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The Social and the Psychological: Structure and Context in Intellectual Development

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Abstract
This paper discusses the distinct meanings of *internalization* and *interiorization* as ways of rendering intelligible the social constitution of the psychological in a line of research that started with Piaget and extended into a post-Piagetian reformulation of intelligence in successive generations of studies of the relations between social interaction and cognitive development. While the same clarity cannot be found in Vygotsky's work, the emphasis on the cultural embeddedness of cognitive activity in contemporary cultural psychology has also been a significant influence on the evolution of this work. This paper proposes a further integration of these perspectives by developing the idea of *operativity-in-context* as a means of retaining the advantages of Piaget's structural analysis of cognition whilst recognizing the situational and cultural constraints on cognitive functioning.

Piaget is often depicted as considering the development of operational structures of intelligence as constituting a universal sequence of development, an assumption which has been the object of considerable debate and criticism in the years since he formulated his theory [Chapman, 1988a, b; Kuhn, 2007; Maynard, 2008]. Indeed, one might say that it is Piaget's insistence on such a universal property of the human

The loss of our esteemed friend and colleague Gerard Duveen coincided with the requests for revisions of the first version of this paper by the reviewers. Since it was his wish to see a revised version of the paper published, the rest of the authors decided to make the changes and resubmit the paper. This paper is dedicated to the memory of Gerard Duveen.

mind which has been the source of tension with, even exclusion from, contemporary discussions of cultural psychology which have rather tended to emphasize the contextualized character of all psychological phenomena. Piaget [1966] himself was reluctant to concede that cultural or socio-economic influences could do more than accelerate or retard progress through this sequence of stages. According to Kuhn [2007], when Piaget as late as 1972 discussed intellectual development during adolescence [Piaget, 1972], his position remained firm that the same universal sequence of cognitive structures is constructed by each individual, culminating in the formal operations structure. Moreover, the pace of this evolution is affected by the quality and frequency of opportunity individuals are afforded to engage these intellectual structures. Furthermore, Kuhn [2007] claimed that in sharp contrast to Piaget's earlier position regarding stage structures, Piaget for the first time put forward the thesis that the formal operations structure may not be manifested across all intellectual domains. Additionally, he more radically raised the possibility that new, more specialized structures might be identified that are specific to particular domains of human endeavour, which takes Piaget a long way from the universalist theory with which he is most closely associated.

Similarly, Chapman [1988a, b] offered an interpretation and extension of Piaget where stages are a classification of the forms of thinking described in the populations Piaget studied. Chapman also discussed the possibility of different developmental pathways given different forms of experience. For example he argued:

> I would suggest that the data to be equilibrated in different cultures may vary sufficiently so that the process of equilibration can result in qualitatively different developmental pathways. Within each culture equilibration may result in developmental progress, but that progress could proceed in a different direction relative to other cultures. (p. 96)

Empirical evidence from cross-cultural research remains equivocal as to whether underlying structures can be identified independently of cultural context [Berry, Poortinga, Segall, & Dasen, 2002; Cole, 1990; Kuhn, 2007]. In the past two decades, the analytical framework for much cultural psychology has shifted from a comparative perspective to an exploration of other cultures' modes of cognition and development along with an understanding that thinking needs to be considered always as a culturally framed pattern of activity [Maynard, 2008]. Yet the attraction of Piaget's analysis of operational development remains strong and vital, principally because of its emphasis on the structural quality of the organization of intelligence which emerges beyond the specific empirical learning of the child engaged with particular forms of activity. For Piaget, the idea that the conservation of the amount of water is necessarily logically true is not, in this sense, a simple empirical abstraction from engagement in particular forms of activity, but rather a reflecting abstraction [Piaget, 1977/2001] from the co-ordinations of actions and mental actions (operations) through which the child can engage in certain activities with this water (pouring, pouring back, comparing, adding, taking away). But if we wish to retain the strengths of a structural analysis, does this entail a rejection of any consideration of the contextualization of thinking? Against any such radical polarization of positions it would seem more profitable to reject the terms of such a dilemma, and to seek instead some way of reconciling structural and contextual frames for understanding intelligence. We might, for instance, argue that while all thinking may be structured through operational forms, it is also the case that all thinking takes shape within the

specific contexts of particular cultural locations which exercise their own constraints both on its construction, and its expression or communication. We could, in this way, look to discourse as an example of such an interactionist position. All discourse has structure, but each utterance affects and is affected by the context in which it occurs – a complex context, to be sure – which extends from the large scale of the specific language group in which the utterance is made, to the microlevel of the particular conversational demands of any speech act [Perret-Clermont, 2006]. Or again, we might consider the phenomena of food and eating. It is a universal truth that food is a necessary requirement for human life. Quite simply, without food we die. But the human relationship to food is always a relationship shaped by the constraints of the culture in which it occurs. What we eat, when we eat it, how it is prepared, who we share it with, what symbolic significance it carries – all of these are features of every act of eating. We can say that the universal necessity of eating can only be satisfied through engaging in some culturally patterned form of activity. Similarly, we might say of all thinking that while it draws on some universal features, it can only be constructed, expressed, or communicated by engaging in some culturally patterned form of activity [Rijsman, 2007]. Developing such a perspective might require revisiting and revising some aspects of the Piagetian paradigm, but it would have the benefit of drawing this central body of work into communication with other emerging contemporary strands of thought.

Such a project would, of course, be more extensive than could possibly be achieved in a single paper. We hope, however, that in this paper we can offer a contribution drawn from reflections from our various research studies on the relations between social interaction and cognitive development. As we shall see, this research offers a privileged position for considering these questions, precisely because it throws into clear relief the development of structures of intelligence within the context of communicative activities. We begin with a discussion of the relations between the social and the intellectual in Piaget's own work, which leads to a consideration of two central themes in his theory, the distinction between internalization and interiorization, and the distinction between operative and figurative aspects of knowing. We then consider how these themes relate to Vygotsky's work, which has been of central importance to the emergence of cultural psychology over the past few decades. Next we consider how empirical research over the past three decades has addressed the issue of social interaction and cognitive development. Finally, in the conclusion, we offer some reflections which provide integrative themes towards the reconciliation of structure and context in the development of intelligence.

