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# RECONCEPTUALIZING INTERNALIZATION

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ABSTRACT. Internalization is a familiar notion in many developmental theories. It is an especially important concept in sociocultural theories that emphasize the role of social interaction and dialogue in the development of human forms of cognition. The metaphor of internalization suggests that social relations are an 'outside' and minds an 'inside' of developing children. We explore why this metaphor is appealing and explain where we feel it is misleading. We argue that thinking in terms of internalization risks conflating logical and empirical relations between social and psychological phenomena, including construing relations in definition as relations of containment. Our appeal to 'definitions' and normative standards leads to an evaluation of explicit versus implicit rules. The intrinsic constraints that implicit rules place on development are discussed and an evolutionary epistemological conception of cognitive development is described.

Interest in the idea of the dialogical self (Hermans, 2002, 2005; Hermans & Kempen, 1993) and the dialogical mind (Fernyhough, 1996) raises questions about the nature of development and dialogue. Such approaches share the view that some aspects of the psychology of individuals are relational in origin. That is, individuals' minds, selves, or persons are in some sense 'socially constituted'. In other words, "Whether or not you are social in the sense of sociable, you are social ontologically (at least in a major way)" (Bickhard, in press, p. 29). In this paper, we focus on a specific articulation of this general thesis: theories of the dialogical mind. Internalization is a core metaphor for such approaches, a means through which social and psychological phenomena are related. The goal of this article is to examine the metaphor of internalization, and to describe the relations between development and dialogue in less metaphorical terms.

The idea that thinking has its roots in interpersonal dialogue has a long history, dating as far back as Plato. Recent approaches draw upon the works of Vygotsky (1934/1986) and Bakhtin (1981, 1986) (e.g., Fernyhough, 1996), although the same

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point is there in Piaget's (1923/1959, 1924/1928) early work, inspired by Janet (Carpendale, Lewis, Susswein & Lunn, in press). Many developmental theories involve some notion of 'internalization', although these views can differ radically. Social learning approaches (Aronfreed, 1969) assume that internalization involves the transmission of rules that are imposed upon, and eventually adopted by children, resulting in internal control over behaviour. This view contrasts with the view that the internalization involves transformation rather than transmission (Lawrence & Valsiner, 1993). For Vygotsky (1981), the sociality of higher mental functions is characterized as the "conversion of social relations into mental functions" (p. 165). According to Vygotsky, "it goes without saying that internalization transforms the process itself and changes its structure and functions" (1981, p. 163). In Leont'ev's (1981, p. 57) words, "the process of internalization is not a transferal of an external activity to a preexisting, internal plane of consciousness: it is the process in which this internal plane is formed". Rather than stamping social influences into a blank slate, Vygotsky insisted that internalization involves the creation of a specifically human mental plane. However, if 'internalization' is meant to indicate 'transformation' and 'creation', we have to be careful not to confuse internalization, in the ordinary sense of 'drawing into' or 'coming to contain', with this other metaphorical use of internalization.

For Vygotsky (1978, p. 57), "the internalization of socially rooted and historically developed activities is the distinguishing feature of human psychology, the basis of the qualitative leap from animal to human psychology". However, he goes on to state that, "as yet, the barest outline of this process is known." That is, Vygotsky acknowledged that 'internalization' names a phenomenon of interest but does not explain it. We suggest that adopting the metaphor of internalization may actually impede further elucidation of the very relational phenomena that Vygotsky brought to light. Internalization seems to follow from the view that human forms of cognition develop through social interaction or dialogue specifically. If social activity is conceived of as 'outer', and psychological activity as 'inner', then it might seem natural to characterize the relations between social activity and cognitive development as involving a process of 'internalization'. In this article, we explore the metaphor of 'internalization' and the related intuition that certain forms of human thought depend upon dialogue and social interaction more broadly. We argue that social practices including dialogue *define* as well as causally affect cognitive development. In our analysis of these definitional relations, we distinguish between explicit and implicit rules, and finally outline an alternative evolutionary epistemological view of development (Campbell, 1974, 1987).

## Internalization

The notion of 'internalization' is widely used and is not unique to relational theories of development. For example, in the cognitive neuroscience literature, Moll, Zahn, de Oliveira-Souza, Krueger, and Grafman (2005) argue that the prefrontal cortex "has a central role in the *internalization* of moral values and norms" (p. 804, italics added). In some cases, 'internalization' may seem like a harmless synonym for 'learning'. However, in other cases it is used more as a formal model of cognitive development. It is this second use of the term that we view as problematic (for related concerns see Josephs, 2003, p. viii). Succinctly, when "the line between the metaphorical and the literal becomes blurred…what begins as an explanatory aid often becomes thought of, whether intended or not, as a technical concept" (Slaney & Maruan, 2005, p. 154). The claim that development involves the 'internalization of dialogue' requires an explanation of what is meant by this metaphor. As discussed earlier, explanations of what is meant by 'internalization' typically involve the notions of transformation, creation, and co-creation. It is not clear that the metaphor of internalization helps to explain these processes. Wertsch (1993) has argued that the term internalization should be abandoned and replaced by the more judicious term 'mastery'. We aim to expand upon this idea in the second part of this article.

