

CHAPTER 4

STUDYING THE MOVEMENT OF THOUGHT

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Methodologies hide as well as reveal. The danger is that the affordances of a methodology overshadow its limitations thus constraining research. Paraphrasing the words of Karl Duncker (1945), the problem is that the functioning of familiar methodologies narrows our perception of phenomena so as to blind us to certain aspects. Duncker conducted experiments on problem solving and “functional fixedness.” For example, he gave participants matches, a candle, and a box of tacks, and asked them to fix the candle to a soft wall. Duncker found that participants would try to tack the candle to the wall directly or use the matches to melt it onto the wall. The solution was to tack the box on to the wall and then use the box to support the candle. Why did participants fail to see the role of the box in the solution? First, Duncker argued that participants were trapped in the conventional use of the box as a means to store the tacks. Second, he pointed out that the presence of the tacks and the possibility of melting the wax, and the conventional use of both of these for securing things, blinded participants to the secondary function of the box. In the present chapter we suggest that much contemporary methodology has become functionally fixed on identifying variables and consequently has become blind to the actuality of psychological processes, namely, the situated real-time semiotic mediation of thought and action.

Methodological Thinking in Psychology: 60 Years Gone Astray?, pages 69–88
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The chapter begins with a discussion of two incommensurable paradigms: one which takes objects as axiomatic, the other which takes processes as axiomatic. While the former brings objects into the foreground, the latter brings processes into the foreground. Psychology is, for the most part, within the paradigm of objects or “things.” This translates into a psychology of variables with mechanistic relations. In contrast a psychology built within a process paradigm would bring psychological transformation to the fore. But unfortunately the dominance of the psychology of things, and the associated methodologies have, for the most part, rendered the movement of thought invisible. By going back into the history of the discipline this chapter examines research which started out with a process orientation and sought to develop a methodology for studying psychological processes. In particular, the focus is on the Würzburg School, the second Leipzig School and Vygotsky. From this brief historical review useful pointers about methodologies for studying the movement of thought are obtained. The chapter concludes by contributing to the development of a methodology for studying the movement of thought, or semiotic mediation, which, although building upon this earlier work, is also novel. The core idea is that contrary to common assumptions the movement of thought is not always an internal and private phenomenon, it sometimes has an external phase, for example, in verbal utterances, writing, and the use of resources which is amenable to rigorous analysis.

CARTESIAN AND HEGELIAN PARADIGMS

According to Thomas Kuhn (1962/1970) all sciences are embedded in paradigms that are more or less implicit. These paradigms are sets of assumptions, articles of faith, which are taken for granted. Paradigms are incommensurable. If they were not, then the so-called paradigms were mere extensions of one another. Thus, the move from one paradigm to another is discontinuous, and abrupt. Paradigm shifts are stimulated by the accumulation of anomalies. Normally the tendency is to ignore anomalies. But following the threads of these anomalies leads to the construction of a new paradigm. It is rare for researchers to follow conflicting findings and ideas because paradigms shape the way in which researchers see the world: what they make observable overshadows that which is inexplicable.

Ivana Marková (1982) has used the Kuhnian concept of paradigm to characterize two fundamental paradigms in psychology. There are those who assume that the topic of study is first and foremost “things” and only secondarily processes. On the other hand, there are those who assume that processes constitute things just as much as things constituting processes. Marková calls these the Cartesian and Hegelian Paradigms after their two

main proponents. Equally they could be called the “thing” and process paradigms. Wagoner (2009) calls these the product and process approaches, and, at a psychological level, they overlap considerably with what Laursen and Hoff (2006) call variable-centered and person-centered approaches. What is critical is that the Hegelian paradigm shifts our ontology from objects toward processes, such that “things” both arise within processes and constitute those processes. The methodological consequence, as we will see, is that “things” and processes need to be understood together.

THE CARTESIAN PARADIGM

The Cartesian paradigm extends far beyond the work of Descartes, but Descartes’ work is a useful typification of this paradigm. The Cartesian paradigm includes the assumption that things in the world and in the mind have a prior existence to processes, whether they be in the world or in the mind. Within the Cartesian paradigm, “things” exist, and interactions are secondary. The core idea is evident in Descartes’ somewhat infamous ontological dualism (Rodis-Lewis, 1998). He distinguishes two ontological realms: *res extensa* and *res cogitans*. *Res extensa* pertains to all that is extended in three dimensional space, while *res cogitans* refers to all that appears in the mind, including rational thought, such as a perceptual experience or Pythagoras’ theorem. *Res cogitans* does not have any extension in three dimensional space.