The Social and the Psychological in Piaget

The role of the social in relation to the psychological in Piaget's theory has retained a rather unstable status [Duveen, 1997]. This instability can be seen as either a difference of emphasis in the earlier and later work of Piaget[1], or rather as the

[1] While some authors have denied any discontinuity in Piaget's work (e.g., Döbert [2004]), the evidence of the texts themselves seem to suggest otherwise. It may be that continuities in Piaget's general project for a biological theory of knowledge can be identified, even if the specific forms in which the project was articulated shifted and changed over time.

manifestation of an underlying discontinuity based on different social psychologies. Already in his first book on the *Language and Thought of the Child* [Piaget, 1923/2002], Piaget claimed that his research confirmed Pierre Janet's thesis that 'all reflection is the outcome of an internal debate in which a conclusion is reached, just as though the individual reproduced towards himself an attitude which he had previously adopted towards others' (p. 75). Interestingly, Janet's thesis was also to become fundamental for Vygotsky's ideas about internalization, though as we shall see, Piaget interpreted Janet in a rather different way than did Vygotsky [1978].

Social experience for Piaget carried two distinct meanings with important ramifications for cognitive development. Very early in his writings [Piaget, 1932/1977], he already made a crucial distinction between two forms of social relations, constraint and co-operation. Where there is *constraint* because one participant holds more power than the other, the relationship is asymmetrical, and, importantly, the knowledge which can be acquired by the dominated participant takes on a fixed and inflexible form. Piaget referred to this process as one of social transmission, and he referred to the way in which the elders of a tribe initiate younger members into the patterns of beliefs and practices of the group. Similarly, where adults exercise a dominating influence over the growing child, it is through social transmission that children can acquire knowledge, though in the form of opinion rather than as operative knowing.

By contrast, in *co-operative* relations, power is more evenly distributed between participants so that a more symmetrical relationship emerges. Under these conditions, authentic forms of intellectual exchange become possible, since each partner has the freedom to project their own thoughts, consider the positions of others, and defend their own point of view. Under these circumstances, where children's thinking is not limited by a dominant influence, the conditions exist for the emergence of constructive solutions to problems, or what Piaget referred to as the construction of knowledge rather than social transmission. Here, the knowledge which is constructed is open, flexible, and regulated by the logic of argument rather than being determined by an external authority. In short, co-operative relations provide the arena for the emergence of operative knowing, which for Piaget requires the absence of any constraining influence, and is most often illustrated by the relations which form between peers.

Thus, for Piaget the role of the other in promoting or limiting cognitive development depends on the forms of *social relations* activated during communication. In his discussion of co-operation in the *Moral Judgment of the Child* [1932/1995], we can identify an underlying idea that the *other* is useful to the extent that the other is on an equal footing with the subject:

> In so far as an adult is able to cooperate with a child, that is to say to discuss on an equal footing and to collaborate in research, it goes without saying that their influence will lead to analysis. But in so far as their speech is cloaked in authority, and in particular to the extent to which verbal instruction prevails over experiment in common, it is obvious that the adult will consolidate childish verbalism. (p. 153)[2]

[2] This translation (by Gerard Duveen) is a more accurate rendering of Piaget's original French than the published English text [Piaget, 1932, p. 187 of the Penguin Edition, 1977].

In his discussion of conversation types in *The Language and Thought of the Child* [Piaget, 1923/2002], Piaget identified the first stage of development where conversation is in fact a monologue or two parallel monologues. In the second stage, there can be a superficial association between subject and other on a common theme, but with the absence of activity in relation to the same object of thought, so that it does not really constitute conversation. In this case, there is no collaboration since the subject is orienting to the other only to 'announce' their own action or thoughts, or to talk of themselves. Any conversation or collaboration that emerges in the case of agreement in this stage takes the form of collaboration in action or a non-abstract form with the evocation of common memories. In the case of disagreement between subject and other, the form of argument in this stage is characterized either as a 'quarrel' or as 'primitive argument'. The first is a clash of contrary assertions that are not only statements of fact, but are connected with desires, with subjective evaluations, with commands, and with threats. The second is a clash of unmotivated assertions. This form of argument is primitive to the extent that there is no use of justifications or explanations of the rationale of the argument.

It is only in the third stage that subject and other enter a genuine form of dialogue where there is collaboration over a common subject of memory, abstract thought, or action accompanied by justifications or explanations of the foundations of what is being discussed. This is the form of collaboration that Piaget in his later books would call co-operation. Thus, the use of logical justification and explanation can be taken as the content of co-operation that Piaget linked with genuine dialogue. On the contrary, the first and second stage of verbal intelligence observed by Piaget [1977/1995] in young children were characterized by *egocentrism* which

> ... is a sort of 'innocence' not only 'of the eye' but of the whole mind, such that the immediate sight of people and things seems to be the only one possible and is not yet situated in relation to other points of view. (p. 218)

Constraint can be seen as reinforcing 'childish verbalism' and egocentrism due to a form of *unilateral respect* which reflects the asymmetry between self and other. Only with the emergence of co-operation would relations of *mutual respect* develop between self and other [Piaget, 1977/1995]. The general idea of respect, and particularly this distinction between these two forms, carried great significance in Piaget's thinking. Mutual respect can be considered as an epistemic virtue for Piaget, framing a norm of reciprocity where each subject takes into account the other's point of view:

> Further, it is easy to see that this valorization of individuals as such, in terms of 'respect', necessarily leads to the disinterested behavior which characterizes moral norms, and leads to it alone: to say that *a'* respects *a* is to say that in his behavior relative to *a* the individual *a'* puts himself at the point of view of *a* and of his scale. The 'reciprocal substitution' of scales or of 'means and ends' is therefore nothing else than the expression of a mutual respect. [Piaget, 1977/1995, pp. 118–119]

In unilateral respect, which ontogenetically precedes mutual respect, the child is passively or uncritically accepting the other's point of view without comparing it with their own point of view. In contrast, in mutual respect the child is engaged in the process of constructing norms of behaviour as logic or morality. Engagement in norm construction signals a disengagement from socially coercive processes, a relative autonomy, that is, from social constraints which allows the participants to reflect

on two perspectives (self and other) on the same object. This reflection, in turn, facilitates the co-ordination which results in a new structure that can accommodate both perspectives.

