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Using Resources: Conceptualizing the Mediation and Reflective Use of Tools and Signs

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Abstract

The idea that culture comprises resources that are used has become a popular means to re-conceptualize the culture–agency antinomy. However, the theorization of using resources is fragmented. The present article reviews several attempts to theorize resources, arguing that there has been too much focus upon the resources themselves, while the notion of use has been neglected. Focusing upon mode of use, as opposed to the resources used, the article underscores the importance of distinguishing between tools, which are used to act upon the world, and signs, which are used to act upon the mind. The article also argues for a distinction between non-reflective use, or mediation, and reflective use of resources. Future research should focus upon the transformation of tools into signs and the transformation of mediation into reflective use. The article concludes by discussing problematic issues that remain in conceptualizing the use of resources.

Key Words

mediation, reflection, resources, signs, tools, use

It is now widely accepted that creating an opposition between agency and culture is unproductive. Previously, culture was often conceptualized as a force external to the individual. Hegemonic norms, socialization practices, institutions, collective representations and discourses were conceptualized as coercive and deterministic. Indeed, implicitly it often seemed as if only an individual outside of culture could be fully independent. However, more recently in anthropology (Bourdieu, 1990), sociology (Giddens, 1986) and psychology (Valsiner, 1987), there has been a move to conceptualize individual agency as culturally constituted: people do not act against culture, rather they act through culture. A child growing up alone on the proverbial desert island is not free, but rather is enslaved by basic instincts. Culture enables

distanciation from the environment and thus self-regulation, planning and creative action.

At the core of this re-conceptualization are new words to describe culture in terms of resources, tools, artifacts, capital and semiotic mediators. Although each of these terms has its own context of use, they all imply that culture is *used*. Things become resources, tools, artifacts, capital or semiotic mediators through being used in the course of human action. The etymological origin of the term 'resource' comes from Latin *resurgere*, meaning to splash back, resuscitate or rise again. In the face of a rupture or great need, a resource enables adaptation and restoration. It is this embeddedness in a ruptured goal-oriented and meaningful activity which gives the terms resource, tool, artifact, capital, mediator and semiotic mediator their particular value. Each of these terms denotes something akin to a resource, namely something that does not exist in itself but which comes into existence by enabling meaningful human activity.

Examples of using resources abound. Vygotsky (1978, p. 51) provides one of the classic examples in his discussion of using a knot in a handkerchief as a mnemonic aid. Since then, the same idea has been applied to the use of an abacus as either an external aid or an intra-psychological representation to aid thought (Cole & Derry, 2005), to the study of heuristics, mental strategies and rules of thumb (Gigerenzer & Todd, 1999), and to the use of stickers, post-it notes and other memory aids by people with declining cognitive faculties (Baltes, 1997). In the field of development, the concept of resources has proved popular (Arievitch & Stetsenko, 2000; Neuman & Bekerman, 2001). Children use transitional objects as emotional resources (Winnicott, 1968), argumentative styles as rhetorical resources (Psaltis & Duveen, 2006) and fingers, calendars and arithmetic as resources to mark time (Wyndhamn & Säljö, 1999). In the field of education, there have been studies on how education guards access to resources (Bourdieu, 1986) and how certain resources are needed even to participate in education (Rochex, 1998). Outside of the educational frame, religious fables, traditional stories, films and pop songs can all provide resources for dealing with life's problems, from naming a child (Zittoun, 2004a) to adapting to war (Zittoun, Gillespie, Cornish, & Aveling, 2008). Soldiers (Hale, 2008) and migrants (Markovitzky & Mosek, 2006) use personal artifacts from home as resources for identity and memory, and communities and nations use memorials to achieve a similar end (Wertsch, 2002; Zittoun, 2004b). While we can take heart in the breadth of contexts in which the re-conceptualization of culture is taking hold, and with it the notion of resource, this very breadth is also a cause for

concern. Do people use language (Austin, 1962) in the same way as they use tourist guidebooks (Gillespie, 2006)? Is the mediation provided by a pole-vaulting pole (Wertsch, 1995) equivalent to the mediation provided by religion (Belzen, 1999)?

Moving beyond the antinomy between personal agency and culture is a paradigm shift which is still in its early stages, and as such there is considerable volatility in the terminology and conceptualization. The terms resource, artifact, capital, tool, mediator, and semiotic resource are overlapping and polysemic. The problem is that with too much polysemy, there is little consolidation and advancement of the field (Witherington, 2007; Zittoun, Gillespie, & Cornish, 2009).

The aim of the present article is to review conceptualizations of using resources. We begin by reviewing efforts in the social sciences broadly conceived, and then hone in on the unique contribution of cultural psychology. In each case we review the main conceptual distinctions that have been made. We argue that the majority of these conceptualizations have concerned themselves with distinguishing cultural elements and that theorization of the way cultural elements are used has been neglected. Accordingly, we focus upon the process of use rather than the resources used and outline two distinctions. First, we distinguish using a resource to act upon the world (tool) from acting upon the mind of self or other (sign). Second, we distinguish non-reflective use (mediation) from reflective awareness of the resource being used (reflective use). Future research, we argue, should focus upon the transformations between tools and signs, and between mediation and reflective use. The article concludes by discussing some of the outstanding problems in conceptualizing the use of resources.

Re-conceptualizing Culture in Social Science

Bourdieu (1986) has been at the forefront of re-conceptualizing the individual–culture relation in the social sciences. He distinguishes between economic, cultural, symbolic and social resources. Economic resources include wealth and access to credit. Cultural resources refer to the skills, knowledge and experience of an individual, which tend to be cultivated by parents and educational institutions. Symbolic capital is a resource in the sense that high status and prestige give legitimacy and can enable certain forms of action (e.g., titles, degrees and awards). Finally, personal connections and institutional contacts can be drawn upon as social resources for getting things done.

According to Bourdieu, these resources can be accumulated as capital. In the same way that economic capital can be exchanged for

commodities and services, so exchanges are possible between these forms of capital. Economic resources can be used to cultivate and obtain social connections, to purchase education and thus cultural capital, or to acquire prestige. Equally, social, cultural and symbolic resources can be used to facilitate the accumulation of economic capital.

Agency within Bourdieu's scheme is culturally constituted. Cultural capital, for example, constitutes the habitus of the individual providing a platform for action, while economic and social capital can enable certain paths of action. However, Bourdieu's focus is not upon the active individual. Rather, the focus is upon the way in which capital accumulates and social structures such as class are perpetuated. The emphasis is on the way in which the socially constituted habitus, access to resources, and the resources themselves are constraining rather than enabling. In this sense, Bourdieu has a theoretical structure that conceptually transcends the culture–agency antinomy, though in practice he focuses upon the cultural and structural side of the antinomy with little direct theorization of the way in which resources are woven into activity.

Other scholars in the social sciences, such as Swidler (1986), have been more focused upon the way in which resources are actually used. Developing from Bourdieu, Swidler argues for a conceptualization of culture as a '"tool kit" of symbols, stories, rituals and world-views, which people might use to solve different kinds of problems' (Swidler, 1986, p. 273). These can often be very contradictory and do not necessarily lead to simple, clear-cut paths of action. For example, the Bible is full of contradictory messages and as such does not prescribe a monological and internally consistent way of life. For Swidler, the Bible presents an open-ended range of meanings, some of which may resonate with the reader and may thus be appropriated and woven as resources into the reader's path of action.