The influence of this dualism contributed to the creation of empiricism on the one hand and rationalism on the other (Marková, 1982). But whether studying empirical objects in the world or rational objects of the mind the key point, for the present chapter, is that in both cases, at both ontological levels, the concern was with “things,” namely, things with extension (material objects) and things without extension (ideas and logical relations). Within the Cartesian paradigm, things come first, and only then can they enter into either material or logical relations.

In both ontological realms, that which is true is timeless. True logical relations do not change. For example, geometry, Descartes argued, is true for all time. The mind, which is a logical necessity, does not develop. It is, he writes, conscious in all circumstances, even in the mother’s womb (Descartes, 1641). Descartes’ universe of truth, then, is like a Platonic realm of ideal forms all existing outside of time. In Descartes’ scheme there is no development or qualitative transformation, there is no growth of new forms. Instead there is only the rearrangement of the parts. As with mathematics, every “finding” was actually imminent within the assumptions, and as such, nothing entirely novel can be found.

Much philosophy and science builds upon the Cartesian assumption that things, either in the world or in mind, are primary. Bergson criticized this tradition of thought for “spatializing”—that is for developing concepts which conceal temporality within spatial metaphors (i.e., turning processes into “things”). For example, consider the ways in which time has been measured: the movement of a pendulum, the falling of grains of sand, the movement of the sun or its shadow, the movement of cogs, or the movement of electrons in a digital circuit. In each case time is spatialized by being reduced to the movement of an object, or “thing,” between two places without transformation. Within the Cartesian paradigm time is a pin-point instant, constantly replaced by a future pin-point instant. Bergson (1910) argued for an alternative conception of time called duration. Duration refers to the phenomenological experience of time within which past, present, and future co-exist in an irreversible movement (Valsiner, 1998). Melodies, he pointed out, cannot be heard if time moves from one instant to the next. In Ehrenfels’ (1988/1932) terminology melodies are a higher order Gestalt because they exist in duration.

The Cartesian paradigm within psychology has several traces in contemporary research (Farr, 1996; Gillespie, 2006). Indeed, mainstream psychology is built upon fundamentally Cartesian assumptions. First, the primary objective of much psychology is to measure characteristics or variables. These variables are then correlated or deemed causatively associated with other variables. The Cartesian metaphor of a mechanistic universe is imminent. When change is evident, the question asked is: Which variable or variables caused it? The assumption is that change needs explanation, but variables do not—they are taken for granted.

The main problem with the Cartesian paradigm is that its root metaphor or thema (Holton, 1975), that the world first and foremost consists of things, obscures the actuality of thought as a situated process. While the Cartesian paradigm can conceive of, and has methodologies for, assessing initial states and outcome states, it has trouble either conceiving or studying that which happens in between. The relation between independent and dependent variables are described in terms of probability statistics, but the movement of thought in any given situation is not an abstract probability, it is an actuality. Although the actuality of thought might move through potentialities (see Sato, Wakabayashi, Nameda, Yasuda, & Watanabe this volume), each potentiality addressed by thought is an actual thought. Probabilistic statistics obscure variance, thus blending variant underlying processes into a single abstract, and possibly non-existent, curve of probability. Within such a methodological paradigm even asking questions about what actually happened in a given case between input and output becomes problematic. Studying a single case is seen to be worthless because within a paradigm based on probability one can tell nothing on the basis of one case. Thus the

actuality of a given process ($n = 1$) is made invisible within the paradigm (despite the entire statistical edifice being a collection of single cases). Change, when observed, is always raised to the statistical level, variables are postulated, and correlations sought. The resultant correlation, or lack thereof, is given a reality status above the manifest process, which is often empirically evident, within a given case.

The process that we are interested in is that of the stream of thought (James, 1890), namely, the actual step-by-step sequence of semiotic mediation of thought and action. This movement of thought is what actually occurs within a given case. It is the movement of thought by which a person apprehends and gives meaning to their situation, and works out a plan of action. In contrast to the Cartesian idea that the mind is understood as a poor quality mirror reflecting the world more or less accurately, the approach we take is that mind is a mediator of action in the world. The challenge is to make this mediating movement of thought observable, not as a statistical average, but as a singular but empirically analyzable process.

