts and contents. [With the advent of non-sensory elements] teleological, active moments had to be postulated that permeate the mental world with their directionality. This moments were first outlined as central by Brentano.” (Harkai 1930. 51.)

In his continuing theoretical work that first appeared as a series of papers (Harkai 1937, 1939) he constantly used Bühler as one of the foundations for his idea of an intentional motivational behavior theory, in a way as a biologized Brentano. He even claimed that while Bühler was a good organizer of action research, at the same time he was too loose regarding teleology (Harkai 1939).

In his later, finalized synthesis the organization of behavior was interpreted as the interaction of the environment and a unified biological organismic entity (Harkai 1940, 1944). The motivational system of organisms only makes sense in an evolutionary background and cannot be interpreted merely as an interaction of experience and physiological processes. This gives a curious flavor to the view of Harkai on the *unity of psychology*. For him the key to unity is that one has to consider the actions in animal behavior, their motivational aspects, the direction of mental processes (their intentionality) and their unified organization. According to Harkai the inspiration for this psychology should come from the followers of the intentionality tradition initiated by Brentano (1874), and of course Karl Bühler (1927) talking about the semiotic unity of psychology, claiming that all human or animal action is characterized by a goal and at the same time it is guided by certain signals. At the same time, behavior has an objective reference

and is organized as a whole. This is what Bühler and Harkai thought to be the right attempt to overcome the contradictions of the fragments of contemporary psychology – motivation-centered psychoanalysis, cognition-centered experimenters and overt action centered behaviorists should unite in a goal centered holistic experimental psychology.

Harkai was expressly a biological functionalist, taking the contemporary early German ethology seriously, parallel with the attitude of Bühler. He has taken up an idea popular in German zoology especially in the writings of Jakob von Uexküll (1864–1944) that the animal lives in a world articulated by its body and by its nervous system, attributing certain meanings to certain elements in the environment. Animals live in a partly constructed *Umwelt* (Uexküll 1909, 1925). “Uexküll thus starts off not from the idea of an objective environment but from a ‘subjective external world’ given to the living being, selected by its sensory and effector apparatus” (Harkai Schiller 1940. 113–114).

What he called “psychological biologism” was an empirically and theoretically motivated renewal of Aristotelian functionalism.

He compared the inspiration of Bühler and Piaget in their ideas about the genesis of consciousness.

In his expression theory Bühler sees in signs a saving on actions; consciousness arises when the operations of physiological regulation do not assure our vital values. Action accommodates the occasions of our life field the needs of our organism. According to Piaget reflex, habits, intention and thought are all instruments of adaptation. They develop in cyclic circles, from restless search towards theories, towards action organizing schemata. In all of these conceptions, joint by the best representatives of our science, it becomes more and more clear that physiological and conscious events are in their higher organization aspects of action organization. (Harkai 1944. 33.)

His theory also appeared in actual experimental work. His numerous (partly posthumous) publications concentrated on what we would call today representational phenomena in animals. Detour behavior (Schiller 1948, 1950), figural preferences and drawings by apes (Schiller 1951, 1952, Schiller and Hartmann 1951).

IX. THE IMPACT OF BÜHLER ON THE LATER COMPARATIVE WORK OF KARDOS

The approach Bühler was taking towards a critic of early non intentional visions of animal behavior promoted by behaviorists lead to the other aspect of his criticism of naive behaviorism: the issue of regulation (Garvin, 1966). Animal behavior is regulated not in a mechanistic manner but in a complex cybernetic way. In a late paper of his, Bühler (1954) outlined directional and object-based naviga-

tion both in aviation and in bird flight; he analyzed the mechanical conception of Loeb (1900, 1912) on animal tropism. Interestingly, Bühler claimed that the mechanical vision of Loeb is mistaken because it did not consider cybernetic regulatory factors such as the ones already highlighted by Claude Bernard regarding the regulation of the inner milieu. It is remarkable that the last manuscript of Bühler (1969) that was only published posthumously also presented a theory and a series of experiments on animal navigation, mainly concentrating on bees and birds. The issues of animal teleology figured in earlier works of Bühler, especially in his child development book. As analyzed by Ter Hark (2007) the 1927 book was rather crucial in presenting the intention based synthetic theory of animal behavior, in contrast to the entirely mechanistic vision of Loeb. Friedrich (2018) also shows very clearly how crucial was for Bühler to contrast the mechanistic vision of Loeb with the trial and error vision of intentional animal behavior promoted by Thorndike and Jennings.