Why is the metaphor of internalization so uncritically accepted? Perhaps because our common-sense conceptual system is subtly but deeply metaphorical (Lakoff and Johnson (1980/2003, 1999). The metaphorical nature of phrases such as 'hard times,' 'hot tempered' and 'deeply metaphorical' is almost invisible because their meanings are so transparent. Another familiar metaphor is the 'container' metaphor, which has two main interrelated uses: (a) a "tendency for people to conceive of physical entities as being enclosed (or *contained*) within a larger, non-physical structure"; and (b) to think "of non-physical entities as being enclosed within a physical structure" (Slaney & Maraun, 2005, p. 166). Examples include such conventional phrases as thoughts '*in* one's head' or feelings '*in* one's heart' in which a non-physical entities (thoughts and feelings) are conceived of as being contained by a physical entities (heads and hearts, respectively); and being engaged "*in* dialogue", in which physical entities (persons) are conceived of as conversing within a non-physical structure (dialogue). It may be objected that it is persons as *psychological* rather than *physical* entities that engage in dialogue, and that it is better to say that persons enact or instantiate dialogical structures than to say that they are 'contained within them'. Our point is that the notion of being 'in dialogue' is a familiar phrase *despite* these logical complexities.

It seems fine to say that human beings communicate *in*, or through, dialogue. The metaphor is harmless here because it just means that dialogue is a very important human activity. More broadly, it is common to think of individuals as entities within social and cultural structures or contexts, and to think of minds as the socioculturally shaped interiors of persons. However, 'internalizing dialogue' seems to involve a shift

from the first to the second sense of the container metaphor, which is not ordinary in the sense that talk of, for example, doing arithmetic 'in one's head' is. The notion of internalizing dialogue suggests that participating *in* dialogue causes certain of children's 'internal' cognitive[1] abilities to become dialogically-structured. This view can be caricatured as asking how social activities get inside psychological phenomena, an unfair but illustrative depiction. It is perfectly ordinary to ask someone, "What do you have in mind?" It is not ordinary, though, to ask if, or how, children internalize dialogue; that is a request for a theory of development. If we unwittingly expand ordinary metaphorical language into theorizing, relational and developmental processes may be misconceived. We can think to ourselves, "on the one hand X, but on the other hand Y." Yet, this does not mean that thinking is two-handed; that is obviously concrete thinking. We think that the metaphor of 'internalization' has become similarly calcified.

## Internal and external

Starting from the intuition that there is something inherently social and linguistic about certain forms of thought, the container metaphor paradoxically suggests that there is something social *in* individuals. However, there is a difference between claiming that human beings *are* social and claiming that we have something social *inside* us. Social cognitive abilities are *individuals'* abilities, although their existence presupposes interaction with others. Because dialogue is such an important form of social interaction and an important context for development, we might also think that cognitive development involves getting some traces of dialogue into individual minds. But it is helpful to examine the convention of conceiving of cognitive abilities as 'internal'. We speak so casually about the inner and the outer in psychology that it is easy to forget that it is a metaphor. The container metaphor is often used to convey logical relations, as, for example, in Bennett and Hacker's (2003, p. 86) paraphrase of Frege's (1956) remark that "you can't have my pain and I can't have your sympathy". Yet, it is subtly metaphorical to say that we can never really look inside another's mind or get inside their skin. This just means that no person can have someone else's experience, a logical truth, not an engineering problem. Pain can be *in* a body part and sympathy might result from having a friend's suffering *in* mind. But the 'ins' are different. Perhaps part of the appeal of the idea that thoughts and feelings are inside persons is due to the fact that we can often conceal what we think and feel. However, concealing what we think and feel does not involve hiding those thoughts and feelings in a vessel, as a birthday gift might be hidden in a drawer.

The container metaphor of 'internalization' may be used to express causal relations. For example, an ex-patriot noticing that she has 'internalized' some of the

[1] For ease of comprehension, we will use the term 'cognitive' as is conventional, to refer to both intellectual and volitional abilities (see Kenny, 1989). Although this obscures some important distinctions, such distinctions will not be explored in this paper.

values of her new culture describes the *effect* of living in a new place. It may also be used to express logical relations, as in the intuition that there is some trace of social relations in individual thought. To clarify the distinction we are drawing between causal and logical relations: A man's marital status determines or defines whether or not he is a bachelor; this relation is logical. If this man has such objectionable body odor as to drive away all would-be wives, his odor causally determines his marital status (Susswein & Racine, in press). It seems that Vygotsky described *both* logical and causal relations when he wrote that "the internalization of socially rooted and historically developed activities is the distinguishing feature of human psychology, the basis of the qualitative leap from animal to human psychology" (1978, p. 57), and "the child's system of activity is determined at each specific stage *both by the child's degree of organic development and by his or her degree of mastery in the use of tools"* (p. 21, italics in original). According to Vygotsky, the higher mental functions are determined both by individual biology and mastery in the use of signs. Here, 'determine' means both 'define' and 'cause'. But it is essential to distinguish between them. It is patently nonsensical to claim that a man's being unmarried causes him to be a bachelor. A man's being unmarried and his being a bachelor are not related as cause and effect—they are synonymous and related by definition. However, not all logical relations are as easy to spot as synonymy.