THE HEGELIAN PARADIGM

The bud disappears in the bursting-forth of the blossom, and one might say that the former is refuted by the latter; similarly, when the fruit appears, the blossom is shown up in its turn as a false manifestation of the plant, and the fruit now emerges as the truth of it instead. These forms are not just distinguished from one another, they also supplant one another as mutually incompatible. Yet at the same time their fluid nature makes them moments of an organic unity in which they not only do not conflict, but in which each is as necessary as the other; and this mutual necessity alone constitutes the life of the whole. (Hegel, 1807/1977, p. 2)

Hegel was a process philosopher (Marková, 1982). Skeptical of reifying “things” he preferred to see them as aspects arising within “the life of the whole.” Thus his basic unit of analysis was the process (which he called dialectical) within which parts emerged and gained qualities, and within which those parts gave qualities to the whole. Does the acorn come before the oak tree? Is the oak tree superior to the acorn? According to Hegel, these questions do not make sense because both the acorn and the oak tree are different phases of the same process. Yet, although they are parts of the same process, the acorn and the oak tree are not equivalent. There is genuine non-tautological growth and transformation. Hegel wrote, somewhat flip-pantly, that mathematics was boring because it was all tautology. His point is that although new mathematical theorems might arise and discoveries made, these are all tautology because the so-called newness was in fact im-

minent in the axiomatic assumptions of mathematics. The growth which Hegel was interested in was qualitative transformation and the emergence of non-tautological novelty.

Hegel's philosophy is quite abstract. It was Dewey (1896) who brought the process paradigm into the heart of psychology with his paper criticizing the study of stimulus-response relations in mechanistic terms. Initially a Hegelian, and later a pragmatist, Dewey's concern was always to understand psychological processes, and the movement of thought, within the life process. As he became a pragmatist, the "life of the whole" increasingly became activity—whether individual or joint. Thus, the mind, Dewey (1896) argued, is a phase of action. When human action gets blocked, then mind arises. It is not, he argued, a mirror of the natural world as Descartes assumed (Rorty, 1981). Mind, he argued, is the means through which we reconstruct our relation to the world. In the thinking of James (1890) and Mead (1912) mind became a "stream of thought" with a flow of ideas each mediating the next and the ongoing activity. In the language of Vygotsky and the post-Vygotskians, mind is semiotic mediation, that is, the mediation of thought and action by signs.

The Hegelian paradigm is best understood when contrasted with the Cartesian paradigm. Instead of the mind being an ontological realm of pure ideas, mind is a process. Instead of mind "mirroring" the world with more or less accuracy, mind is conceived to be a mediator of activity, carving out paths of action. Instead of the mind being timeless, the mind develops both over the life-course, and in the micro-details of the stream of thought. Not only do the parts explain the whole, as described by the Cartesian paradigm, but the whole can also be used to explain the parts. Instead of mechanistic, or even ballistic, interactions between variables, there are reciprocal transformative relations. Instead of mechanistic cause and effect there is purposive human action. Instead of everything being pre-given and the rearrangement of the parts following mechanistic rules, there is genuine emergence of novelty. At the level of thematic metaphors (Holton, 1975) it is the difference between a machine and an evolving ecosystem.

It is the conception of the mind as a stream of thought or semiotic mediation that the present chapter focuses upon. This conception of mind has, it is argued, been obscured by the Cartesian assumptions in much psychology. Methodology has been developed for studying the relation between variables, not processes of mediation and transformation. The statistical relation between variables decontextualizes the mind to an average which is divorced from situated here-and-now activity settings.

The aim of the next section is to return to some early central European research traditions in order to gain some insights into how to develop methodologies which can make the stream of thought observable in research. These traditions of research were firmly based within the Hegelian para-

digm, and they began developing process methodologies which have since been overshadowed by the widespread functional fixedness on variables

METHODOLOGIES FOR STUDYING MENTAL PROCESSES

A widespread and early assumption for the discipline of psychology was that thought is internal, and thus the challenge for psychology was to develop a scientific and objective study of this internal phenomenon. To early psychologists the most obvious methodology, inherited from Descartes, was what became known as introspection. As Danziger (1980) has pointed out, there were many varieties of introspection. Some used it in a very restricted and experimental manner to study only perceptual processes (e.g., Wundt), some used the method more broadly to study the complexity of mental life (e.g., James), and some used the method of phenomenology to address more philosophical issues (e.g., Brentano and Husserl), which derives directly from Descartes method of radical doubt.

Although common, the method of introspection was hotly contested (Lyons, 1986). Critical voices pointed to the often contradictory results. How could divergent introspective accounts be reconciled? What about the process of introspecting interfering with the process of thought itself? Could the mind observe itself at work without interfering with its own processes? Wundt characterized the problem of introspection as being like Baron von Münchhausen trying to lift himself up by his own pigtailed.