Interestingly enough, the former student of Bühler, who started with constancy phenomena, Lajos Kardos, two generations later in a way returned to the Bühler inspiration as a comparative psychologist. Kardos started his theory on the genesis of mental life with an analysis of the Loeb–Jennings debate, and of the coordinative, cybernetic attitude: the genesis of prediction is necessary for the genesis of the mind (Kardos 1980). This theoretical book of Kardos compared to all his other work reads as surprisingly speculative. He is not doing experiments, neither is he doing too much reading. On the basis of some elementary biological background Kardos set out to analyze the postulated behavior of theoretical monocellular organisms. This excursion is used to shed light on the origin of mental life. In this regard it is remarkable that his teacher half a century earlier used the same attitude when proposing a unified sign based framework for psychology, and also started from the Loeb–Jennings debates (Pléh 2013). Unity of biological and meaningful elements in human life on all levels of mental organization was the key notion for Bühler.

The distance between the integrated behavior of the amoeba and human scientific thought is certainly impossible to grasp. Still, on the basis of the most modern observations both can come under two common concepts: they are holistically organized and are characterized by meaningful events. (Bühler 1927. 392.)

In his analysis of the origin of mind the starting point for Kardos was avoidance behavior. Warning signs are crucial in the development of mental life. Starting from the etymology of prevention ('prevent' → 'praevenio') he claimed that organisms use information that precedes harmful events: "harmful impacts are consistently preceded by biologically irrelevant impacts" (Kardos 1980. 24). Signals precede the harmful event. The animal avoids the harmful space, and "the adiphore space is a secure starting place; from here, by well-controlled action it

can avoid any dangerous contact or can achieve contact when desirable” (Kardos 1980. 94).

Kardos initiated a long series of experimental studies on animal learning and memory in rodents from the 1950-as on. On the theoretical level he started from an analysis of the relationships between the “animal way of life” and mental organization. In this regard he is a Gestaltist who was sensitized in the circle of Bühler (1934) to the ideas of early ethology emphasizing species specific behavior and the different *Umwelts* of animals. For Kardos, the essential difference in the way of life between other mammals and apes is the *opposition between locomotion and manipulation*. The actual animal learning experiments of Kardos were run through 30 years, using maze and discrimination learning technologies. His starting point was the idea that behavioral equivalence is crucial to learning. That is an idea again that goes back to the concept of behavioral equivalence claimed by his teacher Bühler (1927) in the framework of early continental ethology. The underlying sign based equivalences in animal learning for Kardos are One place – one sign – one behavior.

The first studies along this line were his experiments on “aequiterminal routes”. (Kardos and Barkóczi 1953). Rats had to learn two slightly different types of mazes, where in one version they had to learn that the same goal has different values depending on the route taken. That was impossible to learn. Rats are not able to learn the distinction that if you came from left than you have food, and if you come from the right, you have no food.

The interpretation of the experiment was that memory representation in animals with a locomotory way of life is place tied, rats being unable to learn different targets being on the same place if the place was reached by different routes. These behavioral results are to be explained according to Kardos by postulating a *mnemonic field* (Kardos 1988). Using some more complex spatial learning situations such as star shaped mazes, Kardos proposed a mnemonic theory slightly different from the cognitive maps of Tolman (1948). Kardos (1988) was claiming that rodents basically are maintaining memory images as vivid as their percepts, rather than cognitive maps as Tolman (1948) claimed.