Swidler emphasizes the creativity with which individuals use cultural resources. 'A crucial task for research', she argues, 'is to understand how cultural capacities created in one historical context are reappropriated and altered in new circumstances' (Swidler, 1986, p. 283). The point is that culture may provide resources for human action, but exactly what constitutes a resource, and what it is used for, remains open. Cultural artifacts created in one context can be used creatively in a second context. In order to understand this process, Swidler (1986, p. 284) argues, researchers need to focus upon 'how culture is used by actors' and 'how cultural elements constrain or facilitate patterns of action'.

In her analysis of the culture that exists in society, Swidler proposes that it can be conceptualized as existing on a continuum from ideology to tradition to common sense. The continuum is from highly articulated and self-justifying belief and ritual systems (ideologies), to partially articulated beliefs and practices (traditions), to completely transparent and taken-for-granted cultural knowledge (common sense). Common sense is taken-for-granted in the sense of seeming to be a natural aspect of the world which needs no justification.

Swidler elaborates this distinction further by suggesting that during settled periods, culture tends to exist as common sense. During such times people unquestioningly use the cultural tools, and that use in turn reinforces the ethos or values of the culture. In contrast, during unsettled times both cultural ends and values are questioned. During such periods culture needs to be justified and accordingly it becomes discursively elaborated and thematized (Marková, 2003). As the pattern of life becomes de-stabilized, so the culture which supports, canalizes, and reproduces that pattern of life needs to become articulated as a self-justifying ideology.

There are similarities between Swidler's presentation and the ideas developed by Moscovici (2008). Moscovici has revived Durkheim's concept of collective representations, but has developed it in a more psychological direction. Contemporary societies are too heterogeneous to support genuinely collective representations, Moscovici argues. Rather, alternative and sometimes conflictual representations co-exist (Gillespie, 2008). Such representations Moscovici calls social representations. Like Swidler's concept of ideology, social representations exist in a heterogeneous field of representations and thus often have to become self-conscious in a discursive sense. The representations become self-justifying—what Moscovici calls polemical representations. A second similarity concerns the role of representations as resources for action. Like Swidler, Moscovici's focus is upon the use of knowledge within everyday life and especially how it is appropriated from one context and used in a second.

Despite calls by Swidler to study 'how culture is used by actors' and Moscovici's encouragement to psychologists to incorporate sociological theory, social scientific theorizing of resources tends to underplay agency. For example, the concept of resource is repeatedly linked to preserving social hierarchies. Instead of studying education in terms of enablement, it is studied in terms of constraint. Educational institutions, family traditions and social networks control access to the exclusive resources that enable high achievement (Farkas, Grobe, Sheehan, & Shuan, 1990). Although important, such research has a

tendency to once again undermine agency, and to fall back into the traditional forms of cultural or sociological determinism.

The problem is partially disciplinary. The culture–agency antinomy spans sociological (i.e., culture) and psychological (i.e., agency) levels of analysis. The problem is compounded by the fact that the sociological level of analysis was born out of a rejection of the psychological level (Durkheim, 1898). Since then, any attempts to explain sociological phenomena in terms of psychology have been labelled 'psychologism' and resisted with all the motivation that an ontological threat to the discipline can unleash (Moscovici, 1993). Upon these fractured foundations it is almost impossible to build a nuanced theory of how cultural resources are used. Any theory needs to be both sociological or cultural, and psychological. Cultural psychology presents one such approach.

Cultural Psychological Approach to Resources

The idea that culture mediates and enables human activity has been a central tenet of the cultural psychological approach since the work of Dewey (1896), Janet (1934) and Vygotsky (1978). What these and other ancestors have bequeathed contemporary cultural psychology is a commitment to a unit of analysis that entwines the individual actor and culture into one model. The 'unit of analysis' in cultural psychology has been conceptualized in terms of 'acting-with-mediational-means' (Wertsch, 1995), 'activity' (Leontiev, 1979), 'symbolic action' (Boesch, 1991), mediation within 'activity systems' (Engeström, 1999), mediation within transitions (Zittoun, 2006a), mediation within 'social acts' (Gillespie, 2005) and many more (see Matusov, 2007). These units of analysis are distinctive because they are focused upon individual action with cultural means, and as such these models span both psychological and sociological dimensions of the problematic.

A second defining feature of cultural psychology concerns the emphasis on creative action, also mentioned by Swidler. Instead of simply 'using' resources, actors within this tradition are often described as 'poaching' or 'renting' (Wertsch, 1998, p. 145), and as 'appropriating' (Rogoff, 1995, p. 150) and 'hi-jacking' (Perriault, 1989, p. 155). Using culture implies novelty. This novelty is not merely restricted to the moment of use—it can feed back into the resource itself. Resources are 'marked' by creative use and carry this history into the future. Examples of creative appropriation, which have left their trace, include using the telephone and instant text messaging for social communication. Instead of resisting these creative

dynamics of appropriation, there is now a move to encourage and incorporate these dynamics into the development of new technologies (Hyysalo, 2004).

Despite these two common features, cultural psychological research is actually quite heterogeneous. Different sub-traditions have conceptualized the use of resources in different ways. In the following, we present three influential distinctions, namely: between cultural and natural resources; between instrumental and consumptive objects; and between primary, secondary and tertiary artifacts.

The distinction between natural and cultural resources has been espoused by Baltes and his colleagues. For Baltes (1997), lifespan development comprises three basic processes: *selection* of goals, *optimization* of the resources, and *compensation* for the loss of natural resources. The notion of *resource* designates any means to achieve the selected goals. Compensation for the loss of natural physical and cognitive ability, for example due to aging, entails using new resources, optimizing existing resources or changing one's goals (Baltes, Lindenberger, & Staudinger, 1998). Cultural resources are diverse, including cognitive skills, motivational dispositions, socialization strategies, physical structures, economics and medical procedures. Examples of compensation include Michael Jordan relying on special footwear to compensate for a foot injury and Marie Curie asking colleagues for help. Whether cultural resources are technologies, people, books or heuristics is not the main issue. The key point is that cultural resources compensate for deficient natural resources.

Symbolic Action Theory also gives a central place to goals, and conceives of culture as enabling goal achievement. However, instead of distinguishing resources on the basis of being natural or cultural, Boesch (1991) distinguishes them in terms of the goal being achieved. Specifically, he distinguishes between *instrumental* and *consumptive* objects: 'An instrumental object serves to produce a material or social effect; consumptive objects serve to produce subjective-functional effects of enjoyment. A hammer is an instrumental object; a cigarette is a consumption object' (Boesch, 1991, p. 194). Generally speaking, an instrumental object is an object that is primarily intended to physically enable practice (e.g., money), while a consumptive object, which affects the subjective state of the person, is either an object of personal meaning or one that satisfies desires (e.g., aesthetic objects). Like Baltes' approach, Symbolic Action Theory brings to the foreground the enabling dimension of the cultural psychological approach. But Boesch adds a more subtle distinction of the ends of action, recognizing that some resources are ends in themselves (i.e., consumptive resources).