Wundt, being aware of the problems of introspection, yet believing that some sort of introspection was necessary, dismissed introspection in general, as practiced by the philosophers, and instead introduced an experimental and greatly circumscribed introspective methodology. For Wundt the main problem was that the mental process precedes the reporting of it, and in that gap, distortion becomes possible. He reduced this source of error by creating experimental apparatuses, which would standardize the presentation of stimuli, thus enabling the perceiver to receive identical inputs repeatedly. Moreover, he encouraged training participants to report upon their thought processes quickly and reliably. Finally, he insisted that the method only be used to study relatively simple mental processes, such as perception. Thus introspective reports were, for example, on the size, sequence, duration, weight, color, or intensity of a stimulus. In these ways, with repeated presentation of simple stimuli and prompt reporting, his experimental method reduced the error between the mental event and the report. In order to distinguish his approach from armchair introspectionism, Wundt called his method the experimental method of internal perception (Danziger, 1980).

Wundt's method, while popular in the latter decades of the 19th century, faced a double rejection. On the one hand there was, what Danziger (1979) has called, the positivist repudiation of Wundt. Young psychologists, such as Külpe and Ebbinghaus, influenced by the positivism of Mach, wanted to redefine psychology in natural science terms. They argued that Wundt's psychological concepts of synthesis and volition were metaphysical and not befitting a natural science. Accordingly, they tried to pare Wundt's methodology down, stripping away all that was not clearly observable. In so doing, they inadvertently stripped away the dynamic and processual elements in Wundt. The result was a psychology of perception and behavior. Arguably this positive repudiation was a key turning point in moving mainstream psychology away from a Hegelian paradigm, based on process, toward a Cartesian paradigm, based on the study of things.

On the other hand, there were those who thought that Wundt had not gone far enough in examining complex dynamic mental processes, and that he had unduly limited introspection to the study of the least interesting psychological phenomena (Danziger, 1980). Although several of researchers of this persuasion were to be found in Würzburg (e.g., Külpe and Marbe), there were also other researchers across Germany, in France (e.g., Binet's use of spontaneous reports) and England (e.g., Galton's studies of mental imagery). These researchers were united by the fact that, when faced with the choice of limiting their study to reliable but uninteresting data, or interesting but difficult to interpret data, they chose the latter. This group, although not as influential as the positivists, are central to the present analysis because they strove towards understanding psychological processes. Their paradigm was process oriented, and moreover, they strove to develop process methodologies. Thus our search for process methodologies should start with a close examination of their work.

THE WÜRZBURG & SECOND LEIPZIG SCHOOLS

The method of the Würzburgers was "systematic introspection" (Danziger, 1980). The method was messy: they elicited qualitative accounts of psychological processes and, recognizing that direct introspection could alter psychological processes, they often made use of retrospection, that is, the *post hoc* reconstruction of the psychological process. Such reconstructions Wundt criticized for allowing in biases via imperfect memory and preconception.

But, despite being open to critique, the results produced by the Würzburgers had critical implications for Wundt. Their research showed that the seemingly simplistic perceptual judgments which Wundt advocated studying were far from simple. In determining the nature of a perception

subjects were engaging in complex reconstructive activities. These were invisible within Wundt's analyses because he never elicited qualitative accounts, instead he based his analysis only upon the final judgment his participants made. Unsurprisingly, then, he found the judgments to be relatively straightforward. Without looking for the complex thought processes behind the judgments, he did not find them. But while Wundt had emphasized the outcomes of perception, thought and judgment, the Würzburgers and the related researchers were more interested in the processes of perceiving, thinking and judging—indeed, the actual outcome of the psychological process was often quite irrelevant (Valsiner & Van de Veer, 2000).

One example of research that began to complicate Wundt's conception of basic perceptual judgments was done by Sander and Krueger (Valsiner & Van de Veer, 2000), who examined the actual development of a percept or thought (*Aktualgenese*). They examined the temporal emergence of individual percepts from unstable approximations to clear and stable perception. Their method was to slow down the presentation of the stimuli, to either present it very gradually, or present it in sub-optimal conditions. The first appearance of the image would be, for example, either very small, moving very quickly, or very dark. Each time the image was shown, it would be presented more clearly, and between each presentation the viewers were asked to report upon their perceptual processes (Valsiner & Van de Veer, 2000; Wagoner, 2009). Slowing down the process of perception formation, and eliciting qualitative accounts at each stage, showed clearly that perception formation does not move from the partial to the complete. Each stage of the perceptual experience produces a complete perceptual experience. Prior knowledge, expectation and broad cultural background enter into the perception of the partial image. Culture guides and constrains the perceptual process.