X. THE IMPACT OF BÜHLER’S THEORY OF LANGUAGE ON HUNGARIAN LINGUISTICS

Bühler has started to use his general model of language already in his arguments for a three aspect psychology in 1927. His theory is a self-proclaimed *Organon model*, referring to the logical theory of Aristotle. It is a conceptual framework, starting from ‘axioms’ that treat language not in an abstract way, but as an instrument of communication. Persyn-Vialard (2005, 2011) analyzes the functional nature of his model. Human language has by necessity three functions: a) it has an

experiential, inner, first-person reference, it is an *expression (Ausdruck)*, b) it has a relation to other people's behavior, i.e., it has a *directive function (Appel)*, and c) most specifically, it represents something from the external world; it is a symbol (*Darstellung*). For Bühler the proposal is not merely about dimensions of linguistic signs. According to his "crisis-book" (Bühler 1927), this tri-partiality is not a characteristic of language exclusively. It is also a story about the triple aspects of the human condition: the inner world, behavior, and reference to something external and objective are all crucial to mental life. Bühler in this regard speaks about the general semiotics of behavior.

Signs of human language obtain their object reference through a supra-individual logical intentionality. In human language, there is a hierarchy among the three functions. The descriptive and intellectual function is always the leading one. We can express emotions mainly by naming things, and the same holds for the directive functions. At the same time, Bühler was not insensitive to what we would call today the "expressive aspects of speech". He claimed that while the referential function is the basic and defining function of human language, tone of speech, interjections, and other elementary features of our speech channel are also used to express emotions (Bühler 1936b).

The supra-individual semantics shall be the foundation of the existence of a human sphere of thoughts. Through his "objective semantics" Bühler's early interest towards the reality of thought obtained a new anchorage. It will be echoed a generation later by a follower of Bühler in the philosophy of science, Karl Popper (1972, 1976, 1994).

Bühler put rather clearly the connections between his psychological ideas and the communicative specificities of sign based coordination. Social life needs coordination, and in this regard semantics is always social. By developing the descriptive function, animal signal systems increase their efficiency.

1. When where there is real social life, there is a need to coordinate meaningful behaviors of the members of the community. Since the reference points of this coordination are not given in a common perception, they have to be provided with a higher order contact, specifically with semantic dispositions.

Individual needs or dispositions have to be manifested somehow and these manifestations have to be noticed in order for them to be validated in the joint enterprise.

By coordinating signs with objects and states of affairs, they do obtain a new semantic dimension. And due to this process, their communicative efficiency increase importantly. (Bühler 1927. 50–51.)

For Bühler the central issue in the study of language use was the role of grammar, or linguistic organization at large. He relied on the proposal of Saussure (1922), the founding father of modern structure-based linguistics, to start from a differentiation between *langue and parole* (language and speech), and empha-

sized repeatedly that the study of speech as an activity presupposes the study of grammatical linguistic structures. At the same time, regarding relationships between language and speech, under a Humboldtian inspiration, Bühler has turned the Saussure-ian system from a single-instance system differentiating social and individual as *langue* and *parole*, into a four-instance system. The entire system is shown in Table 3.

Table 3. The full system of aspects of language in Bühler

<i>Level/objectivity</i>	<i>Subjective I.</i>	<i>Objective II.</i>
Lower level 1.	speech activity	language product
Higher level 2	speech act	linguistic construction

XI. EARLY HUNGARIAN STRUCTURALIST INTERPRETATIONS OF THE MESSAGE OF SPRACHTHEORIE

The *Ausdruckstheorie* of expressive movements analyzed by Bühler (1933a) was early on absorbed by Hungarian philosophers and philologists. László Bóka (1934) the later literary theorist criticized Bühler in his early review to be too far from language, and too much following Klages. In Bóka's view Bühler was mainly treating in this book language as lacking expressive powers. As a matter of fact, the language theory of Bühler a few years later (1933b) proved the opposite, the same year.

They discussed in many aspects his vision of expressive power in a presentation of a paper by László Gáldi (1940), a later influential lexicographer and style theorist on the expressive power of language as it is related to the lexical choices, mood and the likes. The debate centered around "language character-ology", the issue for expressive differences among languages, and the individual use of language for emotion expressions.