Thus we can see that not all resources are used for compensation: some are used for satisfaction.

Boesch (1991) presents the distinction between instrumental and consumptive resources with an important caveat. Food may at times be instrumental, in the sense of being used for survival, but it is often aesthetic, and much of the time it is a combination of both. Equally, while hammers are generally used for instrumental ends, children have been known to use them to explore acoustic and destructive aesthetics. The key point is that 'the same object can be consumptive or instrumental, according to the use we make of it' (Boesch, 1991, pp. 194–195).

A third conceptualization of using resources has been developed by Cole (1996) and his colleagues. This approach borrows Wartofsky's (1979) distinction between primary, secondary and tertiary artifacts. Briefly, primary artifacts are used for the reproduction of the species and overlap with Boesch's instrumental tools. Primary artifacts include language, skills, mechanical tools and social organization. Secondary artifacts are representations used to transmit primary artifact use. These representations do not pertain to abstract knowledge, but rather to a concrete 'how-to' knowledge of artifact use. Tertiary artifacts refer to the imagination and are thus quite different from either primary or secondary artifacts. Tertiary artifacts enable contemplation, reverie, aesthetic perception, planning, rehashing and practising. These artifacts are derivative of praxis, echoing praxis, but the work of the imagination is not passive: it may mediate praxis, leading to novel primary and secondary artifacts.

The distinction between primary, secondary and tertiary artifacts has become popular and is useful for conceptualizing the way in which culture is both used and propagated (McDonald, Le, Higgins, & Podmore, 2005). However, while the tripartite distinction is clear at a conceptual level, it often becomes messy at the point of application. For example, what sort of artifact is a school textbook? From the perspective of a teacher it might be a primary artifact for doing the work of teaching and thus surviving. But, from the perspective of the content it is a secondary artifact meant to transmit cultural knowledge. Finally, from the perspective of a bored student it may be a basis for daydreaming and thus a tertiary artifact. This is the same point, mentioned above, that Boesch (1991) makes about his own distinction between instrumental and consumptive objects. The problem is also evident in Baltes' distinction between natural and cultural resources. For example, a natural resource, such as one's fingers or toes, can be used as a cultural resource for counting (Ifrah, 1998). In both cases, creative human appropriation undermines the attempt to align resources or

artifacts with certain uses. Resources designed for one purpose, or conceptualized as being for one purpose, may, in the next moment, become appropriated and used for a second purpose. It seems that any typology of resources based upon the resources themselves, rather than the modes of use, will fail to capture these creative dynamics. Accordingly, it is essential to distinguish *what* is used from *how* it is used, and to focus theoretical effort on the latter.

Distinguishing Tools and Signs

In order to theorize how resources are actually used, it is necessary to return to an often-overlooked distinction insisted upon by Vygotsky. Vygotsky (1997, p. 61) was very critical of the loose way in which his contemporaries were using the metaphor of 'tool'. Specifically, he criticized scholars, including Wundt and Dewey, for referring to language as a tool. This metaphor, he argued, is over-stretched and obscures the distinction between tools and signs. Tools and signs are similar because they are both mediators. But this similarity conceals a fundamental difference:

> The tool serves for conveying man's activity to the object of his activity, it is directed outward, it must result in one change or another in the object, it is the means for man's external activity directed toward subjugating nature. The sign changes nothing in the object of the psychological operation, it is a means of psychological action on behaviour, one's own or another's. (Vygotsky, 1997, p. 62)

Tools, according to Vygotsky, mediate our relation to the physical world, and signs mediate our relation to our own or other minds. It is important to note that Vygotsky's distinction between tools and signs is not based on the cultural element itself, but upon how it is used. For example, a shovel can be used as a tool for digging a hole, but it can also be used as an *aide-mémoire*, that is as a sign, if it is placed by the door in order to remind oneself or someone else to dig a hole.

Vygotsky's distinction between tools and signs, although often overlooked, persists in a surprising way. This fundamental distinction characterizes the two main sub-traditions of research in cultural psychology. These two traditions are the activity tradition and the semiotic mediation tradition (Valsiner, 2007, pp. 31–32). Simplifying somewhat, the activity tradition prefers to write about tools and emphasizes material mediators, while the semiotic mediation tradition prefers to write about signs and tends to emphasize semiotic mediators. Let us consider these traditions in turn.

The activity tradition emphasizes the mediation of action in the world, focusing upon mediators that enable organizations to function (Engeström, 1987), pole vaulters to jump (Wertsch, 1995) and cookie sellers to sell cookies (Rogoff, 1995). Within this tradition there has been a tendency to suppress Vygotsky's distinction between tools and signs, and instead to use more general terms such as 'artifacts' (Cole, 1996, Ch. 5), 'mediational means' (Wertsch, 1998, p. 17) and 'cultural artifacts' (Gauvain, 2001, p. 126). In these and many other cases, there seems to be a shying away from the distinction between tools and signs for fear of invoking a Cartesian dualism between mind and matter. Accordingly, the distinction between tools and signs has been allowed to fade. Or, more critically, one could argue that inflating the terms tool, artifact or mediational means, to the extent that they subsume the concept of sign, enables a conceptual sleight of hand that redirects the research gaze from intra-psychological dynamics and semiotic mediation to external dynamics and tool-based mediation, thus sidestepping the problem of internalization (Zittoun, Gillespie, Cornish, & Psaltis, 2007).

The semiotic mediation tradition has preferred to focus upon the semiotic mediation of thought and action. In Vygotsky's own terminology, the focus is signs, not tools. Accordingly, in this tradition one can find studies of distanciation (Valsiner, 2003), emotional experience (Zittoun, 2006a), internal dialogues (Hermans, 2002; Josephs, 2002), implicit mediation (Wertsch, 2007) and self-reflection (Gillespie, 2007a). While this research tradition tends to focus upon intra-psychological mediators of thought, there are also examples of research that examines the external mediators of thought, and even the transition between the two (Cole & Derry, 2005). The critique of this tradition is that it risks re-creating the Cartesian dualism between world and mind. The problem is that if semiotic mediation can be an intra-psychological process, then what ontological status does that process have vis-a-vis external forms of mediation?

At this point there is no need to resolve this lingering theoretical debate. Our approach is more pragmatist (Cornish & Gillespie, 2009). We want a broad understanding of using resources that can transcend the culture–agency antinomy, and thus we need to consider the use of both tools and signs. That both forms of use exist is abundantly evident in the voluminous literature of both traditions. We need to leave theoretical problems about terminology to catch up with empirical observation, and we should not let sensible research get held back by theoretical confusion. Any comprehensive theorization of using resources needs to include both tools and signs.

Distinguishing Mediation and Reflective Use

While Vygotsky's distinction between tools and signs is conceptually clear, there linger other distinctions in his writings which are less clear. Wertsch (2007) provides a subtle analysis of the different ways in which Vygotsky uses the concept of mediation. According to Wertsch, two distinct modes of mediation can be distinguished, which he calls implicit and explicit mediation. Explicit mediation tends to entail mediation by external objects, people or signs, and the mediation is often intentional and done with awareness (2007, p. 180). Implicit mediation tends to be internal, semiotic and is rarely the object of consciousness or reflection (p. 185).