The methods developed by the Würzburg and Second Leipzig Schools are clear examples of methodologies designed to get at the actual movement of thought. The focus is upon how perception, thought, and judgment develop. However, these methods received considerable criticism. One of the major problems was the role of the experimenter in asking questions to elicit the qualitative accounts which would form the data for analysis. The questions would position the participant as one who should be able to answer the questions, and faced with that expectation they did. But the problem was that "introspection became less a question of observation than a matter of construction" (Danziger, 1980, p. 253)

A second criticism of these methods concerned the possibility of a disjunction between the experience of the participants and the descriptions they provided. The act of communicating entails translation and orienting to the addressee which means that the resultant description is not equivalent to the experience described. Problems include: breaking down the

experience for the purpose of communication fails to convey the whole; attempting to communicate the whole gestalt usually entails metaphorical or even poetic language; and overly-precise sensationalistic language is alien to the quality of the experience. In the language of the time it was said that the experimenters were rarely getting pure description (*Beschreibung*) rather they tended to get communications (*Kundgabe*). This criticism, however, yielded a very significant retort. The idea that utterances were always communications was seen to be not quite accurate. Analysis of these so-called communications showed that sometimes they were not simply reports, but that they were an expressive part of thought (Danziger, 1980, p. 256). That is to say that rather than either describing thought or communicating it, the utterances often seemed to actually be part of the thought. This insight is important, and will be returned to in the final section where we attempt to develop this idea.

VYGOTSKY & THE METHOD OF DOUBLE STIMULATION

Vygotsky's methodological approach was influenced by the post-Wundtian researchers, such as Sander and Werner (Rosenthal, 2004). Vygotsky was also clearly within the process philosophy of Hegel, though this was mediated somewhat by Marx. Vygotsky's aim was also to get at underlying causal relations—beyond empirical manifestation—and to produce a genuinely developmental analysis that situates the parts within the whole (Vygotsky & Luria, 1930/1994). The concern with process made Vygotsky skeptical of outcomes. For example, at the time it was common to compare apes with two- or three-year-old children because they were seen to be able to solve similar problems. However, Vygotsky criticized such complacency. Although they arrived at the same outcome, he argued, the process was fundamentally different. The children, he argued, were solving the problems using language (Vygotsky & Luria, 1930/1994). It follows that any analysis which looks only at outcomes risks entirely misunderstanding the phenomena, and even treating as equivalent that which is quite different.

The method of double stimulation, developed by Vygotsky, has its roots in the work of Aveling and the Würzburg School (Sakharov, 1994). The underlying idea is that humans control their own conduct through the use of signs, or secondary stimuli, which they use to regulate their relation to primary stimuli. The classic example, often given by Vygotsky, is that of a person upon seeing something they need to remember (primary stimulus) tying a knot in their handkerchief (secondary stimulus) so that at some point in the future the knot will trigger the memory, thus enabling the desired action. This phenomenon of double stimulation, Vygotsky argued, was the basis of higher mental functions. Normally the process was internal (e.g., asking oneself a question or directing oneself to attend) but developmentally the process originates in social interaction (see Veresov in this

volume). The method of double stimulation refers to a range of experiments that sought to make the process of double stimulation external and observable.

Several experimental configurations were used to study double stimulation. Sakharov (1994) reports on giving children a range of toys varying in certain dimensions. These toys, it was explained to the children, were categorized in a strange language and it was the task of the children to try and group the toys in the correct category. At each stage of the grouping the children were asked about why they had included or excluded a toy. Thus there was an element of qualitative self-reporting as used in experiments by the Würzburg and Second Leipzig Schools. The focus, however, was on the emergence of a new category, or secondary stimuli, and how the children would use that emerging category to organize the toys. Another variant of the method, used by Vygotsky, was a stimuli-choice-reaction study. Stimuli were presented to children who had to respond in a certain way. Initially the mapping between the stimuli and responses was straightforward, thus aiding in the task. But then the relation was made arbitrary, making the task much more complex. In this more complex condition children were provided with symbol cards which they could use as reminders (secondary stimuli) to mediate the relation between the primary stimuli and the responses. This method makes observable the child's emerging use of a secondary stimulus in order to semiotically mediate their memory.

While Wundt had given his subjects one stimulus and asked them to report on the experience of that stimulus, Vygotsky gave his subjects two stimuli, and his set up enabled them to use the second stimulus to regulate their relation to the first. Using a second stimulus to control the first was, for Vygotsky, a higher mental function. As such, the method of double stimulation goes against Wundt's insistence that experimental methods can only be used to study basic psychological processes.