In these early works, then, one can see Piaget articulating the relations between the social and the psychological through a focus on the relations between self and other in relation to an object. Indeed, there is even a nascent attention to the triadic relations between subject-other-object as an important context for the development of intelligence [see also Zittoun, Cornish, Gillespie, & Psaltis, 2007], even if the role of the other in this triad is fundamentally that of supporting and sustaining the development of the subject. In short, in his early work, Piaget believed that reasoning develops through the internalization of argumentation [Carpendale, 1999]. Piaget frequently used verbs such as *create* (créer), *end* (aboutir) and *lead to* (entraîner) to capture the effects that the social has on the origin of logical thinking. According to Döbert [2004], 'to *create* (créer) is a strong formulation that can be read in terms of constitution (generation) theory' (p. 141). In his later work, after discovering the *grouping structures* of thinking in the 1940s [see Carpendale & Müller, 2004; Müller & Carpendale, 2000], Piaget elaborated a new conceptual language describing the structures of intelligence and their genesis. As he did so, he also came to rework the terms in which he articulated the relations between the social and the psychological to reflect this new framework.

While, as we have seen, Piaget had always recognized a mutuality between social relations and intellectual structures, the appearance of *The Psychology of Intelligence* [Piaget, 1947/1950] marked the emergence of a variant of the relationship between intra- and interindividual structures – one that proposes that the corresponding structures are identical [Döbert, 2004]. Piaget came to believe that reason is an ideal equilibrium immanent in all conscious activity. He claimed that the laws of grouping 'constitute general forms of equilibrium which express both the equilibrium of interindividual interaction and that of the operations of which every socialized individual is capable when he reasons internally in terms of his most personal and original ideas' [Piaget, 1947/1950, p. 165]. He thus claimed that the social relationships equilibrated into co-operation constitute *groupements* of operations structured in the same way as the logical actions exercised on the external world by the individual. The laws of *groupements* define the form of ideal equilibrium common to both social and individual actions [Piaget, 1977/1995, p. 146]. His favourite motto on this issue was: 'to wonder whether it is intrapersonal operations that engender interpersonal co-operations or vice versa is analogous to wondering what came first, the chicken or the egg' (p. 294). A significant consequence of this identification of the social and the intellectual is that it no longer made sense to ask questions about the relations *between* the social and the intellectual, precisely because they were considered as two sides of the same coin, being simply different expressions of the same logic of the co-ordination of actions. This does not mean that Piaget no longer believed that social factors play a role in development, but rather that he reduced the understanding of the role of the social on cognitive development to the logic of the co-ordination of actions. As Döbert [2004] observed, this new state of affairs meant that 'agreeing and disputing, consensus and dissent henceforth surface only as dependent variables or observable events that are to be explained by means of the theoretical constructs of operative intelligence' (p. 146). But in this way, the reverse question of how social interaction promotes cognitive development becomes less important and this is the

reason that Piaget never empirically studied the effect of social interaction on cognitive development.

This view is also problematic since it reduces the social psychological dynamics of social interaction and the pragmatic aspects of language and communication to their epistemic aspects, leading to an impoverished sense of the social that provides no theoretical tools to study other important aspects of culture and their role in cognitive development that engage higher levels of analysis than the intra- and interpersonal, like that of social identities and social representations [Duveen, 2000, 2001; Duveen & Lloyd, 1986, 1990; Duveen & Psaltis, 2008; Psaltis & Duveen, 2006, 2007]. To embark on such a project of articulating four different levels of analysis [Doise, 1986] in the study of cognitive development (intrapersonal, interpersonal, intergroup/positional, and ideological/social representations) while retaining the strengths of a structural analysis of Piagetian constructivism is the general aim of this paper.

Two Forms of Knowing in Piaget

In reflecting on his early work, Piaget [1962/2000] described it as being limited to a focus on what he called 'verbal intelligence' or a 'preoccupation with thought at the level of language' (p. 246). As he developed his operative theory of the development of intelligence, he came to emphasize the sense of intelligence arising from the co-ordinations of action and, subsequently, the *interiorization* of the logic of this co-ordination as operations. This shift was a negative development in terms of studying the role of language and communication in cognitive development but at the same time it allowed the significant discovery of operational structures. It also introduced distinctions between *operative* and *figurative* aspects of knowing, as well as between *interiorization* and *internalization* as distinct processes linked to these two forms of knowing.

The clarification of the double use of the French word *intériorisation* in Piaget by Furth [1969] as *internalization* and *interiorization* is an important one for comprehending Piaget's distinct ideas on the general issue of internalization. Internalization is defined as the 'eventual diminution of external movements that become covert and sketchy' [Furth, 1969, p. 294], as for instance in imitation and internal language. Interiorization refers rather to the 'dissociation between the general form of a co-ordination and the particular content of an external action' and leads from sensorimotor to operational intelligence and is the precondition for objective knowledge as well as for symbolic representation [Furth, 1969, p. 294]. Thus while we might speak about the internalization of a telephone number, for instance, understanding a structure such as the concept of number is a consequence of processes of interiorization.

Clarifying Piaget's departure from a commonsensical empiricist theory of representation [Carpendale, 1999] is a crucial step in grasping the relatively insignificant role Piaget attributed to *internalization* in the development of operational intelligence. The mediating representation theory assumes that signs are internalized from external events, which those signs represent. The child's object of knowledge then is the internalized sign and through this, the subject mediates the sign's relation with external events. In Piaget's more structural theory of operative knowl-

edge, however, it is not representation (as the internal sign) which is central, but the *structure* to which external events are assimilated which is of decisive importance. Furth [1969] argued that Piaget could describe the structure of his developmental stages without reference to representation or internalization because it was the co-ordination of interiorized actions that was the crucial function in cognitive development. In a *circle of knowing* [Furth, 1969], assimilation incorporates the external event into a general structure and at the same time accommodation adapts this structure to the particular features of the event. Consequently, in all knowing there is a distinction between the operative and figurative aspects. The growth and development of operatory structures is primarily due to formal or reflecting abstraction as a reflection on the subject's own actions and not just empirical abstraction.

One context in which the developing relations between operative and figurative aspects of knowing take on particular significance is in the transition from pre-operational to concrete operational thinking. The cognitive structures available to the pre-operational child do not yet allow for any co-ordination between different perspectives, but are limited to grasping the appearance of things. Thus, when comparing equal quantities of liquid in two glasses of different shapes the child suggests that there is either more or less in one of the glasses. In this sense, the child's knowing is dominated by the figurative aspects, which focus on the end states (the phenomenal appearances of the liquid in the two glasses). The development of concrete operations furnishes the child with a different set of operative structures which, by allowing them to co-ordinate simultaneous variations in two dimensions, also allows them to focus on the transformation between the end states. In this way, the operative aspect of knowing now dominates the figurative aspect. As Piaget put it, 'sooner or later reality comes to be seen as consisting of a system of transformations underlying the appearance of things' [Piaget & Inhelder, 1971, p. xiii]. In this example, it is the *interiorization* of new co-ordinations of actions which leads to the development from one operative structure to another, rather than *internalization* (which would be limited to the internalization of the phenomenal appearances of the levels of liquid in the glasses).