It may be helpful to employ a technical, philosophical variant of the container metaphor, and distinguish between internal, or conceptual, and external, empirical relations:

> Internal relations are those relations that are intrinsic to the nature of one or more of the relata. They are a kind of essential relation, rather than an essential property. For example, an arc of a circle is internally related to the center of that circle in the sense that it could not be that arc of that circle without having that relation to that center of the circle (Bickhard, 2003, p. 101).

Internal relations, such as between 'bachelor' and 'unmarried man,' contrast with external relations expressed by statements, such as "her words caused me to reconsider my views on the issue." Relations in meaning are internal; relations of cause and effect are external.

It seems clear that there are causal relations between social interaction and cognitive development. Human infants do not survive, never mind intellectually thrive, without sufficient social interaction, which would seem to necessarily include some amount of dialogue in later years. Developmentalists have also documented early forms of interaction that have been described as dialogue, or proto-dialogue, in infant development (Trevarthen, 1977, 1979; Stern, 1985; Fogel, 2002). Any possible effects of experiencing enriched or impoverished dialogues on cognitive development would

constitute external, causal relations between dialogues and minds. Variation in early social interactions may explain *why* some infants develop certain skills earlier or better than others. The relations between biological development and cognitive abilities are also causal, but different. A functioning brain is a *causal precondition* for the development and exercise of such cognitive abilities as engaging in dialogue. Specifying causal preconditions of a particular ability helps explain *how* an organism does what it does, or possesses the ability it possesses. Neuroscience literally seeks to explain cognitive activities by reference to what is inside persons although, as shown above, the metaphor of internalization is often uncritically adopted in this literature as well. Nevertheless, it seems clear that that both biological structures and social interaction play causal roles in the development of cognitive abilities. Such external relations between brain, mind and dialogue would be described through empirical investigations.

In contrast, characterizing the internal relations between dialogue and mind requires conceptual investigation. This involves considering *what* we mean by, among other things, 'thinking' and 'mind', i.e. what activities *count as* thinking, and having a normally functioning human mind. We think that this division of labor between *why, how,* and *what* questions (an elaboration of Dupré, (1993) helps to clarify Vygotsky's idea that higher mental functions are 'semiotically mediated'. For mastery in the use of signs, and more generally, of social practices, is what *defines* many distinctly human cognitive abilities. For example, losing or failing to develop the ability to engage in reasonably fluent dialogue would be considered to be a serious mental pathology[2]. The ability to engage in dialogue is an important criterion for having a normally functioning human mind. Like the mutually co-defining arc and center of a circle, our ordinary notions of (human) mind and dialogue are internally related. Part of what it means to have a properly functioning human mind is that one has the ability to engage in dialogue. A striking difference between humans and other species is that we speak a natural language. We ask questions, offer explanations, request justifications and clarifications, and so forth. These activities constitute specifically human forms of thought. Köhler's apes may have been able to solve problems, but they did not explain to their trainers how they approached the problems (Köhler, 1925a, 1925b). That is, although many species act in ways which count as thinking, many forms of human cognition require language.

Certain of individuals' cognitive abilities are ontologically dependent upon the use of signs. For example, the ability to add presupposes the existence of the sign system of numbers. But there are also abilities which seem more removed from the use

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[2] To be clear, the ability to engage in dialogue conventionally is not the only criterion of having a mind. A person suffering from aphasia who could communicate with gestures would partially fulfill both the criteria of participating in dialogue and of having a functioning human mind. Furthermore, non-language using beings can fulfill other, non-dialogical behavioral criteria of having a mind.

of signs, such as understanding how close to one's conversational partner one ought to stand. Such an ability is defined, not by the explicit rules of a formal sign system, but implicitly by social practices. The possibility of understanding such social conventions presupposes some standard of what counts as 'too close,' even if few competent conversationalists would be able to explicate that standard in measurement terms: for example, when talking to strangers keep a distance of 4 to 12 feet between the two of you, but 1.5 to 4 feet is fine if you're talking to good friends (Hall, 1966).

We might call these 'practical definitions': definitions in deeds rather than signs. The situation is even more complicated for such cognitive abilities skills as perspective taking abilities, as there both verbal and non-verbal criteria for 'understanding perspective'. One criterion for understanding perspective is correctly describing what another person could and could not see in a given situation. However, this is not the only criterion. For example, in competitive situations there is evidence that chimpanzees know what conspecifics have seen. A subordinate chimpanzee will take food that a dominant has not seen, but will not take food that the dominant has seen (Tomasello, Call, & Hare, 2003).