Bühler's theory of language was also discussed in many details from a philosophical point of view by Gáldi (1943). The linguistic reactions around the same time were more consequential. In a way, Bühler figured as a central author in the Saussure inspired first wave of structural linguistics in Hungary.

Gyula Laziczius (1896–1957) the founding father of a Saussure and Prague school inspired structural linguistics in Hungary (see about his impact Kiefer 2008). Laziczius criticized this extension at the time. In general he was very receptive of the general frame of the theory of language promoted by Bühler in his textbook (Laziczius 1942, 1966). As Fónagy (1984), his student reminded us, in the textbook of Laziczius, there are over 100 (!) pages presenting the *Sprachtheorie* of Bühler. At the same time, he was very critical of the combination of Saussure and Humboldt.

The principle that Bühler treats as his third axiom is questionable to the first sight. There is a fourfold distinction involved here, as of *speech actin* [*Sprechhandlung*], *speech work* [*Sprachwerk*], a *speech act* [*Sprechakt*] and *linguistic construction* [*Sprachgebilde*]. [...] Bühler did not realize that the distinction of action and act, work and construction cannot be fit into the distinction of “langue” – “parole” since they do cross classify. [The crucial issue is that in this combination] We abstract in a mixed manner the individual and social aspects, and the „language” nature of the extracted set is unquestionable. With the procedure of Bühler we thus arrive to the undifferentiating of “language”, to the undifferentiating that was to be resolved by Saussure exactly through distinguishing “langue” and “parole” [...] This faulty thesis should necessarily be deleted from the axioms of linguistics, and replaced by the correctly interpreted distinction by Saussure between “langue” and parole. (Laziczius 1940. 42–43.)

XII. INTERPRETING BÜHLER'S FIELDS AND PRAGMATIC MESSAGE

Two generations later, I tried to treat the fourfold distinction of Bühler as a positive program, where the social–Individual dimension is combined with a speech act like theoretical frame. On the subjective side, Bühler stresses the processes rather than ‘knowledge’ in the classical sense, and in a sense similar to another Aristotelian rejuvenation theory proposed by Gilbert Ryle (1949) the British philosopher, differentiating between *knowing how*, rather than *knowing what*. Bühler supposed that individual actions are accommodated to the system, therefore the analysis of the system (linguistics) was always prior to its usage, to the psychology of language, and also supposed that the social system manifests itself through individual acts (Pléh 1984).

Bühler emphasized two crucial aspects when he talked about the structure of language. The first is the *structure dependence* of the value of individual items. Along with his commitment to *Gestalts* in the organization of all of perceptual psychology, Bühler believed that each linguistic sign obtains its function only with reference to the entire system of signs. On the other hand, signs in combinations form new unities, often by rounding up meanings.

Regarding the structural elements of language, he postulated, in line with structuralist principles, three levels: sounds, words, and sentences. It was especially important for Bühler to show that human language has a double articulation: words and sentences. The other logical possibility – and he has lengthy thought experiments about this – would be to have unstructured long distinct strings to correspond to each individual state of affairs. Unlike this logical possibility, this is the sense in which human language has a double articulation.

Human language is based at least on two classes of institutions (conventions) and accordingly, has two classes of linguistic structures. [...] this corresponds to the choice of words and the construction of sentences. There is a type of linguistic structure that cuts the world into pieces, decomposes it into objects, events etc., in order to reduce it to *abstract elements*, and apply a sign to each of these elements; while the other provides semiotic tools for an integral construction of the same world along *relations*. [...] At the same time these two articulations can move from one to the other, what was syntactic may become part of the vocabulary, and what was lexical may become syntactic. (Bühler 1934. 160.)

This kind of structuralist credo was much appreciated by Laziczius (1940, 1942) at the time. Two generations later I have also pointed out the importance of the early pragmatic vision of the psychology of language concentrating on the notion of fields and deixis.