While Wertsch is correct in calling for an analysis of mediation and in pointing out that Vygotsky uses the term in different ways, we suggest that he has identified more than two types of mediation. First, there is a distinction between that which is internal and that which is external. Second, there is a distinction between reflective and non-reflective mediation. The problem is that these two distinctions can and should be dissociated. For example, one can have intra-psychological and highly self-reflective mediation. Wertsch seems to recognize as much in his analysis, but he does not pursue the distinction.

According to our analysis, the distinction between tool and sign is more precise than the distinction between internal and external. Signs can be both internal and external. Signs that operate upon other minds always have an external dimension, otherwise they could not be communicative. Signs which operate upon self are often internal (e.g., self-talk) but need not be (e.g., a knot in a handkerchief as an *aide-mémoire*). Having dealt with this distinction above, in our discussion of tools and signs we want to focus upon the distinction between non-reflective and reflective mediation.

The distinction between non-reflective and reflective resource use has not only been raised by Vygotsky. The distinction is evident in the writings of both Swidler and Moscovici, discussed above. The distinction is also central for Dewey, James and Mead, who were very concerned with reflective consciousness, theorized in terms of I/me dynamics arising in the stream of thought. Reflective self-awareness has often been observed in empirical research (Gillespie, 2007b), as has the reflective use of semiotic resources (Zittoun, Duveen, Gillespie, Ivinson, & Psaltis, 2003).

What is meant by the reflective use of a resource? The key issue is whether the resource itself or the use of the resource is in the conscious awareness of the actor. The non-reflective user of a resource will be

focused upon the minutiae of the task, the ends to be achieved, or indeed, freed by non-reflective use, the user may be thinking about something completely unrelated to the task. The reflective resource user, however, forms a different psychological relation to the task. Their mind is focused upon the resource being used and the mode of use. Reflective use of a resource, whether tool or sign, entails distanciation from the resource and its use. Such distanciation necessitates a second-level semiotic platform for conceptualizing the resource and its use.

This distinction between non-reflective and reflective resource use is particularly dynamic. In the course of an activity, reflective awareness of resource use may come and go. The reflective awareness needs to be temporary, because so long as the resource itself is the focus of awareness it is difficult to proceed with the task. Rather, the reflective phase is a moment of stepping out and reorganizing the task such that attention can be turned back to doing the task, perhaps in a new way.

Using Resources

Table 1 represents the emerging conceptualization of using resources. Down the left hand side is the distinction between tools and signs.

Table 1. Conceptualizing the mediation and reflective use of tools and signs

		Use	
		Mediation (mind is focused upon the goal, not the mediational means)	**Reflective use** (mind is focused upon the resource and its use)
Resources	**Tools** (acting on the world)	Tool mediation: Being absorbed in any action directed at the world	Reflective tool use: Reflecting upon tool mediation
		Examples: Driving, building, fixing, digging, eating etc.	Examples: Changing tool, fixing a tool, learning to use a tool etc.
	Signs (acting on mind of self or other)	Sign mediation: Absorbed in action that is mediated by signs	Reflective sign use: Thinking about the signs that are mediating action
		Examples: Habitual use of discourse or imagery to communicate Talking oneself or someone else through a task Intra-psychological planning to go on holiday Dreaming, reverie, aesthetic appreciation	Examples: Choosing what clothes to wear for an interview The poet deliberating over a choice of words Deciding to tie a knot in a handkerchief to remember something Choosing to listen to some calming music when stressed

Across the top of the table is the distinction between mediation and reflective use. Making the tool/sign and mediation/reflective use distinctions orthogonal results in four categories: tool mediation; reflective tool use; sign mediation; and reflective sign use. The following sub-sections explore each of these four possibilities.

Tool Mediation

Tool mediation concerns the non-reflective use of a resource to affect a change in the world, not in the self's or other's relation to the world. An example is the way in which an experienced driver changes gear while absorbed in driving (Leontiev, 1979). In such an activity, the actual operation of the gear stick is outside of the consciousness of the driver, whose awareness is at the level of the action, namely slowing down or accelerating. In such moments the driver is absorbed (Benson, 1993) in the activity, and the tool-mediated activity itself is not an object of awareness. The artist, for example, in moments of absorption is thinking of the art to be formed and not of the tools used in the process (McCarthy, Sullivan, & Wright, 2006). In tool mediation the tool is a pure medium, invisibly enabling and shaping the ongoing action. During tool mediation there may be reflective awareness, but it is not of the tool use; rather, it is likely to be of the details of the action and the immediate goal. For example, a driver may have reflective awareness of bends in the road or the goal of overtaking the car in front. But in such cases the use of the car as a tool remains at the level of mediation and does not enter reflective awareness. In Leontiev's (1979) terminology, the use of the car as a tool remains at the operational level, while the mind of the actor is at the molar level of the action being performed and the goal to be achieved.

Reflective Tool Use

If while driving the car, the driver moves to change gear but finds the gear is stuck, then there is likely to be a shift of attention from the task being achieved to the means of achieving the task (i.e., the car as a resource). The driver may think: 'Did I move the gear stick in the right direction?'; 'Has this happened before?'; 'Is the engine still running?'; 'What gear am I in anyway?'; and so on. In this moment, the actor's relation to the tool becomes an object in mind. In Leontiev's (1979) terminology, the operation of the gears becomes a goal-directed action. Within this reflective mode, double-loop re-conceptualization of the tool and the mode of use are possible. The driver learning to drive must make each change of gear a deliberate and conscious action, determined by an explicit awareness of the sound of the engine, speed and

unfolding situation on the road. Reflective tool use is particularly dynamic. It is a phenomenological experience of distanciation from tool use which occurs momentarily against a backdrop of embeddedness within the task. Although it is easy to observe this phenomenological experience in oneself, it is difficult to gather empirical data on it as it is experienced by others.

Sign Mediation

Sign mediation concerns the use of signs not to effect a change in the world directly, but rather to alter one's own or someone else's relation to the world. Sign mediation is the mediation of mind. Examples of sign mediation of the mind of the other include many everyday communicative contexts and subsume what have been called communicative resources. When someone says 'I am depressed', they are rarely making a propositional statement about their own being; rather, they are usually trying to effect a change in their relation to someone else (Rorty, 1999, p. xxiv). For example, they may be trying to make the interlocutor more sympathetic. If such an utterance has the desired effect, then the interlocutor may put on some uplifting music, which itself would be another example of sign mediation, except this time it would be oriented to the mind of the person claiming depression.

If however, the music is put on for oneself, then it would be an example of using music to mediate one's own feelings and emotions (Lewis, 1982; Zittoun, 2007). Research on symbolic resources (Zittoun, 2006a) has directly addressed sign mediation of self by studying how books and films enable imaginary and aesthetic experiences and support emotional and identity regulation. This domain includes most tertiary artifacts in Cole's terminology, that is, artifacts that enable reverie, daydreaming, dreaming, planning and self-talk. What is being mediated in these examples can be anything from self's future action to self's emotional state.