There are logical relations between social practices and psychological phenomena. However, the relations are not representational nor are they of similarity. To say that individual intellectual abilities bear some structural similarity to dialogue or other social phenomena understates and obscures the relation between psychological and social phenomena. Adults and older children do have the cognitive ability to represent dialogue in the sense that they can imagine dialogue or describe a conversation between two people. Furthermore, they might be able to draw a picture of two persons having a dialogue, and such a pictorial representation of dialogue would bear a structural similarity to the social practice of dialogue. However, it is not clear that the *ability* to engage in, describe, or illustrate a dialogue has any sort of 'dialogical structure.' Nonetheless, a structural *sameness* relation between social interaction and individual thought is often tacitly assumed. Fernyhough (1996, p. 48), for example, argues that Vygotsky-inspired sociocultural approaches to mind are partially defined by, "the assumption that the higher mental functions have their origin in and, therefore, share important features with interpersonal activity". This 'therefore' is tricky. That X causes Y does not entail that Y shares important features with X. If one assumes a process of internalization, it might seem natural to suppose that "higher mental functioning involves…an internal version of the interplay of perspectives that takes place between individuals on the external plane" (p. 51). However, clarifications which follow hinge upon explaining how this internal interplay is *different* from real-world dialogue.

We sometimes think in the form of imagined dialogues, and an ordinary example of the container metaphor is to think of such thoughts as taking place "in our minds". When we imagine conversations, we might say that there is a structural

similarity between our thinking and social activity. But we do not always think that way. This fact strains theories that assume a more generalized sameness relation between thought and dialogue. For example, Fernyhough (1996, p. 48) qualifies his claim that, "the higher mental functions share important features with interpersonal activity", by explaining that throughout development, dialogical thinking is abbreviated so that the process of internalized interlocutors comparing and contrasting perspectives on a given topic no longer takes place sequentially, but simultaneously; "Dialogue…does not always manifest the temporal patterning of conversation" (p. 52). Moreover, there is not "any necessary structural resemblance to the 'give and take' of conversation" (p. 52). Furthermore, dialogical thinking takes place without any actual speakers:

> Another way in which the dialogic higher mental functions extend beyond conventional notions of verbal thought as a "conversation in the head" lies in the extent to which the dialogue is abbreviated…a continuous process of syntactic abbreviation, particularly the development of "predicativity" (whereby the "psychological subject" of an utterance is gradually eliminated, while the "predicate" is preserved) (Fernyhough, 1996, p. 52).

Consequently, dialogical thinking bears no similarity to "a conversation in the head". It is not sequential, and involves no speakers. So it is not clear how dialogical relations between persons are reproduced in such a form of thinking. Rather, it seems that intuitions regarding internal, definitional relations between mind and dialogue are dealt with by proposing that the minds inside of individuals are dialogical in nature. We see this as illustrating how good ideas can get trapped in the container metaphor.

'Internalization' was intended to denote a process of transformation, especially through dialogue and interaction more generally. We have argued that conceiving of a transformation in abilities as an 'internal' transformation is a potentially misleading consequence of employing an ordinary language container metaphor. So how should we characterize this transformation? What is dialogical or more generally social about this transformation? Almost all theorists would accept that social interaction plays an important role causal role in development. However, in, for example, modularity or information processing approaches to psychology, dialogue is essentially viewed as triggering or as providing inputs to computational processes. Although these approaches may conceive of dialogue as necessary for cognitive development and certain forms of cognition (e.g. 'understanding an utterance'), they fall far short of a 'dialogical theory of development.' They fail to account for the intuition that that there is something deeply, or essentially dialogical or social about cognitive abilities. It seems that we are looking for a relation that is stronger than necessity. Might it be 'necessity plus sufficiency'? Does it help to claim that dialogue is necessary and sufficient for higher mental functions? Probably not, as it is clear that biological factors are part of the

complete *casual* story of cognition. So perhaps what seems missing from non-relational accounts of development are not more or stronger causal relations, but a different type of relation entirely.

It is the logical relation of 'definition' that explicates the intuition that there is something essentially dialogical or social about cognitive development and cognitive abilities themselves. Transformations in relations with the other persons are what *constitute* such important developmental achievements as forms of perspective taking. And it is the exercise of social cognitive abilities that defines those abilities. For example, gaze following is a primitive form of the family of actions which *count as* 'understanding attention' (Susswein & Racine, in press; Racine & Carpendale, in press). Being able to report what another person can and cannot see is a criterion for 'understanding perspective.' Stating that a person will look for something where she last left it is one criterion for understanding false beliefs (Wimmer & Perner, 1983). Voluntarily sharing a cookie with a playmate is a criterion for 'understanding sharing'. And so on. How is that we assess whether or not a child has 'internalized' a concept or value? We assess her actions in the real world. The convention of describing cognitive abilities as 'internal properties' should not obscure the fact they are *defined* by 'external' actions and interactions. Furthermore, even if we persist in describing experience as involving an 'inner world', it is clearly not the quality of a person's *experience* of, for example, doing addition 'in their head' that determines their level of skill at it. A person's skill at arithmetic is independent of whether or not they enjoy calculating sums. And although it surely possible to compute a sum 'in one's head' without reporting the results in a particular case, the existence of calculating depends upon there being a *general* standard of what counts as correct or incorrect. Now, it is not clear that there is something dialogical or social about *all* cognitive abilities. For example, searching for a hidden toy beneath a blanket constitutes understanding object permanence and it is not clear that this ability is dialogical or social in an important way (Piaget, 1937/1971). Nevertheless, many if not most of the cognitive abilities that we are interested in—to play games, to obey commands, to reason about others' thoughts and feelings and express one's own—are defined by social and often more specifically dialogical practices.