Internalization in Vygotsky

This example helps to bring into sharper contrast the underlying epistemological similarities and differences between Piaget and Vygotsky on the issue of internalization. When Vygotsky [1978] addressed the development of pointing he did so in an explicitly communicative context – the child's gesture of grasping develops into the sign of pointing as it shifts from trying to recover a lost object to trying to influence an other to get the object for them. Vygotsky thus analysed the development of pointing in the context of the triadic relationships among child-other-object [Zittoun et al., 2007]. The meaning of the child's grasping is first in the mind of the other (the caregiver in the example) and only later does it become internalized by the child. The auxiliary stimulus in Vygotsky's account [1978] is not an exact copy of something, since as it is internalized it also changes function. From being something for the self (grasping), it becomes something for the other (pointing) that then becomes internalized as a semiotic means for controlling and organizing the subject's

operations as an auxiliary stimulus (pointing). Something similar happens with social language that changes form as it becomes abbreviated or more sketchy on the road to becoming inner speech. In both these instances, there is a clearer sociogenetic line in internalization than is the case in Piaget, which derives from Vygotsky's more explicit reference to the triadic structure of subject-other-object as the context for these developments.

While Vygotsky, like Piaget, departed from an empiricist theory of representation, his focus was on the new functional possibilities which arise with the internalization of new semiotic means. The triadic context for this internalization is what links the interpersonal to the intrapersonal levels of psychological functioning. While the clarity of Vygotsky's account is undoubtedly appealing, it is not without its problems [Amin & Valsiner, 2004]. For the present discussion, we can also note that Vygotsky's account is more limited than Piaget's in some important ways, principally, of course in the way that he only identifies a single process rather than differentiating between internalization and interiorization. That is, for Vygotsky, the social process structuring psychological development is envisaged as a single type of social relation, in which there is always an asymmetry of knowledge between an expert and a novice [Duveen, 1997]. In contrast, Piaget's distinction between two types of social relations, constraint and co-operation, is also linked to the suggestion that it is the symmetric social relation of co-operation which facilitates reflecting abstraction that promotes the development of operative structures. Further, the dimension of asymmetry or symmetry discussed by Piaget is not fundamentally one of knowledge, but rather one of respect, so that a more knowledgeable partner should be able to engage in co-operative relations with a less knowledgeable partner provided a form of mutual respect is established between them.

The Social and the Psychological in Sociocognitive Conflict

The tradition of sociocognitive conflict emerged out of Geneva from a group of social psychologists concerned with the issue of social interaction in cognitive development. It was initiated by the work of Doise, Mugny, and Perret-Clermont [1975] who combined social-psychological insights and the work of Mead and Vygotsky with Piagetian theory taken seriously in its totality rather than focusing only on the later work of Piaget [Perret-Clermont, 2004]. The notion of sociocognitive conflict referred to a conflict of perspectives between subject and other about the same object, a conflict which had to be made salient in the here and now in an inescapable way. In this way, it aimed to capture the social dimension of Piagetian decentration[3].

[3] Decentration is overcoming centration. According to Piaget, centration consists of focusing attention on a single point of view or perspective at any one time, so that it is only possible to grasp a single aspect or dimension of a problem. For example, in the conservation of liquids task the pre-operational child focuses his/her attention on the height of the glass but not the width, or vice versa. The coordination of different centrations is a developmental achievement according to Piaget.

This approach made explicit links with Moscovici's [1972] triadic (or tripolar) epistemological model from the early beginnings of this line of research [Perret-Clermont, 1980]. Mugny, Perret-Clermont, and Doise [1981] commented on their approach:

> Such an approach was prompted by reflections initiated by the crisis in social psychology; as emphasised by Moscovici [1972, p. 141], the task of a new social psychology is partly to develop from 'a bipolar psychology' (ego-object) to a tripolar psychology (ego-other-object), a necessary change because it conforms more to reality. (p. 318)

The idea of sociocognitive conflict is a first attempt to open the 'black box' of social interaction and identify in an experimental manner the productive elements in social interaction that lead as a causal mechanism to cognitive development. In this work, interpersonal co-ordinations are described as preceding the interiorization of intrapersonal co-ordinations, thus challenging the Piagetian position of identification between the interpsychological and intrapsychological. This first generation of studies provided concrete experimental evidence, for the first time, of the kind of social interaction that can elicit cognitive development. It drew on a more dynamic conception of communication as a terrain of contested claims within social interaction, through the study of actual social interactions that moved beyond the abstracted and idealized notions of social relations of constraint and co-operation, which in Piaget's account appeared as distinct and exclusive forms of social relations, despite his proviso that any actual relationship involved some mixture of these two forms, or that these are two end points of a continuum. This work emerged from the different Zeitgeist of the late 1960s where the motto of a generation was 'question authority!' [Perret-Clermont, 2003], associated with a call for a revitalized, more horizontal democracy and the demand to question ideological authority in a move towards debated knowledge. In this climate, in which the minorities of modern nations were struggling for recognition, Moscovici proposed his genetic model of social influence [Moscovici, 1976] suggesting that minorities could eventually achieve conversion of the population to their views by following a consistent behavioural style [Psaltis, 2005a; Duveen & Psaltis, 2008].

Importantly, the empirical findings of research on sociocognitive conflict [Doise & Mugny, 1984; Perret-Clermont, 1980] supported the underlying idea of Piagetian co-operation. Circumstances where the experimental conditions (number of partners, age of partner, developmental level of partner) allowed for a more symmetrical form of communication to emerge were found to be more likely to be linked with individual progress as measured in post-tests. For example, in a number of experiments where the partner of the interaction was an adult, the researchers found evidence that subjects 'who complacently relinquish the decision to the adult, that is, those who respond to the socio-cognitive conflict in terms of a purely relational regulation based on the asymmetry of the partners, have a very little chance of progressing cognitively' [Doise & Mugny, 1984, p. 133]. Many of the empirical findings experimentally manipulated the intensity of sociocognitive conflict and stressed the importance of the norm of reciprocity enacted in social interaction as promoting sociocognitive conflict.