Reflective Sign Use

The reflective use of sign resources to act upon the mind of others is more common than one might initially suspect. Anyone who learns about rhetorical strategies, thinks about how to give a speech or write a letter or article, prepares to tell a joke or studies management is likely to be engaged in the reflective use of semiotic resources. Examples from the literature include young children's selective use of argumentative strategies (Tartas & Muller Mirza, 2007), teenagers' careful consumption of the right magazines in order to be part of a peer group

(Hijmans, 2004), and community organizers encouraging sex workers to conceptualize their predicament using the discourse of workers' rights (Cornish, 2006).

Vygotsky's (1978) classic example of tying a knot in a handkerchief in order to remember something is an example of the reflective use of a semiotic resource to act upon the mind of self, or more specifically, to act upon self's future relation to the world. Further examples include: referring to a book on dream symbolism to interpret one's dreams; referring to a book on first names to choose a name for a new child (Zittoun, 2004); or deciding to make an explicit comparison between one's own life experience and that found in a novel (Zittoun, 2006b). Equally, consider tourists who deliberate which guidebook to buy for their travels (Zittoun et al., 2003), or who choose to read novels about their destination before departure (Zittoun, 2006a). In these examples, the difference between signs and tools is underscored. The tourist reading about their destination country before departure is not acting upon that country; rather, they are acting upon their own psychological relation to that country.

Between Mediation and Reflective Use

The distinction between tool mediation and tool use enables us to ask the interesting questions of how, why and when mediation becomes reflective use and vice-versa. The literature suggests a number of reasons (Gillespie, 2007a). First, the reason most often mentioned is that a rupture halts ongoing action and stimulates reflection. This can be the gear change producing an unexpected result, the choice of which coins to use to pay for a taxi (Peirce, 1878), or unsettled times (Swidler, 1986) such as war (Zittoun et al., 2008). In these instances there is a classical rupture-transition process in which the actor's taken-for-granted mode of action breaks down and the actor has to question both the resources being used and their mode of use (Zittoun, 2006a). Second, reflective use can also arise due to overlapping or contradictory representations (Bauer & Gaskell, 1999), where the action orientation associated with one representation stimulates the alternative action orientation. Third, reflective use can be stimulated by the gaze of others, such as when tourists become aware of themselves as camera-touting tourists (Gillespie, 2006). Relatedly, because when people speak they usually hear their own utterances, it may be that hearing their own utterances provides enough distance from those utterances to stimulate reflection upon those signs as mediators being used (Gillespie, 2007a). Fourth, it may be that the very efficacy of the

resource stimulates awareness of the resource. For example, Zittoun (2006b) reports on a young man experiencing a difficult transition, who found a novel to be a useful resource by active reflection upon the relations between the novel and his own life narrative. Finally, there are also socially sanctioned moments of creativity, when the traditional constraints upon action are removed. For example, play (Harris, 2000), pilgrimage (Turner & Turner, 1978), tourism (Ryan & Hall, 2001), fiction (Vygotsky, 1971), poetry (Abbey, 2007), carnivals and festivals provide spaces in which existing relations can be re-imagined, reversed or rejected. In these liminal modes of activity, alternative paths of action and thought are promoted, thus potentially stimulating novel and reflective uses of resources.

The reverse movement, from reflective use to mediation, is fairly straightforward. Once the work of reflection is done, and the resource or its use has been satisfactorily re-conceptualized, then activity proceeds and the mind refocuses upon the details of the goal-directed action, and the resource passes into pure mediation.

The movement from mediation to reflective use and back again might enable a double-loop questioning of the activity or tool. Reflection upon the activity or tool entails looking from a new perspective, which may lead to a modification of the resource or the mode of use. Returning to Leontiev's (1979) example of learning to drive a car, we know that initially each action, such as changing gear or speed, is guided by reflective awareness and self-monitoring. Then, by virtue of practice, these actions become automatic and operational, thus enabling the mind to focus less upon the mediational resource and more upon the action being done. In the case of sports professionals, the case is often more complex, because their habits of running or swimming, for example, often need to be made explicit before being re-modelled (Behncke, 2005). Once reflected upon and thus regulated they can be modified, with the aim that these modified patterns of behaviour will settle back into the domain of habit.

Future research focusing on this transformation needs to obtain data on the stream of consciousness (James, 1890), as the objects in that stream move from embedded participation in the task to distanciation or reflection upon the resources being used and then back again to embedded participation (Valsiner, 2007). Such dynamics are difficult to observe directly. Talk-aloud protocol can be used during the course of activity (Valsiner, 2003; Wagoner & Valsiner, 2005). Microgenetic methods, which try to slow down the movement of thought, might also provide a means for exploring the shifts in reflective consciousness. Alternatively, one can analyse interviews in search of moments of

reflection and the movement of thought (e.g., Gillespie, 2006; Moscovici, 2008, Ch. 10).

Between Tools and Signs

What is a sign? And how is it different from a tool? If signs cannot act upon the world directly, but only upon the mind, then do they belong to a distinct ontological realm? If so, does this realm co-exist with the material realm, yielding a dualism akin to that described by Descartes? Questions such as these have unfortunately led to the suppression of the distinction between tools and signs. By making the distinction between tools and signs fundamental to our conceptualization of use, we now need to address these difficult questions.

The relation between tools and signs, and especially the question of how tools might become signs, was of central concern to Vygotsky (Vygotsky & Luria, 1994). According to Cowley, Moodley and Fiori-Cowley (2004), there is no satisfactory way to explain how this emergence occurs. Vygotsky (1997, p. 104) himself presented a brief analysis of pointing, which is meant to illustrate how pointing-for-reaching becomes pointing-for-communicating (i.e., a sign). But his analysis is too brief to reveal a mature theory (Zittoun et al., 2007). While no conclusive statement can be provided on the way in which tools become signs and vice-versa, we want to outline briefly how a Meadian perspective might aid future research in addressing this important question.

According to Mead (1922; Gillespie, 2005), between tool use and sign use there is an intermediate form of social action. This intermediate form is only conceivable when we take a perspectival view on the social world (Mead, 1932). Beginning with direct action on the world, Mead points out that although this action is directed at the world by the actor, it may have meaning for an observer. That is to say, the action may have two different meanings from the two perspectives. In relation to the actor, the action is directed at the material world. But in relation to the observer, the action becomes a symbolic index of consequence. Such action Mead described as symbolic, and he differentiated it from *significant symbolic action*. Symbolic action is action that is meaningful to an observer in some way, of which the actor is unaware. Consider a driver who pulls out onto a street unaware that they have just cut off a bicyclist, who narrowly escapes an accident. The driver, in such a situation, is embedded in the task of driving and unaware that their actions have the meaning of being 'incompetent', 'aggressive' or 'dangerous' from the perspective of the bicyclist. The driving is

symbolic for the bicyclist but not for the driver. Significant symbolic action, on the other hand, is communication proper, where the actor is aware of the impression an action creates in the mind of an observer, and thus uses the action to affect the mind of the observer deliberately; for example, wearing a smart suit in the knowledge that other people will think it smart, or speaking to people in full knowledge of what one is saying.