Although it is not our focus here, we note in passing that this same analysis can be applied to the notion of a dialogical self as well. What we call self-awareness is largely a matter of being able to distinguish between our own and others' movements, predict one's effect on others and, later compare oneself to others. It not an ability to perceive dialogically structured 'inner' entities qua thoughts and feelings. Thus, rather than a dialogical self being constituted by internalized others, we might say that what is social or dialogical about selves is that self and other are internally related—mutually co-defining, like the arc and center of a circle. Human selfhood is tied up with human sociality, because we *are* social, but not because there is something social 'inside us'.

We have questioned the metaphor of internalization as an explanation for the development of higher mental functions and argued that individual abilities are relational or social in the sense that they are defined by social practices, and 'semiotically mediated' to the extent that they are defined by fluency in the manipulation of signs. In contrast, the metaphor of 'internalization' suggests that development entails getting interpersonal relations into the relata of individual persons. If, in Geertz's picturesque terms, "mind extends beyond the skin" (1973), the container metaphor is inadequate to express this idea. If minds are in some sense dialogical or relational, then they cannot be self-contained. In the following section we outline an alternative, mastery-based account of dialogical development. This requires an examination of the process of mastering rules, and evaluating explicit versus implicit conceptions of rules.

## Internalization as Mastery: Rules as selection pressures [error detection] on 'higher mental functions'

Dialogical accounts of human psychological functioning focus on how the social environment affects the development of children. Evolution also focuses on the relationship between an organism and its environment, and it is sometimes helpful to compare the process of development to that of evolution. As well as the parallels between evolution and development, there are differences in how these two processes are typically, although uncritically, conceptualized. Non-relational developmental theories typically focus on the individual, and although the environment is acknowledged as a source of individual change, it is conceived of as a relatively static context upon which the individual actively confers meaning. Evolutionary theories, in contrast, typically focus on the environment as being the sole determinate of change in a species. The environment is viewed as imposing selection pressures (environmental demands that organisms must satisfy if they are to survive and reproduce) or constraints, upon individual organisms that passively acquiesce to the process of natural selection.

Human development involves both an active child who constructs meaning, and an environment of selection pressures that constrains the child's activity. Moreover, as social environments predate the children who are born into them, the selection pressures in the social environment take precedence over the activity of the child in guiding the trajectory of his or her development. Although there are reciprocal effects between a child and his or her social environments, for example, with parents adjusting their communication style to accommodate the temperament of their child, it is unlikely that such accommodations by the social environment would extend to the child's learning of social conventions, such as language. It may be true that as adults we can negotiate with others regarding the social conventions in which we mutually participate, but such negotiation presupposes prior conventions that allow us to reach agreement. That is,

before children can reciprocally influence social and cultural conventions or rules, they must first learn those conventions or rules as understood by the people already engaging in those conventions. Otherwise, children will be unable to enter into negotiation with those persons already engaged in those conventions, and therefore, will be unable to reciprocally influence those conventions through their participation. For this reason, outside of the immediate family context, social environments and conventions predate the children born into them and who will later learn to interact with them. Only after children have first mastered the selection pressures in such social environments do those environments become amendable to reciprocal influence by the children; to break the rules one must know first what they are. An adequate developmental account of the relation between social and psychological phenomena must address how children succeed in mastering the selection pressures in their social environment.

To clarify the relation between social and psychological phenomena, consider for a moment an analogous example of the relationship existing between the trait of an organism and its environment: the wings of a robin. They have a structural-functional makeup that allows the robin to fly. The relation between the structural-functional makeup of the robin's wings, and the air through which the robin flies, is definitional in nature, not causal. The wings are not an effect of the air through which the robin flies. That is, the air in the environment of robins did not cause them to have the wings that they do, but rather defined a set of selection pressures (principles of aerodynamic flight) that individuals in the species were required to meet if they were to enhance their survival through the capacity for flight. The wings of robins and the air through which they fly are related in the sense that for robins to fly their wings must conform to the requirements of the environment, but the environment does not select or determine the specific physical instantiation of their wings, only that for an organism to fly its functioning must accord with the interactive, aerodynamic demands of the atmosphere. For example, butterflies, robins, and bats can all fly because the species specific instantiation of their wings accords to the same aerodynamic principles of flight; penguins, however, have wings but as their wings do not accord with aerodynamic principles they cannot fly. "From this perspective, the fitness [of a trait] is *not* seen as an objective function to be optimized, but as an *expression* of environmental requirements" (Eiben & Smith, 2003, p. 16, italics added). More simply stated, this scenario is akin to when a boss tells an employee, "I want it done now, and I don't care how you do it." What is 'done now' is an outcome, in this case successful flight, and 'how you do it', in this case the specific structure of a bird's wings, is unimportant so long as it 'gets the job done'.