This work at the same time stayed close to the Piagetian distinction between the figurative and the operative aspects of knowing from the later work of Piaget. This

can be seen in the way theoretical ideas evolved in opposition to social learning approaches [Rosenthal & Zimmerman, 1972] emphasizing *modelling* as the crucial mechanism for cognitive development. While recognizing modelling or imitation as an important mechanism, it was insufficient to account for operative development. In contrast to the sole emphasis on modelling in social learning approaches, both Piaget's constructivist approach and Moscovici's [1972, 1976] systematic social psychology recognized that change or influence was not limited to transmission from the more powerful or knowledgeable to the less powerful or knowledgeable. Importantly, the process had to be understood as something bidirectional which emerged through the co-operative search for solutions to tensions and conflicts requiring the co-ordination of perspectives into operations.

The distinction between forms of knowing that differ in the degree of operativity was also reflected in the methodological paradigm of this tradition. In a pre-test/interaction/post-test design children worked in dyads or triads on Piagetian tasks. Control groups worked individually and special attention was paid to delayed post-tests in order to distinguish between short-lived changes, which might simply be due to some form of modelling or imitation, and more long-lasting progress, which would be more likely to be structural in nature. Moreover, in the post-tests the children were examined on the depth of their knowledge, that is, whether they could generalize their newly acquired knowledge to other tasks that were based on the same operational structure. Finally, and perhaps more importantly for the evaluation of structural change, children were also asked for justifications for their answers in the post-tests. Here the central concern was whether children could produce novel forms of reasoning, that is, arguments in support of their newly acquired knowledge which they had not heard from their partners during the interaction [Perret-Clermont, 1980]. Novelty, in this sense, provided an index of creative thinking, of a cognitive reconstruction rather than simply modelling.

These methodological refinements were necessary in order to distinguish operative development from superficial forms of learning. If for example a *subject* is discussing the solution of a conservation problem with an *other* and the *other* says 'It's the same' (referring to the content of the pretransformation and the transformation glass), these words have a different meaning for a conserver and a non-conserver. For the non-conserver, the words are taken to refer to the perceptual tableau of the two unequal glasses. Since the two glasses do not have the same dimensions and thus the water goes higher or spreads wider, the figurative meaning of this sentence is wrong. For a conserver, however, the sentence is correct because they can co-ordinate the different dimensions of the glass and mentally perform a series of reversible transformations on the two glasses that compensate for the difference in the two glasses. Thus the assertion by the conserver that 'It's the same' can potentially stimulate a sociocognitive conflict, which in turn may provide the arena for reflection leading to operational development through interiorization. However, only the post-test, and especially the delayed post-test, can tell whether any advance on the part of the non-conserver represents such operational development, or is simply the internalization through imitation of what the conserver has said during the interaction.

It is perhaps worth noting that Piaget knew of this line of research emerging 'two steps away' from his office [Perret-Clermont, 2003] but his response was to assimilate this work to his theory rather than accommodate his own work in the light of these new findings. In a comment on this line of research, Piaget [1976] wondered

whether interaction or communication is a source (as a causal factor) of the structure of operations or only a factor that facilitates or speeds up their formation (a training providing a developmental dynamic as a formalizing factor). Piaget's answer was that the source of the structure is biopsychosocial and cannot be reduced to the social. The *other* for Piaget thus remained at best limited to a facilitative presence, but he saw in this social Genevan work an effort to dissociate the social and the intellectual, an effort which he rejected by again insisting that these are the indissociable aspects of a single process. Doise and Mugny [1984] reinterpreted the Piagetian idea of a spiral development giving a causal role to social interaction on the one hand, and to cognitive prerequisites on the other. Social interaction leads the individual 'to master certain abilities which will allow him to take part in more complex social interactions, which in turn promote continued cognitive development' (p. 23). In short, the social Genevans claimed that sociocognitive conflict was a necessary but not sufficient condition for cognitive development. Only the epistemic resolution (and not the relational resolution) of sociocognitive conflict was considered as a necessary and sufficient factor of cognitive development. Still, the achievement of such resolution was itself dependent on cognitive prerequisites of the persons involved. It was noticed that children of a certain socio-economic level and identities pre-tested in face-to-face adult-child relationships were systematically performing less well but after proper social interactions with peers they could catch up, not displaying differences in cognitive level compared to the other groups [Mugny, Doise, & Perret-Clermont, 1981; Mugny & Perret-Clermont, 1985; Perret-Clermont, 1980], a repeated finding that remained poorly understood before the third generation of studies that we will present later. These first findings importantly opened the door to enrich and refine the role of social factors in cognitive development and to understand their relations to the educational context.

The Social and the Psychological in the Second Generation of Studies

The first generation of studies was followed by a second generation of studies initiated in Neuchâtel in the early 1990s [Grossen & Perret-Clermont, 1994, 1997; Perret-Clermont, Perret, & Bell, 1991; Schubauer-Leoni & Grossen, 1993] where the social takes on a more institutionalized role. Reflecting on the first generation of studies, Schubauer-Leoni and Perret-Clermont [1997] commented:

> We noted another oversimplification in this first approach [the first generation]. Indeed the Piagetian bipolar model of knowledge building (subject-object) had been substituted by a primary tripolar model (subject 1-subject 2-object) [in the first generation] which, in fact, because of the new importance that we had given to the impact of the interaction between peers, risked an underestimation of the role of the object in favour of child 1-child 2 bipolarity. But when we started to take more explicitly into consideration the type of task set at the center of the joint activity (...) it became obvious that the object played a central role not only as a 'task' but also as a mediation permitting the specification of a system of social positions in which the adult is in a high position asking the questions. Formerly bipolar (subject-object; or peer-peer) the model becomes now clearly tripolar: questioner-questionee(s)-object and integrates the experiment as a constituent of the observation, (p. 271)

In this approach, the object does more than mediate between self and other; it is agentive, because it carries an *institutionalized history* which defines the positions of self and others and the situation. There is a move from the metaphor of a *mediational* triangle to a *systemic* triangle [Zittoun et al., 2007].