Consider the following more elaborate example. John lives on a street with a lot of rubbish and he has been trying to arrange for local residents to have a day of street cleaning, but he has met with little success. Then, giving up on his neighbours, John goes out to begin cleaning up the rubbish himself. He uses a bag and shovel as his tools for acting directly on the world. However, as he is working he notices that his neighbours are looking at him from between the curtains, and he can imagine their shame for not helping. In order to encourage these feelings and possibly stimulate his neighbours to help, John continues cleaning rubbish late into the night. Although the ongoing behaviour is the same, the bag and shovel have become signs—signs of his working, and he is using them to affect the minds of his neighbours. In this case, although the action (cleaning) remains constant, the action moves from tool use to sign use. However, just because John is trying to communicate with his labour, it does not follow that he will be successful. If we look at the situation from the perspective of his neighbours, then in one house we might find a family who thinks John is wasting his time because the council is scheduled to come and do the cleaning tomorrow, and in another house we might find people who see John's behaviour as sanctimonious, self-righteous and holier-than-thou. In so far as John's neighbours feel guilt, then his action is significantly symbolic, but in so far as his neighbours perceive alternative meanings, then his action is only symbolic. If John were to become aware of these alternative meanings, then his action would become increasingly significantly symbolic, and he might even cease the cleaning.

Incorporating Mead's distinction between symbolic and significant symbolic action into our present scheme means recognizing symbolic action (in Mead's terminology, not in the terminology of Symbolic Action Theory) as an intermediary between action and significant symbolic action (or sign use). This intermediary is important because it defies the idea of a Cartesian dualism. In symbolic action we find half a sign process, and it is not halfway to being a different kind of ontological stuff. Rather, it remains partial because the perspective that links the actor to the object is not integrated with the perspective

that links the other to the actor's action. The actor's action is meaningful to the other, but the actor is not aware of this meaning and thus is not in control of the sign process. Significant symbolic action entails the actor being aware of the meaning of their action from the perspective of the observer. Thus, instead of moving between ontological realms, a Meadian conception entails only a movement between perspectives.

Considerations for the Future

That the social sciences in general and cultural psychology in particular are fragmented fields of research has often been observed (Valsiner, 2007; Witherington, 2007). One area of particular heterogeneity, overlap and polysemy, we have argued, concerns the idea of using resources. Our aim, in the present article, has been to review the main concepts being used and to tentatively draw out the distinctions between tool and sign, and between mediation and reflective use.

Unlike many of the distinctions reviewed, the distinctions we have emphasized concern the uses of resources, not resources used. Accordingly, the same resource can appear in any of the four modes of use. Consider again the case of the shovel. While absorbed in digging, the shovel is a mediational tool. If the shovel breaks, or causes trouble, it may stimulate reflective use. If the hole is not dug before the end of day, the digger may choose to leave the shovel in a notable place, either as an *aide-mémoire* for the morning or as a reminder for a second person to make a contribution. Finally, the shovel may be incorporated in reflective semiotic use if, for example, it gets selected by a stage designer who is looking for a shovel as a stage prop that will create a very particular aura on stage. Thus, in the present scheme, a shovel cannot be categorized absolutely; rather, we need to focus upon an instance of use to be able to categorize it.

The two distinctions that we propose are not meant to be a final integrative statement. Rather, these distinctions are put forward as an attempt to review and take stock. In that spirit, we want to conclude our stock-taking by considering a number of problematic issues that will need to be considered in future theorizing.

First, many instances of tool use are highly semiotic. Driving a car, even if absorbed in the act of driving, is a highly semiotic activity. There are road signs, which mediate behaviour. Even the behaviours of other drivers and pedestrians become signs (or more specifically, using Mead's terminology, symbols), which mediate the behaviour of the driver. Does this mean that driving is not tool use? In order to deal with this problem, we need to be very clear about what is in whose

mind. The road sign is a semiotic mediator but the driver is not the one who is using the sign communicatively. The local council that installed the road sign has reflectively used the sign as a sign mediator of drivers' behaviour. The driver uses the sign as indicative of an emerging road. The driver uses knowledge to interpret road signs. This mode of use is usually non-reflective sign mediation. To the extent that the driver is interpreting signs, we are dealing with sign mediation. But the car itself is not being used to interpret the signs; rather, it is simply being used as a tool. But, of course, this is not to say that the car cannot be a sign. Indeed, any driver who pays attention to the appearance of their car is concerned with it as a sign. The point, however, is that to distinguish tools and signs means focusing on the micro details of the here-and-now context, and who is using what and how.

Second, the distinction between mediation and reflective use can also become messy in practice. Consider using a mirror: is it reflective use? Although the mirror might stimulate self-reflection, this is not necessarily reflection about the use of the mirror. It is important not to confuse self-reflection in general with reflective use of resources. The question to ask in each situation is: What is the object in the mind of the actor? Reflective use entails having the resource or its use as an object in mind. Non-reflective use entails the actor being aware of something else.

Third, in cases where there is sign mediation directed at an interlocutor, that is, non-reflective use, it can be difficult to know whether we are dealing with 'use' by the actor or 'perception' by the interlocutor. Consider the case of boys interacting with girls to solve a task and using a masculine argumentative style to gain influence (Psaltis & Duveen, 2006). Is the argumentative style being 'used' by the boys or is it being 'perceived' by the girls? If, as suggested by Mead, creating an impression in the mind of the other is the first step in the creation of a sign, then can one say that creating such an impression is actually a case of sign mediation or communication? In Vygotsky's (1997) example of the baby grasping, which the mother interprets as pointing, is the baby engaged in sign mediation of the mind of the mother, or is the mother using the baby's grasping as a semiotic index of the child's desires?

Fourth, there are also situations in which an actor assumes that they are using signs to create a specific meaning in the mind of an other, but, like in the case of John, the meaning received, or the impression created, is quite different from that which is expected. In such situations the actor is using a sign, in so far as they are intentionally communicating. However, the action or communication is a symbolic

index or cue for the interlocutors who find a different meaning. One could call this extra or unintended meaning that is created in the minds of observers 'surplus meaning' (Gillespie, 2003), and arguably, in so far as the actor can become aware of this surplus meaning, then we are witnessing the movement from action to symbol to significant symbol. But in order to fully capture the dynamics of this surplus meaning in an analysis, one has to consider each communicative act from the various perspectives. Table 1 presents the act of use only from the perspective of the actor.

Fifth, the study of using resources must be aware of the psychologist's fallacy (James, 1890). Namely, we must be careful to distinguish what is in the mind of actors from what is in the mind of researchers. Table 1 suppresses the multi-perspective nature of social life. Any time that these categorizations are used in the context of research, there are at a minimum two perspectives, namely, the perspective of the researched and the perspective of the researcher. These two perspectives are evident in the table in the following way; when talking about reflective use, the frame of reference is the phenomenological perspective of the researched. Reflective use means that the resource is an object in the mind of the actor. Mediation, on the other hand, is not in the conscious mind of the researched. It only exists consciously for the researcher forming an interpretation. Mediation is something that the researcher sees in the activity analysed.