From the standpoint of the present chapter, the critical point about the method of double stimulation is that, although double stimulation is at the centre of human higher mental functioning, it is often an external observable process. This marks a radical break with the prior assumption that thought is necessarily and always internal, and that, at best, people can offer introspective descriptions which "describe" (or "translate") internal thought processes. The assumption in the method of double stimulation is that although higher mental functions are often internal, there are times when an aspect of the actual thought process is external. Consider Vygotsky's account of Lewin's experiment on meaningless situations:

[T]he experimenter left the subject and did not return, but observed him from a separate room. Generally, the subject waited for 10–20 minutes. Then, not understanding what he should do, he remained

in a state of oscillation, confusion, and indecisiveness for some time. Nearly all the adults searched for some external point of support. For example, one subject defined his actions in terms of the striking of the clock. Looking at the clock, he thought: “When the hand moves to the vertical position, I will leave.” The subject transformed the situation in this way, establishing that he would wait until 2:30 and then leave. When the time came, the action occurred automatically. By changing the psychological field, the subject created a new situation for himself. (Vygotsky, volume 1, 1932/1987, p. 356)

What Vygotsky is pointing to in this example is the external nature of the higher mental functions. This is an instance of double stimulation and thus higher mental functioning. But the thought process is in a loop that includes the clock on the wall. The clock is part of the semiotic mediation process, and to that extent, this instance of semiotic mediation is partially internal and partially external.

The main contribution of Vygotsky’s method was to break away from the Wundtian and ultimately Cartesian idea that thought is something by definition internal that needs to be reported on. Indeed, even the Würzburgers and those studying *Aktualgenese* thought that perceptions were formed within the individual. Eliciting qualitative verbal descriptions opened a window on the process, but at all times the process remained internal. Vygotsky’s method marks a significant change because the psychological process becomes external. The child’s use of the auxiliary stimuli is not “describing” or “communicating” internal processes of thought. Rather the use of the auxiliary stimuli is an essential part of the thought process. “We regard our method as important,” Vygotsky (1978, p. 74) wrote, “because it helps to objectify inner psychological processes.” Making psychological processes, such as the movement of thought observable is important because it opens it up to rigorous analysis.

By showing that psychological processes could go on outside the bounded skull of the individual thinker, Vygotsky’s method of double stimulation makes a methodological breakthrough the implications of which have yet to be fully developed. If people can use external semiotic mediators in experimental settings, then maybe they use them in naturalistic settings, and if so, could this provide a solid methodological basis for the study of the movement of thought?

DEVELOPING THE METHODOLOGY

Descartes ontological dualism clearly assumed that thought was an internal and private thing. Indeed, for Descartes the rest of the world could be an illusion, but his thought, he maintained, was real. The method of introspection strengthened the assumption further. The very etymology of the term

is to “look inwards.” Wundt, like Descartes, was concerned with a metaphor of perception as stimuli entering into the subject, and impressions being formed in the mind within. This overpowering idea, or metaphor, that the world was impressing itself upon a mind within, has obscured the presence of thought as a partially external and observable process.

Contemporary research methods still assume that thought is fundamentally an internal phenomenon. Self-report questionnaires try to extract people’s experiences, views, and feelings. Interviews, when analyzed in terms of the views elicited, also make the same assumption, namely, that the researcher needs to coax the inner thoughts out of the interviewee. The assumption is also particularly evident in the various scanning techniques which promise to see through the individual’s skull, to what is assumed to be the very essence of their thoughts. One of the more subtle contemporary methods, advocated by the cognitive scientists Ericsson and Simon (1993), is protocol analysis which can be seen as an heir of *Aktualgenese* (Valsiner & Van de Veer, 2000).

Protocol analysis has several forms. In concurrent reporting, subjects are asked to “think aloud” as they solve problems, and to avoid any attempt to explain what they are doing. The reports are not read as explanations of thinking, but simply as accounts of the contents of short-term memory. The method has been successfully used by Valsiner (2003) and Capezza (2003) in their study of the semiotic mediation of an aggressive act. However, all who use the method recognize a problem. When people verbalize their thoughts their utterances seem to be more than the mere “dump” of working memory that Ericson and Simon describe. Utterances move between rationalizing, describing, expressing, and reflecting. As Buehler (1951) has clearly pointed out, in the act of thinking there are always thoughts about our thoughts—for example, how confident we are in a memory, or how sure we are of a belief. While this might seem to be a problem, it can also be understood as an opening to a new method. The basic idea behind talk-aloud protocol is, again, that thought is internal. The complicating factor is twofold: sometimes the utterances describe thought rather than being a verbal memory dump, and secondly, sometimes the utterances feed back into the thinking process, for example, by stimulating self-reflective thought leading to self-presentation.