In a parallel development, Chapman [1991] also proposed his own systemic 'epistemic triangle' as an effort of reconciliation between the earlier and the later work of Piaget:

> Human knowing involves an irreducible epistemic triangle, consisting of an active subject, the object of knowledge, and (real or implicit) interlocutor, together with their mutual relations. Both the subject and the interlocutor have direct acquaintance with the object by virtue of their respective operative interactions with it, and they acquire knowledge of each other (and each other's experience) through communicative interaction. Further the ability of agents to communicate with each other by means of a semiotic system such as language allows them to exchange knowledge of the object as well as to coordinate their actions in cooperative action. (pp. 211–212)

Chapman [1991] suggested that operations develop not merely through the interiorization of operative interactions, but through the interiorization of the epistemic triangle as a whole (operative interaction is interiorized in the form of cognitive operations and communicative action in the form of semiotic mediation). This work also made theoretical links with Vygotsky's work as he saw semiotic mediation as the source of reflection and suggested that interpersonal communication by means of language provides children with the motive and the opportunity for coordinating these interiorized actions as a way of generating interpersonally valid justifications. Finally, Chapman redefined operational competence as the whole cycle of (a) conceiving a need to justify one's assertions in a manner independent of one's particular point of view, (b) using the co-ordination of cognitive concrete operations as a means of understanding the relations of necessity underlying an inference, and (c) constructing a justification on that basis, then the justification so constructed will provide appropriate evidence for the competence conceived. Unfortunately, Chapman died in the early 1990s and his very promising reworking of Piagetian theory did not become a full-blown empirical experimental programme to study the influence of social interaction on cognitive development.

The empirical work in Neuchâtel [Grossen & Perret-Clermont, 1994, 1997; Perret-Clermont et al., 1991; Schubauer-Leoni & Grossen, 1993] brought to light an additional set of theoretical constructs that arose from the researchers reflecting on the role and resistance of the specific objects discussed in social interaction and on their own role as adults in testing situations and the empirical investigation of *experimental* and *didactic contracts* as a way to understand the institutional context of social interaction. Contextualization of the triangle is achieved by an investigation of the cultural and institutional *frame* in which a given interaction takes place: the rules, roles, and expectations on which people draw so as to guide their conduct as the interaction unfolds.

This shift opened the way to better grasp the role of *expectations* of different forms of interaction in the context of the adult-child experimental situation. For example, in an experimental contract the experimenter and not the experimental subject is expected to pose the questions. There are expectations of who has the correct answer and who does not. These representations need to be worked out by a pupil

when faced, for example, with the questioning of a teacher. In order for the pupil to be able to formulate responses which are both cognitively satisfactory and relevant, that is, for such acts to be recognized as answers by the teacher, they need to be appropriately framed and organized within the given sociocognitive context [Bernstein, 1990]. Pupils interpret simultaneously social situations and tasks. They construct representations of their endeavours. All these elements recall the existence of *power games* in most interpersonal relationships. But above all they underline the role of knowledge as mediating the social relationship in the teaching situation, knowledge which presupposes (or bears upon) a system of non-interchangeable social positions. Relating to an object of knowledge implies relating to those who (re)present it and to the institutions that have set them in this role [Schubauer-Leoni & Perret-Clermont, 1997].

The research focus in this second generation of studies in Neuchâtel was an effort to open up the black box of interaction and the black box of the contextual expectations around interactions, that is, to attempt to analyse the communicative processes at work in the interactions among children and between children and experimenters. The empirical emphasis of these studies was on the microgenesis of meaning in the experimenter-child interaction in the pre- and post-test situations and the co-construction of context and intersubjectivity [Rommetveit, 1974].

If such questions are brought together with the questions of the first generation of studies, then a more complex but more realistic view of the dynamics of interaction in relation to internalization and interiorization begins to emerge. In its concern with the communicative demands of the situation, this second generation of studies began to explore questions of the contexts through which structures are articulated. In what can be described as a third generation of studies, the relationship between structure and context has become a focus for the research itself.

The Social and the Psychological in the Third Generation of Studies

More recent work can be described as a third generation of studies [Duveen & Psaltis, 2008; Grossen, Iannaccone, Liengme-Bessire, & Perret-Clermont, 1996; Psaltis, 2005a, b; Psaltis & Duveen, 2006, 2007; Schwarz, Perret-Clermont, Trognon, & Marro, 2008]. One of the central characteristics of this line of research was the systematic articulation of Doise's [1986] four levels of analysis in the study of cognitive development (intrapersonal, interpersonal, intergroup/positional, and ideological/social representational levels) while retaining the strengths of a structural analysis of Piagetian constructivism. This strand of research followed a systemic use of a triadic epistemology [Chapman, 1991; Moscovici, 1972] focused on the set of relations among subject-other-object in which structure and the context in which it is articulated need to be considered together. Operational structures remain central to an understanding of cognitive development, but their co-ordination is seen as being enabled and constrained by the social identities and social representations of a community. The culture of a community comprises tools, scripts, patterned practices, frames, institutions, and social representations [Duveen, 2007; Duveen & Psaltis, 2008] that in turn furnish positions of identity [Duveen, 2001]. These positions of identity are essentially expectations of triadic asymmetrical configurations of status between subject-object-other. They define triadic expectations of control over the

object, and thus of actions over the object and their co-ordination. For example, social representations of gender [Duveen, 1993] furnish positions of gender identity that imply a social marking of the material world (e.g., a toy car) in a way that this object is more likely to be controlled and acted upon by a boy than a girl. This position is compatible with Chapman's operational semantic theory since the set of operations is assumed to develop as the result of interiorization of action. The co-ordination of actions is the result of the resolution of sociocognitive conflicts the intensity and nature of which depend on the conflicting or aligned nature of asymmetries of status in interaction. This constructivist approach accounts for the dependence of reasoning on the content of a problem for the reason that action is tied to the particular content and context of interaction [Carpendale, 1999]. Language and semiotic mediation are important in this process in two ways: firstly directly, by signalling in communication in the form of different words who 'owns' or should 'own' the problem space of the object, thus regulating activity over the object, sociocognitive conflict, and co-ordination of actions and perspectives; secondly indirectly, because of the use of *symbolic resources* in the microgenesis, ontogenesis, and sociogenesis of social representations [Duveen & Lloyd, 1990; Zittoun, Duveen, Gillespie, Ivinson, & Psaltis, 2003]. Symbolic resources can be seen as cultural elements that mediate the representational work occasioned by ruptures or discontinuities in the smooth experience of ordinary life, moments when the taken-for-granted meanings cease to be taken for granted. This is the case when symbolic resources semiotically mediate moments of developmental transitions. As the child develops, we can observe changing forms of reflexivity, from the *non-reflective use* exhibited by children, through *becoming-reflective* among adolescents, to *reflective uses* by adults [Martin, Sokol, & Elfers, 2008; Zittoun et al., 2003].