Although it is a common short-hand to speak of the environment as a causal factor in evolution, as in the environment of robins 'caused' them to have the wings that they do, this is potentially misleading. The evolutionary success (fitness) of organisms is defined in terms of reproductive success. This necessarily entails that the organisms

have managed to survive up to that point in time. To survive organisms must maintain the continuity of their life processes in the face of environmental perturbations that may potentially undermine that continuity (Maturana & Varela, 1987). Evolution is the process by which organisms adapt over time to such perturbation so that they maintain the continuity of their life processes. That is, the adaptiveness of a trait is indexed to the ability of that trait to contribute to the maintenance and continuity of the organisms' life processes; it is *not* indexed to the environment, nor is it a representation of environmental perturbations (Christensen & Bickhard, 2002). The reason for this is that given the organism as the point of reference (*not* an observer watching the organism), what defines death for an organism is the break down of the continuity of its life processes (Maturana & Varela, 1987). Environmental perturbations, by undermining the life processes of organisms, do not specify what traits organisms will evolve in response. This is because the context that defines a trait as adaptive is the prior organization of the life processes of the organisms (Christensen & Bickhard, 2002). How the life processes of organisms are organized is independent of the physical environment with which they interact. This organization is not an isomorphic representation of environmental perturbations, as if the environment causally impressed organization into organisms. The environment does not cause this organization, as such organization is caused by its own internal self-organizing dynamics, and which is arranged in such a way that the organization maintains its own continuity and reproduction (Christensen & Bickhard, 2002; Maturana & Varela, 1987). The environment does, though, implicitly define the parameters in which such organization can take place (Bickhard & Campbell, 2003). That is, the environment constrains and limits possibilities of organization, but does not 'cause' such organization. Selection pressures, therefore, define a space of possible organization that will lead to outcomes of survival and reproductive success, but are not efficient causes of that organization; "'Nature selects for outcomes,' and is indifferent to how they are achieved" (Lehrman as cited in Griffiths & Gray, 1994, p. 279).

What then does any of the preceding have to do with the social or dialogical development of mind? This: What makes 'higher mental functions' inherently social is that community standards of correctness *define* what performances by a child will count as possession of the higher mental function 'X', much in the way that evolutionary environments 'select' what mutations will ultimately count as adaptive for an organism in those environments. Human cognitive development includes mastering social conventions involving normative standards of correctness and the use of language. Such mastery involves following routines, obeying rules, observing social etiquette, coming to agreement and disagreeing, etc. It does not necessarily involve representing those routines, rules, and conventions, however (Bickhard, 1980). Cognition is not 'about' rules (excepting cases such as in this article, in which we are thinking about social conventions), just as the wings of a bird are not 'about' the principles of aerodynamics.

Rules delineate boundaries in the social environments in which children interact. The cognition of children is negatively (as in a negative of a photograph) or implicitly defined by the social rules and conventions with which they interact.

To presuppose that the ability to act and interact consists of representations that permit actions and interactions begs the question as to why it is that DVD cases do not know anything about the contents of the movies they contain, although the cases contain an impression, a representation, of the video disc. The reason DVD cases have no knowledge of their contents is because they do not perform any actions – they do not *do* anything. We take the philosophical position that knowing is grounded in activity, not in representations (Bickhard & Terveen, 1995; Brooks, 1991, 1995; Bennett & Hacker , 2003; Maturana & Varela, 1987; Piaget, 1970/1971; Varela, 1995); "Knowing is effective action, that is, operating effectively in the domain of existence of living beings" (Maturana & Varela, 1987, p. 29). *Possessing* abilities differs from *containing* them. Possession entails an agent, containment a vessel. Representations cannot contain their own meaning, as representations are not vessels, and meaning is not an object. The meaning of a representation is the logical relationship between the representation and the original object presented (Bickhard & Terveen, 1995; Campbell & Bickhard, 1986). However, only an epistemic agent with access to both the original presentation and the representation can actively construct such a connection and know that it is in place. This necessarily defeats the purpose of epistemic agents containing representations, for the whole point of having them was to grant such agents knowledge of the world. Thus, conceiving of knowledge as the containment of representations presupposes what it is meant to explain (Campbell & Bickhard, 1986).

To clarify this point, consider a tourist in a foreign country. The tourist as epistemic agent, exists independently from the society with which she interacts on her holiday. In contrast, children's epistemic agency develops in the context of their native culture. Good tourists prepare themselves for such encounters by learning the language, customs, and social norms of the country before they set foot off the plane. That is, they prepare themselves to able to interact with others in the society they are about to visit. The notion that development involves internalizing the rules of society, or patterns of social interaction, has something in common with this tourist view, as if learning how to act and think reasonably consisted in building models of reasonable dialogues. However, children develop, or evolve, their cognitive abilities within the relations and interactions they have with people in their immediate social environment (Bibok, Carpendale, & Lewis, in press; Carpendale & Lewis, 2004, 2006). They do not, as epistemic agents, precede the social environment in which they interact. Children come to implicitly understand social rules as they develop within their societies. In the context of the tourist, at least some of the social rules acquired are explicitly understood by the tourist.

It helps to conceive of social rules as standards of error and well as of correctness—they define when the social conduct of a person is in error or not. As children develop, their conduct is guided or channeled by these rules. This does not require, though, that children explicitly understand such social rules to engage in social conduct (Bickhard, 1980); that is the job of the tourist. Rules select for, or define, what counts as outcomes of successful social interaction; rules do not select for a specific instantiation of the cognitive processes that lead to successful outcomes of social interaction. Instead, rules define a class of parameters to which a given cognition must accord with in order to be successful, *but do not* determine the structure of that cognition or how it satisfies those parameters; "system organization cannot be passively imposed from the environment—it must be constructed from within" (Bickhard, 1992b, p. 34).