The notion of field taken over from *Gestalt* psychology was a main tool for Bühler to connect Gestalt considerations with structural linguistics (Garvin, 1966). Bühler spelled out clearly this relationship between fields and Gestalts:

I am convinced that the concept of field in the future should be as central [in linguistics] as it is for us psychologists. As for the notion of “form” [...] let its use be constrained to cases where two things are alternating, such as content and form. In this constrained sense, the most elaborate form can always become content, and the most substantial content can become form for the specialist of Gestalts and for the theoretician. (Bühler 1936b. 61.)

Language in the vision of Bühler functions in two fields. The first field is the *deictic field*, or *demonstrative field*, which is the world of perception “out there”. Language has an entire class of signs, deictic elements (in the terminology of Peirce (1883) indexical signs) that have their meaning filled from the perceptual field. In this regard the notion of the *origo* of the *here*, *now*, and *me* was very important for Bühler (Marthelot 2012). In his vision, deictic signs are not some remnants of an ancient status of language. Communication merely via “naming signs” would make it rather clumsy. The logical criticism of deictic elements in scientific language should not be extended to natural language use.

Where is it written that intersubjective understanding of things [...] is only possible one way with the use of naming signs [*Nennwörter*], with conceptual signs, linguistic symbols? (Bühler 1934. 105.)

The other field in language is the *symbol field*, of which the specific components are concept–word–symbols. These are not tied to a situation, but create an internal linguistic context, and form a continuum; on one extreme of the scale

they function in sentences that are entirely devoid of context, like mathematical propositions. For Bühler such a duality represented the unity and the duality of sensual and abstract moments in language. On the other end of the continuum, the internal, linguistic field provides an interpretation for the signs – as signs are interpreted in relation to each other.

The particular sign obtains its anchorage and the filling of its meaning in the syntagma with other signs of its kind. In this situation the physical environment falls in the background and becomes irrelevant, as the surface of the paper becomes irrelevant as we read books. [...] What is conserved and becomes an object of most careful work is the *synsemantic* anchorage of the sign; it requires be interpreting and understanding in a deeper manner from the linguistic context. *In extremis*, it is merely the intralinguistic, *synsemantic* field that gives its relevance. (Bühler 1936b. 60.)

The expressive and directive functions are related mainly to the deictic field, while the descriptive function to the symbolic field.

Karl Bühler's theory of language was rather modern both in its combination of a philosophical tradition with his intimate knowledge of modern linguistics, and in its argument for an active theory of language. His concentration on the 'descriptive function of language' was accompanied by a hypothesis of constant joint social work and coordination between speakers and hearers. While the representational function was conceived as crucial by him, it does not passively determine our vision of the world through language. Bühler has combined a Kantian inspiration of a priori determination by categories, with a more dynamic activity theory he has taken from Husserl (Persyn-Vialard 2005). As his French editors, Bouveresse (2009a, 2009b), Bühler treated the representational function in a mediating way. Symbolic language drives representation in a dynamic way, much like an instruction system for the hearer to look for things in the real world. This idea is spelled out in detail in his theories of deixis, anaphora, and the relation between the two fields (Marthelot 2012).

There is a cognitive division of labor that corresponds to these linguistic structural levels. First, articulation into words and sentences makes for human memory economy. We do not have to memorize a different sign for each situation. Second, both the constitutive signs and the entire sentence are anchored in the perceptual field. Words look for their referents in the actually perceived world, as well as sentences look for situations corresponding to them.

In my interpretation a generation ago, I contrasted Bühler with the decontextualized modern experimental psycholinguistics of the 1970s (Pléh 1984). Bühler proposed or represented a more complex foundation both for linguistics and for the psychology of language. He has treated language as both a biological and as a social system, where the biological and social are not in contrast or opposition. This was supplemented with the idea of communication having varied functions,

and being embedded in the field of perception and signs as well. One point was missing from the theory, however, and it is very interesting regarding the history of psycholinguistics. Bühler, just like the other great synthesizer of language and psychology a generation earlier, Wilhelm Wundt, did not intend to connect and confirm his axiomatic and theoretical approach to language with his experimental inspiration. Most likely there were two aspects missing to turn psycholinguistics into an experimental chapter. The lack of technical means to easily manipulate and register language stimuli, which has come with magnetic sound recording and analysis systems. Bühler and his generation were also missing language statistics and information theory that later allowed to characterize linguistic stimuli, words and sounds, and even sentences as independent variables, with numbers.