This approach introduces new social psychological factors that are of crucial importance for an understanding of the dynamics of social interaction between subjects of different social identities over objects that can productively draw on social psychological theories of intergroup relations [Duveen & Lloyd, 1986]. Issues of status asymmetries become of central importance since each subject is situated in a matrix of symmetrical or asymmetrical social relations of varying possible categorizations (e.g., gender, age, ethnic origin, popularity, academic reputation, social class). The recognition of this fact produces a generative research programme where the role of more distant representational and ideological factors stemming from varying sources of diversity can be translated into an exploration of how conflicting and aligned expectations of control can constrain and enable the co-ordination of actions over cognitive problems, and thus cognitive development.

This third generation of studies differs from the second generation work in Neuchâtel in that the focus on the analysis of the interaction encompasses not only a concern with the institutional context, and in particular the character of the didactic (pupil-teacher), and experimental (child-experimenter) contracts; it also encompasses a concern with broader social representations [Lloyd & Duveen, 1990, 1992] and categorizations (e.g., gender, age, ethnic origin, popularity, academic reputation, social class). In this approach, there is an important shift from the classical Piagetian paradigm in which the child is considered as a purely abstract epistemic subject, towards a more concrete sense of the child as a social psychological subject who participates in socially structured patterns of communication within particular institutions and cultures. There is also an important shift from Chapman's [1991] epistemic

triangle, since he was not concerned with the framing of the epistemic triangle in relation to social identities and social representations. Methodologically, there is also a difference from previous work in that a form of *experimental ethnography* [Leman & Duveen, 1999; Psaltis, 2005a] is used that allows for the creation of aligned or conflicting asymmetries of status of varying categorizations, so that social interaction can be observed in a way that forms of interaction can be likened to cognitive progress of children taking part in pre-test/interaction/post-test designs.

For example, an important methodological innovation of the third generation of studies was introduced by Leman and Duveen [1999] which allowed for the influence of two dimensions of asymmetry (epistemic and gender) to be examined concurrently. This study utilized one of Piaget's [1932/1977] dilemmas from his work on moral judgment, but employed a design in which an asymmetry of knowledge (heteronymous vs. autonomous pre-test responses) was crossed with gender to produce four different pair types in the interaction phase: autonomous male with heteronymous female (Mf), autonomous male with heteronymous male (Mm), autonomous female with heteronymous male (Fm), and autonomous female with heteronymous female (Ff). In this way, an asymmetry of status related to gender was introduced into the design and its influence was clear. While generally the autonomous child was able to persuade his/her heteronymous partner in reaching a joint solution to the dilemma, the process was notably different when the autonomous child was a girl rather than a boy. This was particularly the case for Fm pairs, where the time taken to reach agreement was significantly longer, and the girls had to draw on a broader range of arguments to persuade their partners. Further, the conversational patterns were also distinctive. While the autonomous boys generally began the interaction with a straightforward assertion of the autonomous response in a way which left their partner little opportunity to question or challenge the assertion, autonomous girls more frequently initiated the interaction with an interrogative, asking their partner why they thought one of the children had been the naughtier, a conversational move which also had the effect of opening up the problem space to contributions from both partners. Thus, asymmetries of status arising from these children's social representations of gender could be seen to influence the framing of the conversational contract for the interaction, since the children, both girls and boys, had different expectations of a conversation and control over the object of discussion depending on the gender of their partner. Where status asymmetries were aligned with knowledge asymmetries, autonomous boys were able to frame the contract in terms of constraint, while when status asymmetries conflicted with knowledge asymmetries, autonomous girls were more likely to adopt a co-operative strategy. Similar patterns have also been reported in studies based on a conservation of liquid task [Duveen & Psaltis, 2008; Psaltis & Duveen, 2006, 2007] and a spatial rotation task [Psaltis, 2005b, using the village task described in Doise & Mugny, 1984]. There is also evidence that other sources of asymmetry between children, such as peer popularity or academic reputation, can influence the frame of the conversational contract for the interaction [Psaltis, 2005b].

Second, the third generation of studies also introduced a more molar level of analysis for communication within the interaction by distinguishing different types of conversation. Rather than analysing particular speech acts or sequential patterns of speech acts, this analysis considered the conversations across the interaction as a

whole, and differentiated four types in a study using the conservation of liquid task [Duveen & Psaltis, 2008; Psaltis, 2005b; Psaltis & Duveen, 2006, 2007]:

(1) *Non-conserving.* In a minority of cases (about 10%), the non-conserving child was able to persuade his/her conserving partner to agree on a joint response of non-conservation.

(2) *No resistance.* Conversations which began with an assertion of conservation by the conserving child to which the non-conserving child offered no resistance.

(3) *Resistance.* Conversations where the non-conserver offered an argument in support of his/her position at least once during the interaction.

(4) *Explicit recognition.* Conversations in which the non-conserving children gave some explicit indication that they had grasped the idea of conservation. While the non-conservers often began by offering some resistance to the conserver, in the course of the conversation they either came to formulate an argument for conservation themselves, or else gave a clear expression of an *aha moment* such as 'Oh, now I understand!!!', 'I see, you are right!!!'

One immediate advantage of considering this molar level of analysis is that it provides a clearer and stronger pattern of relationships between this feature of the interaction and the outcome for the original non-conservers on the post-test (clearer and stronger than for either specific speech acts or other individual actions within the interaction, or for the relations between the gender composition of the pair and outcomes). Progress on the post-test was observed for almost every child who participated in an *explicit recognition* conversation (89%), but never for those from *non-conserving* conversations. And while about half of the children who engaged in *no resistance* and *resistance* interactions made progress on the post-test, they did so without producing any novelty on the post-test. Indeed, novelty was almost exclusively observed in the post-tests of children who had participated in *explicit recognition* (73%). *Explicit recognition* therefore is the conversation type which was uniquely associated with the type of interaction which stimulates the reflection which leads to interiorization [Psaltis & Duveen, 2006].