The question is though, how do children ever learn all of these implicit rules? The implicit rules in this case are standards of error, whereas for the tourist the explicit rules are standards of correctness. The tourist matches her conduct to the rules and knows that she is greeting strangers in the culturally correct way. Even the rules for what not to do in the foreign country are also explicit, in that she compares her lack of conduct to the rules in the travel guide and is correct for not having done that behaviour. But children growing up in a society, with the exception of explicit instruction, do not have explicit rules against which to compare their behaviour; they do not have Fodor's Travel Guide to Local Folk Psychology.

In cases in which social rules are implicit, the feedback children receive during social interaction (i.e., faux pas) implicitly defines a possible logical class of potential conduct that would be considered to lead to successful interaction and the achievement of shared social goals. With continued feedback, children will vary and modify their conduct in order to continue successfully interacting with others. This can occur in one of two ways: by reasoning or learning. In instances where children are able to predict the outcomes of their conduct, they can be said to have engaged in a process of reasoning about knowledge already known rather than a process of learning something new. However, in instances where children are developing social understanding beyond their current ability, reasoning is insufficient. Instead, given their current level of understanding, children must experiment and vary their conduct, with no guarantee that any of those variations will be successful. As children are learning to interact socially they necessarily will be blind to the potential outcomes of any new conduct variation they perform (Campbell, 1974); to state otherwise presupposes a circular prescience: children would be trying to learn that which they already know (Bickhard, 1992a).

In instances of learning, variations in social conduct that are successful in meeting the requirements of the selection pressures of social rules will be retained and carried forward to future social interactions (Campbell, 1974, 1987). With each successive retention of some mode of conduct, the capacities of children for social

interaction increases as the mastery of new social rules builds upon previous successes in a recursive manner (successful conduct is not merely accumulated, but fed back into the process of conduct variation) (Bickhard, 1992b). Concurrent with this process, each prior success imposes intrinsic constraints upon the possible future constructions of the child (Christensen & Bickhard, 2002); that is, to be successful, each new construction must accommodate and be internally consistent with previously acquired knowledge. Such intrinsic constraints foster development by channeling or guiding the next round of variation and selection, thereby conferring directionality and order upon development. Consequently, with each retention of a new form of conduct, the problem space that children face of having to coordinating their activity with those of others becomes progressively smaller (Bickhard, 1980). Moreover, as children learn to combine different modes of conduct in new ways, the net result is a combinatorial explosion whereby children's capacity to engage in social interaction increases exponentially; learning to engage in social interaction is not additive in nature. Although children do occasionally receive explicit rule instruction from their parents, such as, "look both ways before crossing the street," most of our rules are implicitly known and never verbalized. Perfect examples of such implicit rules are social space and eye contact during conversations. Many people have had the uncomfortable experience of talking to someone from a different culture and discovering that he or she either stands too close or too far away from oneself, and may or may not maintain what we consider appropriate eye contact. Such rules though are not explicitly taught to children, at least to the best of our knowledge.

The conduct of children does not reflect an explicit understanding of these rules. Children are unaware of the existence of such rules; their cognition does *not reproduce* by these rules, but *accords* with these rules. Because implicit rules are defined in terms of error, they exercise their effect on children's development *after* the child has engaged in social conduct, not *before* the conduct takes place. For this reason, rules do not have any causal relationship to the cognition of the children, but a definitional relationship. The rules logically define what conduct may or may not count as socially efficacious, but they do not causally determine how that conduct is to be cognitively performed by the child.

As a result of this process, the cognition or 'higher mental functions' of children are constrained by the social rules in which they develop. This is why, for instance, when we talk to someone we assume the proper speaking distance from them. This is what we do; we do not need to consult any rules, because such knowledge of rules is already endogenous in the very functioning and structure of our cognition. This is why such things come naturally to us; our cognition developed directly in the constant presence and selection pressure of those rules. Our social cognition, and who and what we are that makes us *native* members of our society, is a direct consequence of our cognition developing in that very social environment. It is only for tourists that such

things do not come naturally. That said, there is a continuum of 'naturalness' here, with individuals with autistic spectrum disorders at the far end and the non-clinical but interpersonally insensitive individuals falling somewhere in the middle.