These two perspectives pave the way for further complexity. Consider the case of a man uttering a prayer in an attempt to influence the lottery numbers. From the perspective of the actor, the prayer is being used to act upon the world (the number generator), and as such, the prayer is being used as a tool. However, from the perspective of a researcher who is sceptical about the efficacy of prayer in such a context, the use of prayer might seem to have a different function. Maybe the researcher interprets the use of prayer as a means to maintain emotional security, to create feelings of control, or as a means of wish fulfilment. In such cases the prayer is a semiotic resource, or symbolic resource, being used non-reflectively to mediate the actor's own emotional state. Therefore, the research might argue for the prayer as having a latent function. How can we include such divergent perspectives in future theory?

Thus we conclude our article with more questions than answers. While we have tried to review and consolidate our conceptualization of using resources, it is clear that the task of theorizing our relation to culture is not finished. We hope that these concluding concerns will sensitize future theoretical and empirical research.

Notes

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References

Abbey, E. (2007). Perpetual uncertainty of cultural life: Becoming reality. In J. Valsiner & A. Rosa (Eds.), *Handbook of Sociocultural Psychology* (pp. 362–372). Cambridge: Cambridge University Press.

Arievitch, I.M., & Stetsenko, A. (2000). The quality of cultural tools and cognitive development: Gal'perin's perspective and its implications. *Human Development*, *43*, 69–92.

Austin, J.L. (1962). *How to do things with words*. Cambridge, MA: Harvard University Press.

Baltes, P.B. (1997). On the incomplete architecture of human ontogeny: Selection, optimization and compensation of developmental psychology. *American Psychologist*, *52*, 266–380.

Baltes, P.B., Lindenberger, U., & Staudinger, U.M. (1998). Life-span theory in developmental psychology. In W. Damon & R.M. Lerner (Eds.), *Handbook of child psychology: Vol. 1. Theoretical models of human development* (pp. 1029–1143). New York: Wiley.

Bauer, M.W., & Gaskell, G. (1999). Towards a paradigm for research on social representations. *Journal for the Theory of Social Behaviour*, *29*, 163–186.

Behncke, L. (2005). Self-regulation: A brief review. *Athletic Insight: The Online Journal of Sport Psychology*, *14*, 1–11.

Belzen, J.A. (1999). The cultural psychological approach to religion: Contemporary debates on the object of the discipline. *Theory & Psychology*, *9*, 225.

Benson, C. (1993). *The absorbed self*. Hertfordshire: Harvester Wheatsheaf.

Boesch, E.E. (1991). *Symbolic action theory and cultural psychology*. Berlin: Springer Verlag.

Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241–258). New York: Greenwood.

Bourdieu, P. (1990). *The logic of practice*. Cambridge: Polity.

Cole, M. (1996). *Cultural psychology: A once and future discipline*. Cambridge, MA: Harvard University Press.

Cole, M., & Derry, J. (2005). We have met technology and it is us. In R.J. Sternberg & D. Preiss (Eds.), *Intelligence and technology: Impact of tools on the nature and development of human skills* (pp. 209–227). Mahwah, NJ: Lawrence Erlbaum Associates.

Cornish, F. (2006). Challenging the stigma of sex work in India: Material context and symbolic change. *Journal of Community and Applied Social Psychology*, *16*(6), 462–471.

Cornish, F., & Gillespie, A. (2009). A pragmatist approach to the problem of knowledge in health psychology. *Journal of Health Psychology*, *14*, 800–809.

Cowley, S.J., Moodley, S., & Fiori-Cowley, A. (2004). Grounding signs of culture: Primary intersubjectivity in social semiosis. *Mind, Culture and Activity*, *11*, 109–132.
Dewey, J. (1896). The reflex arc concept in psychology. *Psychological Review*, *3*, 357–370.
Durkheim, E. (1898). Représentations individuelles et représentations collectives. *Revue de Métaphysique et de Morale*, *6*, 273–302.
Engeström, Y. (1987). *Learning by expanding: An activity-theoretical approach to developmental research*. Helsinki: Orienta Konsultit.
Engeström, Y. (1999). Activity theory and individual and social transformation. In Y. Engeström, R. Miettinen, & R.-L. Punamäki (Eds.), *Perspectives on activity theory* (pp. 19–38). Cambridge: Cambridge University Press.
Farkas, G., Grobe, R., Sheehan, D., & Shuan, Y. (1990). Cultural resources and school success: Gender, ethnicity, and poverty groups within an urban school district. *American Sociological Review*, *55*, 127–142.
Gauvain, M. (2001). Cultural tools, social interaction and the development of thinking. *Human Development*, *44*, 126–143.
Giddens, A. (1986). *The constitution of society: Outline of the theory of structuration*. Berkeley, CA: University of California Press.
Gigerenzer, G., & Todd, P.M. (1999). *Simple heuristics that make us smart*. Oxford: Oxford University Press.
Gillespie, A. (2003). Surplus & supplementarity: Moving between the dimensions of otherness. *Culture & Psychology*, *9*, 209–220.
Gillespie, A. (2005). G.H. Mead: Theorist of the social act. *Journal for the Theory of Social Behaviour*, *35*, 19–39.
Gillespie, A. (2006). *Becoming other: From social interaction to self-reflection*. Greenwich: Information Age Publishing.
Gillespie, A. (2007a). The social basis of self-reflection. In J. Valsiner & A. Rosa (Eds.), *The Cambridge handbook of sociocultural psychology* (pp. 678–691). Cambridge: Cambridge University Press.
Gillespie, A. (2007b). Collapsing self/other positions: Identification through differentiation. *British Journal of Social Psychology*, *46*, 579–595.
Gillespie, A. (2008). Social representations, alternative representations and semantic barriers. *Journal for the Theory of Social Behaviour*, *38*, 375–391.
Hale, H.C. (2008). The development of British military masculinities through symbolic resources. *Culture & Psychology*, *14*, 305–332.
Harris, P.L. (2000). *The work of the imagination.* Oxford: Blackwell.
Hermans, H. (2002). The dialogical self as a society of mind. *Theory & Psychology*, *12*, 147–160.
Hijmans, E. (2004). Reading YES. Interpretative repertoires and identity construction in Dutch teenage magazines. *Particip@tions*, *1*(2). Retrieved June 24, 2007, from http//www.p@rticipations.org
Hyysalo, S. (2004). Users, an emerging human resource for R&D. From preference elicitation towards the joint exploration of users' needs. *International Journal of Human Resource Development and Management*, *4*, 22–38.
Ifrah, G. (1998). *The universal history of numbers: From prehistory to the invention of the computer*. London: The Harvill Press.