As in most research in this area, it is the conserver who initiated the discussion [Doise & Mugny, 1984], but it is also instructive to consider the different styles of initiation. Some children adopted the more interrogative style described earlier; an important characteristic of this style is that the dominant child recognizes his/her partner as a thinking subject, thereby facilitating the establishment of co-operative relations based on mutual respect. In contrast, in the more assertive style, the conserver more or less demands conformity from his/her partner. In this style the other is recognized only instrumentally, as a necessary condition for fulfilling the requirement of the experimenter that the children reach an agreed solution. The dominance of the conserver here seeks to establish a relation of constraint founded on unilateral respect. In the absence of any recognition as a thinking subject, the non-conservers also find themselves excluded from the problem space. Initiating the conversation is, of course, a significant way of setting a frame, of proposing a particular positioning of self and other within a common architecture of intersubjectivity. Sometimes partners respond by accepting the terms of the contract offered by the conserving child, but sometimes they also challenge and resist the positioning suggested by the conserver's initiation.

Instances of each of the different conversation types were observed emerging from each of the different pair types. However, some conversation types were more

predominant in particular pair types. *Explicit recognition* was most frequently observed in pairs where a conserving girl encountered a non-conserving boy (Fm). This, of course, is the pair type where the two dimensions of asymmetry are most clearly conflicting. The asymmetry of status arising from representations of gender generate the expectation that the boy will be the dominant partner, while the asymmetry of knowledge puts the girl in the stronger position. These girls characteristically initiated the discussion using the interrogative style. In contrast, where the two dimensions of asymmetry were aligned together so that the more knowledgeable child also enjoyed a higher status (most characteristically pairs where the conserver was a boy and the non-conserver a girl, Mf), the conserver generally initiated the discussion in the more assertive style which was not challenged by the partner, generating conversations of the *no resistance* type. *Resistance* was more likely to emerge when a conserving boy interacted with a non-conserving boy (Mm).

As well as revealing this association between particular conversation types and progress on the post-test, this type of research also, therefore, illuminated something about the character of different types of interaction. Other studies have generated similar results using the village task [Psaltis, 2005b], and moral judgement dilemmas [Mollard, 2007]. To understand what is happening we need to recognize that these engagements between subject and other about a common problem take place within a field which is structured by a number of factors. There is, first of all, the experimental contract established through the pre-tests with each of the participants which frames the interaction between the children as a particular type of conversation. In this line of research it was also observed that preschool children and primary school children performed differently according to the social status given to the adult (teacher or lady coming to play with them). The infant children performed better in the play situation and the primary school children with the person introduced as a teacher [Iannaccone & Perret-Clermont, 1993; Schubauer-Leoni, 1990].

Social representations of gender also contribute something to the shaping of this field by providing the participants with a preliminary sense of the position of self and other, and the expectations associated with these positions. Other factors, too, may exercise an influence. Children may be more or less popular with their peers as playmates or as workmates, and children also carry with them their own academic reputations (which in part stem from their teachers' evaluations of their performance). This shaping of the field serves to establish an initial frame for the interaction, and some conversations simply flow along the lines of expectations set by this frame. In these circumstances, the positions of each partner remain constant, and this also means that control of the problem space remains unchallenged. In other cases, however, the tensions generated by the asymmetries within the initial shape of the field cannot be contained within the existing frame, and the conversation begins to flow along different paths stimulating a more creative engagement of both subject and other in relation to the common object of their discourse. It is in this movement away from the expected pattern of interaction that each partner comes to recognize the other as a thinking subject, and a relation of co-operation based on mutual respect can be established [Duveen & Psaltis, 2008].

Conclusion

What becomes visible through the progressive move from Piaget to the first, second, and third generation of studies is a continuation of the movement towards the contextualization of children's developing intelligence through an articulation of different levels of analysis [Doise, 1986]. In the first generation of studies, contextualization focussed on demonstrating the significance of social interaction for cognitive development, which, as Piaget saw, entailed the dissociation of the social and the intellectual which he had argued after the 1940s were identical. In the second generation of studies, children in the pre- and post-tests were observed to engage in a good deal of *cognitive* work to make sense of the setting, the roles, the status, the questions, and the tasks. Recognizing that all these elements are to some extent interdependent, these researchers proposed that while it might be possible to dissociate the social from the cognitive in experimental designs, they remain interdigitated in a complex architecture for the subjects engaged in interactions. At the same time, the sense of contextualization was also expanded by emphasizing the communicative demands of the situation, especially with respect to the didactic or experimental contracts structuring the interaction.

The third generation expanded the contextualization further by introducing considerations of the broader set of social representations as structuring the field of interaction. The movement towards considering the broader context of children's intellectual development also brought with it a shift in the conceptualization of the child as a subject. For Piaget, the child was always considered as an epistemic subject, a centre of operative activity abstracted from any particular context. The stronger the sense of context became in ensuing research, the more the child became a concrete presence, a social actor with his/her own beliefs and affiliations, hopes and fears, anxieties and insecurities, certainties and their passions. No longer simply an abstract and isolated epistemic subject, the child has now become a social-psychological subject engaged in triadic relations with other social-psychological subjects and their common objects. The field of social relations in which children discuss a common problem with one another is a field that structures and is structured by these triadic interactions. As we have seen, this structure of social relations can act as a constraint, which limits the opportunities for reflection (and reciprocally, reflection might affect them). But where the conversation escapes from the initial social expectations set by the field, there is also the possibility of more creative engagement between subject, other, and object – an engagement which can provide the possibility for creation and later interiorization of new cognitive resources opening the way for new perspectives of development.

To return to our argument in the introduction, we hope to have offered in this paper an integrative perspective towards the achievement of reconciliation of structure and context in the development of intelligence. While all thinking may be structured through operational forms, it is also the case that all thinking takes shape within the specific contexts of particular cultural locations which exercise their own constraints both on its construction and its expression or communication. The increasing contextualization from the first to the second and third generations of study, and the changing conceptualization of the child from an epistemic to a social-psychological subject are also associated with a changing sense of operativity itself. Operative structures are no longer considered as abstract logical entities but as man-

ifesting in a psychological reality when relied upon to think within specific contexts. The operational structures which provide an understanding of conservation can still be described in terms of Piaget's logic of groupings but, just as with discourse or food, they become accessible through actions within particular contexts. In this sense, we can speak of operativity-in-context and we might, in the future, have to consider the reliance on sets of operations as patterned organizations of epistemic activity constrained by a variety of sources of asymmetry of status (gender, age, ethnic origin, popularity, academic reputation, social class, inter alia).

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