This second concern leads us to the core proposition that we want to develop: that sometimes, thought, in its natural habitat, is partially external. Maybe thought does not need to be coaxed out of its ontologically tricky shell. There are moments where people use observable resources, such as the clocks and handkerchiefs described by Vygotsky, and there are times when their externalizations, whether in talk or writing, become part of the thinking process, feeding back into the thoughts they grew out of. In such cases the utterances and writings of individuals cease to be descriptions,

verbal reflections, or even expressions, they become woven into the movement of thought itself. In the following we attempt to develop from this idea toward a methodology for studying the movement of thought.

OBSERVABLE THOUGHT

Thought is not a module in the brain or a thing, it is a process or movement, and part of this movement, we argue, is often in the world. For example, several scholars have pointed out that talk can sometimes be constitutive of thought (e.g., Marková, 2003; Moscovici, 1974/2008). Merleau-Ponty put it particularly forcefully when he wrote: “The orator does not think before speaking, nor even while speaking; his speech is his thought” (1945/1962, p. 180). In order to help translate this basic idea into a methodology, it is useful to distinguish two ways in which thought is audible in talk: talk can be an organic expression or extension of the thought and talk can stimulate a self-reflective movement of thought, thus becoming part of the thought itself.

Let us consider first how talk might be an expressive extension of the thought process. Sometimes an exclamation, a gesture, or an expression so immediately follows on from the internal thought that the external manifestation is best understood as the external phase of that movement of thought. Consider the following excerpt from a young British student, Katie, on holiday in northern India (Gillespie, 2007a). Katie was talking about a particularly “dramatic” bus journey that she had just been on. Filled with enthusiasm, and after a pause in the conversation, she said:

I have to keep pinching myself that it’s actually real, because it’s the kind of scenery that you see in National Geographic, you look through and it’s like “wow imagine being there” (pause) I can’t believe I am here seeing it!

Within this spontaneous expression, Katie reveals the symbolic resources (Zittoun, 2006) that have been framing her experience of northern India. Images from the National Geographic and related publications populate her imagination and are the measuring stick she uses to assess her own experiences. The National Geographic is part of Katie’s thinking process.

Second, let us consider how the movement of thought can sometimes depend upon the external phase. Self-reflection, often thought to be a purely intra-psychological phenomenon, often occurs because of what has been said. Audio recordings of informal discussions between tourists on holiday in northern India, for example, reveal many instances of tourists beginning to say one thing, then, upon hearing themselves speak, self-reflect, and change track (Gillespie, 2007b). One English student, for example, says that she wants to “see proper India rather than just the India that ev-

everyone—that sounds rather clichéd—but that tourists see.” The idea of seeing “proper India” is a genuine impulse, but when verbalized, it becomes audible to the speaker. She hears it like she would hear the utterance of another tourist, and she judges it in the same way that she would judge the utterance of another tourist—“that sounds rather clichéd.” The movement of thought that leads to “that sounds rather clichéd” is inextricably external. Arguably, had she not verbalized the impulse she would not have had the chance to critically react to it in the same way that she might react to the utterance of another tourist. This is what Mead (1934) means by the peculiar significance of the vocal gesture. Because we hear ourselves speak, just like we hear others speak, so we can also respond to ourselves. That response to ourselves is part of human self-regulation, and in it thought becomes observable.

These dynamics of expression and self-reflection are not only evident in talk. The artist working with the canvas (Janson & Janson, 1997), the potter with the emerging clay/glass form (McCarthy, Sullivan, & Wright, 2006), the blacksmith making a skimmer (Keller & Keller, 1996), and the diarist working through her own narrative (Gillespie, Cornish, Aveling, & Zittoun, 2008), all illustrate the external movement of thought. The externalization of the thought is a spontaneous expression which becomes part of the thought because it is reacted to and thus feeds into the ongoing process of thought. The painter thinks through reacting to the canvas just as the diarist discovers her own narrative by reacting to their own writings. In Vygotsky’s method of double stimulation, the cards used by the children are not used to express or simply externalize mental processes—the cards are an integral part of the thought process (which is no longer simply a mental process).

It follows that in order to study the movement of thought we should not be limited to expressive utterances or utterances that trigger self-reflection. People write into diaries as a means of thinking through problems. Equally, in people’s use of pen and paper, while solving a problem, we can see the movement of thought. Sometimes people seek out and watch films or read books in order to help them work through practical, identity and emotional issues (Zittoun, 2006). In such cases the seeking out of the resource is observable, but the psychological engagement with the resource may remain invisible, unless, for example, we can catch them working through the film or book in discussion with a friend. In each of these cases external resources are brought into the movement of thought, and in each of these cases, by studying how people use each, a portion of the movement of thought becomes empirically observable which gives us leverage for speculating about the less observable portions.