James, W. (1890). *Principles of psychology*. Cambridge, MA: Harvard University Press.
Janet, P. (1934). *Les débuts de l'intelligence*. Paris: Flammarion. (Original work published 1814.)
Josephs, I. (2002). 'The Hopi in me': The construction of a voice in the dialogical self from a cultural psychological perspective. *Theory & Psychology*, *12*, 161–173.
Leontiev, A.N. (1979). The problem of activity in psychology. In J.V. Wertsch (Ed.), *The concept of activity in Soviet psychology* (pp. 37–71). Armonk, NY: Sharpe.
Lewis, G.H. (1982). Popular music: Symbolic resource and transformer of meaning in society. *International Review of the Aesthetics and Sociology of Music*, *13*, 183–189.
Marková, I. (2003). *Dialogicality and social representations: The dynamics of mind*. Cambridge: Cambridge University Press.
Markovitzky, G., & Mosek, A. (2006). The role of symbolic resources in coping with immigration. *Journal of Ethnic & Cultural Diversity in Social Work*, *14*, 145–158.
Matusov, E. (2007). In search of the appropriate unit of analysis for sociocultural research. *Culture & Psychology*, *13*, 307–333.
McCarthy, J., Sullivan, P., & Wright, P. (2006). Culture, personal experience and agency. *British Journal of Social Psychology*, *45*, 421–439.
McDonald, G., Le, H., Higgins, J., & Podmore, V. (2005). Artifacts, tools, and classrooms. *Mind, Culture, and Activity*, *12*, 113–127.
Mead, G.H. (1922). A behavioristic account of the significant symbol. *Journal of Philosophy*, *19*, 157–163.
Mead, G.H. (1932). *The philosophy of the present*. La Salle, IL: Open Court Publishing.
Moscovici, S. (2008). *Psychoanalysis: Its image and its public*. Cambridge: Polity. (Original work published 1974.)
Moscovici, S. (1993). *The invention of society: Psychological explanations for social phenomena*. Cambridge: Polity Press.
Neuman, Y., & Bekerman, Z. (2001). Cultural resources and the gap between educational theory and practice. *Teachers College Record*, *103*, 471–484.
Peirce, C.S. (1878). How to make our ideas clear. *Popular Science Monthly*, *12*, 286–302.
Perriault, J. (1989). *La logique de l'usage*. Paris: Flammarion.
Psaltis, C., & Duveen, G. (2006). Social relations and cognitive development: The influence of conversation types and representations of gender. *European Journal of Social Psychology*, *36*, 407–430.
Rochex, J.-Y. (1998). *Le sens de l'expérience scolaire*. Paris: Presses Universitaires de France.
Rogoff, B. (1995). Observing sociocultural activity on three planes: Participatory appropriation, guided participation, and apprenticeship. In J. Wertsch, P. Rio, & A. Alvarez (Eds.), *Sociocultural studies of mind* (pp. 139–164). Cambridge: Cambridge University Press.
Rorty, R. (1999). *Philosophy and social hope*. London: Penguin.

Ryan, C., & Hall, M. (2001). *Sex tourism: Marginal people and liminalities*. London: Routledge.
Swidler, A. (1986). Culture in action: Symbols and strategies. *American Sociological Review*, *51*, 273–286.
Tartas, V., & Muller Mirza, N. (2007). Rethinking collaborative learning through participation to an interdisciplinary research project: Tensions and negotiations as key-points in knowledge production. *Integrative Psychological and Behavioral Science*, *41*(2), 154–168.
Turner, V., & Turner, E. (1978). *Image and pilgrimage in Christian culture*. Oxford: Oxford University Press.
Valsiner, J. (1987). *Culture and the development of children's action: A cultural-historical theory of developmental psychology*. Chichester: Wiley.
Valsiner, J. (2003). Beyond social representations: A theory of enablement. *Papers on Social Representations*, *12*, 7.1–7.16. Retrieved from http://www.psr.jku.at
Valsiner, J. (2007). *Culture in minds and societies: Foundations of cultural psychology*. New Delhi: Sage.
Vygotsky, L.S. (1971). *The psychology of art*. London: MIT Press.
Vygotsky, L.S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
Vygotsky, L.S. (1997). *The collected works of L.S. Vygotsky* (Vol. 4, R.W. Rieber, Ed., M.J. Hall, Trans.). New York: Plenum Press.
Vygotsky, L.S., & Luria, A. (1994). Tool and symbol in child development. In R. Van de Veer & J. Valsiner (Eds.), *The Vygotsky Reader* (pp. 99–174). Oxford: Blackwell. (Original work published 1930.)
Wagoner, B., & Valsiner, J. (2005). Rating tasks in psychology: From static ontology to dialogical synthesis of meaning. In A. Gulerce, A. Hofmeister, I. Staeuble, G. Saunders, & J. Kaye (Eds.), *Contemporary theorizing in psychology* (pp. 197–213). Toronto: Captus Press.
Wartofsky, M.W. (1979). *Models: Representation and the scientific understanding*. London: D. Reidel.
Wertsch, J.V. (1995). The need for action in sociocultural research. In J.V. Wertsch, P. Del Rio, & A. Alvarez (Eds.), *Sociocultural studies of mind* (pp. 56–74). Cambridge: Cambridge University Press.
Wertsch, J.V. (1998). *Mind as action*. Oxford: Oxford University Press.
Wertsch, J.V. (2002). *Voices of collective remembering*. Cambridge: Cambridge University Press.
Wertsch, J.V. (2007). Mediation. In M. Daniels, M. Cole, & J.V. Wertsch (Eds.), *The Cambridge companion to Vygotsky* (pp. 178–192). Cambridge: Cambridge University Press.
Witherington, D.C. (2007). The dynamic systems approach as metatheory for developmental psychology. *Human Development*, *50*, 127–153.
Winnicott, D.W. (1968). The use of an object and relating through identification. In C. Winnicott, R. Shepherd, & M. Davis (Eds.), *Psychoanalytical explorations* (pp. 218–227). Cambridge, MA: Harvard University Press.
Wyndhamn, J., & Säljö, R. (1999). Quantifying time as a discursive practice: Arithmetics, calendars, fingers and group discussions as structuring

resources. In J. Bliss, R. Säljö, & P. Light (Eds.), *Learning sites: Social and technological resources for learning* (pp. 80–96). Oxford: Pergamon.
Zittoun, T. (2004a). Uses of symbolic resources: The case of first names. *Culture & Psychology*, *10*(2), 161–171.
Zittoun, T. (2004b). Memorials and semiotic dynamics. *Culture & Psychology*, *10*, 477–495.
Zittoun, T. (2006a). *Transitions: Development through symbolic resources*. Greenwich, CT: Information Age Publishing.
Zittoun, T. (2006b). Difficult secularity: Talmud as symbolic resource. *Outlines: Critical social studies*, *8*, 59–75.
Zittoun, T. (2007). Symbolic resources and responsibility in transitions. *Young: Nordic Journal of Youth Research*, *15*, 193–211.
Zittoun, T., Gillespie, A., & Cornish, F. (2009). Fragmentation or differentiation: Questioning the crisis in psychology. *Integrative Psychological and Behavioural Science*, *43*(2), 104–115.
Zittoun, T., Gillespie, A., Cornish, F., & Aveling, E. (2008). Using social knowledge: A case study of a diarist's meaning making during World War II. In K. Sugiman, K. Gergen, & W. Wagner (Eds.), *Meaning in action* (pp. 163–179). Berlin: Springer Verlag.
Zittoun, T., Gillespie, A., Cornish, F., & Psaltis, C. (2007). The metaphor of the triangle in theories of human development. *Human Development*, *50*, 208–229.
Zittoun, T., Duveen, G., Gillespie, A., Ivinson, G., & Psaltis, C. (2003). The use of symbolic resources in developmental transitions. *Culture & Psychology*, *9*, 415–448.

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