XIII. LANGUAGE FUNCTIONS AND THE DOUBLE CODING THEORY OF IVÁN FÓNAGY

Regarding the nature of sign-relations, Bühler (1933a, 1933b, 1933c, 1934) had very clear ideas about the communication of emotions and iconicity. He believed that even though the arbitrariness, the lack of motivation between sign and signified is crucial for human languages, human signs are still treated by the users as iconically and emotionally expressive, hence language has an emotionally important iconic basis as well (Bühler 1933c). This suggestion is related to Bühler's general biological commitment: signs are originally biologically relevant movements, and they always functions as expressions of emotions beside their cognitive functions. The Hungarian linguist and psychoanalyst Iván Fónagy (1920–2005) had a very creative extension of the ideas of Bühler regarding the types of linguistic signs and language functions. Regarding the signs themselves, Fónagy claimed that language signs are conventional in the sense of Saussure, but they are not arbitrary. There is an iconic relation between signs and the emotional status of the sender. Regarding the actual communicative situations, Fónagy (1966, 1971) claimed that all speech events, while they serve a descriptive function, they also have a second layer of coding: they code the inner status of the speaker as well. There are coding mechanisms that are responsible for descriptive function of language, but its output is always supplemented by the work of a “Distorter” that tries to use linguistic variations and possibilities to express emotional meanings directly.

From a phylogenetic point of view we might consider the Distorter as a residue of a *pre-linguistic* communication-system, integrated with the linguistic code, and distortion as continuous synchronic motion, a permanent *recreation* of language. The coexistence of Grammar and the Distorter, the double coding of messages is a successful means of *self-programming*. (Fónagy 1971. 219.)

An interesting aspect of this theory was that it treated the emotional/expressive functions as secondary ones. Like the *Sprachtheorie* of Bühler (1933a, 1934), Fónagy also accepted the human specificity of the descriptive, cognitive function of language. The phylogenetically archaic expressive/emotional function is secondary in relation to this. The interpretation of this issue of functions is proposed, however, by Fónagy (1984) in the framework of a more extended multifunctional model of Roman Jakobson (1970) where expressive functions relate to sender and poetic function to the message itself. An innovation of Fónagy is the connection between the poetic function and double coding. In his view, a key to analyze art is to realize that artistic form is also a realization of emotional double coding in language. Form that is unmotivated regarding the referential objects is in an iconic relation with emotions. (Fónagy 2001). Later working together with his psychonaltic son, Peter Fónagy he argued that double condign is based on a „internalized oral mimicry” (Fónagy and Fónagy 1995).

* * *

Bühler was a general inspiration for Hungarian psychologists in the mid Century by proposing unification inspired overcoming of the assumed crisis of psychology. Bühler abstracted three basic parameters of the assumed crisis: (1) the problem of mechanistic explanation, (2) the indirect study of hidden processes, and (3) the subjectivity–objectivity issue. Contrary to the postulation of a split within psychology between natural science and human science, proposed by the followers of Dilthey, according to Bühler, meaningful organization is a characteristic of all behavior, and is not a specificity of the human mind. At the same time, however, behavior should also be interpreted in new ways. It is always a self-initiated activity, never simply reactive as most behaviorists would like it to be. Not even animals – and certainly not humans – can be regarded as merely reactive creatures, as mere automata. Organisms always attempt to construct a model of their environment. In this modeling activity the role of Darwinian selection and its broader interpretation is pivotal for Bühler (1921, 1922a, 1936a). This modeling and motivational inspirations were his most lasting impacts both in Hungarian linguistics and philosophy and psychology.

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