CAVEATS AND STRATEGIES

We are not arguing that thought is never internal and personal, it always has an internal and personal phase. We are only arguing that sometimes an aspect of the movement of thought is observable. Moreover, the entirety of thought is never observable in what people say or write. Visuospatial thinking, for example, is very difficult to pick up in talk. However, sometimes it reveals itself in how people use pen and paper to resolve visuospatial problems. What we are arguing is that talk, writing, sketching, typing, making, and so on are often a portion of thought—not a pale reflection, description or communication. These so-called externalizations can be a constitutive part of the thinking process, they can change the direction of thought, feeding back into either thought or action. And although it is by no means the complete thinking process, it is, from a methodological point of view, a particularly important aspect because it is observable. What is observed might only be the tip of the iceberg of thought, but it is a good starting point. What we need to do is learn how to reconstruct the whole iceberg from the portion which is observable.

In order to analyze talk, writing or painting as part of the movement of thought subtle interpretation is essential. One of the reasons why talk is often disconnected from the thinking process is due to the social situation. In some circumstances people inhibit utterances and craft utterances with their audience in mind. Such dynamics are unavoidable, and the researcher needs to be aware, as far as possible, the context of the utterance or writing. Moreover, the analyst must be attuned to the observable manifestations of such self-presentation: hesitations, stutters, changes of topic, gestures, pronoun use, slips of the tongue, and so on can all be important cues in interpreting utterances as thought. Relatedly, knowledge of the speaker's biography, their socio-cultural background, and their interests are all useful in interpreting what is said.

Observing thought in talk also entails obtaining the right data. One common reason why thought is unobservable in psychological research is a by-product of the tendency to do research with individuals. While children may verbalize when solving a task (Ferryhough & Fradley, 2005; Vygotsky & Luria, 1930/1994), adults rarely do. However, if people are put in situations where the task is a joint task, then they spontaneously express their thoughts, and thus the movement of their thought expands to incorporate the talk (e.g., Wagoner's, 2009 replication of Bartlett's method of repeated reproduction using dyads). Accordingly, joint problem solving routines provide excellent data for analyzing talk as thought. Using a similar rationale, Moscovici (1991) has suggested opening up the black box of influence processes in classic experiments by getting participants to work in pairs. The way in which Psaltis and Duveen (2007) analyze the discourse

between young children during a task provides a good example of how this can be done in practice.

Finally, caution must be applied in interpreting talk as thought. Such an analysis can never provide grounds for rejecting the existence of any psychological process. Just because the process is not observed in the talk does not mean it does not exist. We can never fully know what processes are part of the ongoing thought but not manifesting in the talk. On the other hand, the processes which are observed in talk can, with a degree of confidence, be said to empirically exist. Thus, the method leads to the construction of knowledge based on what is observed, not on what is not observed. This does not mean that theory building should not go beyond what is observed—it should. The external movement of thought is only a small phase of the overall movement. The point is that we cannot dismiss the existence of any internal psychological process simply because it is not observable.

CONCLUSION

The present chapter has examined methodologies for studying the movement of thought. Developing from the early insights of the Würzburg School, the Second Leipzig School, and Vygotsky, the present chapter has developed upon the idea that thought can have an external phase and thus the movement of thought can be studied rigorously.

Early introspectionist studies had the thinker as the observer of their own thought. Later introspectionist research, such as that initiated by Wundt, introduced an experimenter to present stimuli and record the introspector's responses. But, in this latter research the introspector was still the thinker or perceiver and observer. The approach being advocated in the present chapter, of analyzing the external movement of thought, entails separating the thinker from the observer. The thinker is studied either in a naturalistic context where thought entails an external phase, or the thinker is put in a situation conducive to either externalization or the use of external resources. Thus, the researcher, by carefully recording and analyzing the external movement of thought, becomes the observer. Separating the thinker from the observer overcomes the main methodological problems with introspection. The act of observing no longer interferes with the thought process observed, and there is no need to rely upon memory with all the reconstruction that it entails.

The approach being advocated is within the Hegelian paradigm. It assumes that thought is not a thing, but a process. It assumes that individual thought sequences must take methodological precedence over statistical averages. The aim is to examine the movement of thought, the process of mediated thought and action, how one idea follows on from the next

and how material and symbolic resources are constitutive mediators within that process. The approach is to focus upon situations where a portion of the movement of thought is external, and then, analyzing that externalized portion in order to make grounded speculations about the less observable portion. This method will never make the entire movement of thought observable, but it does give us a solid basis upon which to build our analysis. It provides us with objective data, in the sense of data that can be shared, communicated, and debated (Ziman, 1991). Explaining that data will entail going beyond the data and speculating about the less observable portions of thought. Our argument is that those concealed movements leave traces in the observable portion that should form the basis for our analyses.

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