Needless to say, the resulting cognitions display an extraordinary functional fit with their social environment. So much so in fact that to a casual observer it would almost seem that such cognitions were *designed* to match the social environment. These cognitions are so functional, and so accurately *match or correspond* to the social environment that it seems that they must have been imported from the social environment itself, as if children had 'internalized' them. From such a transmission view of internalization, the children develop social understanding through coming to contain a cognitive structure that resembles, represents, or correlates with the social environment. That is, social rules are seen as the *means of production* of social outcomes, rather than as endogenous to the structure of cognition and thus the *means of authenticating* social outcomes. Thus, from the transmission perspective, internalization is seen as the process by which children mentally recapitulate features of social environment in order to successfully interact with that environment. Although this is a criticism often leveled against transmission accounts of internalization, it is equally applicable to transformational accounts. Transformational accounts, by stating that social relations becomes transformed by children, do not address the relationship between those social relations and the transformed and internalized correlate that children are said to acquire. Despite the transformation, the acquired ability of the child still correlates with the social environment in which it was acquired. That is, the acquired ability still stands in a representational relationship with the social environment, all be it now in a different form. That is, a defining characteristic of representations is that there is a correlation between something that is a representation and the thing represented (Bickhard & Terveen, 1995). The two need not be identical, for it is the logical relationship between the two that creates the representational relationship (e.g., signs can represent things in the world, but do not look like the things in the world). Transformational accounts, therefore, still suffer from the same problem as transmission models, for although the process of internalization has changed (from transmission to transformation), the outcome is the same in that cognitive organization correlates directly with the social environment. This is erroneous because social rules constitute or define the problem space (i.e., coordination between people) that social interactive outcomes are meant to solve or accord with, yet defining a problem space does not entail one knows how to solve the problem. A description of a solution is not the means to the solution.

The process of scaffolding offers a ready example for highlighting the differences between viewing social rules and norms as 'means of production' rather than as 'means of authentication'. Traditionally, scaffolding is presented in light of the "zone of proximal development," the difference between a child's solitary ability and

her socially assisted ability in solving a task (Vygotsky, 1978). This difference in ability results from a more capable peer or adult decomposing the task into smaller units and engaging the child in dialogue regarding how best to approach the now simplified task. Once a zone of proximal development is in operation, it is often said that the child's cognition is distributed; that is, the cognition which a child exercises to complete the scaffolded task is not a property of the child, but rather is a property of the social interaction through which the child solves the simpler task units. Through dialogue and interaction, the child comes to internalize this distributed cognition, and thereby solve the original task on her own. Such internalized distributed cognition can include the alternative perspectives on reality offered by the tutor (Fernyhough, 1996), the dialogical structure of their interaction, and the cultural tools by which the original task was reduced in complexity (e.g., principles of problem solving, external cognitive support by the tutor: attentional control, working memory, reflective question asking, etc.). This is one account of how scaffolding works.

What this account of scaffolding accurately reflects is that decomposing tasks into smaller units does facilitate children's development. However, this account views internalization as the process by which the gains occurred via the zone of proximal development are retained by children so as to allow for independent mastery of the original task; via internalization, children import the cognitive supports provided by the scaffolding situation and so solve the task independently (Bickhard, 1992b). Vygotsky did not view internalization as a straight transmission model, but rather one of transformational activity on the part of the child (Wertsch, 1985, 1993; Wertsch & Stone, 1985). Nonetheless, what is being transformed is still something that was originally social in nature and external to the child's agency (Bickhard, 1992b). It is these transformed cognitive supports that allow children to *produce* the correct solution to the task.

However, if social rules and norms are viewed as 'means of authentication', then the account of how scaffolding achieves its effects changes accordingly. Under the authentication account, the original task may be viewed as a problem space that children must navigate to arrive at the correct solution. The correct solution is defined in terms of social rules and norms that act as selection pressures on the children's conduct. At first, the problem space is too complex, and therefore, beyond the cognitive ability of children to solve; that is, the selection pressure of the correct solution disqualifies any potential solution by the children to the task, such that progress on the task by the children will be extremely hampered (Bickhard, 1992b). By decomposing the task into smaller units, what a tutor effectively does is to reduce the problem space in which children have to work. This reduced problem space allows children to achieve partial understanding of the original task that would be impossible to achieve otherwise if the children's progress was compared against the solution to the original task. However, this partial understanding is not something internalized from the scaffolding situation.

All the tutor has done in this situation is to define a reduced problem space in which children must still construct their own understanding via the feedback they receive from the tutor. With each successive task decomposition and reintegration by the tutor, children effectively recursively feed their partial understanding back into their constructive activity, thereby enlarging the potential problem spaces with which they can potentially cope. Eventually, children come to be able to solve the original task independently.

At no time in this process have children internalized anything external to their own constructive activity (Bickhard, 1992b). The zone of proximal development is not achieved via socially provided cognitive supports, but through a muting, or reducing, of selection pressures that define the problem space of the task (Bickhard, 1992b). Such reducing of the problem space is definitional in nature, not causal; the manner by which children construct such understanding is independent of social rules and norms that define those understandings as either correct or incorrect. The higher mental functions by which children attain mastery of the task are their own construction, but that construction could not occur outside of the definitional space of social rules and social interaction.

## Conclusion

Throughout this paper we have pointed out that the pivotal intuition underlying dialogical accounts of development is that the development of the individual is intimately related to social interaction. We have argued that the metaphor of internalization may impede understanding these relations. The metaphor of 'internalization' was intended to capture a process of transformation, but the container metaphor of the 'inner' and the 'outer' does not seem to be of help in characterizing this transformation. We have characterized the sociality of thought as a matter of definition. Human forms of thought are social to the degree that social rules define what conduct counts as possession of a specified higher mental function. In the process of ontogenesis, rules, conventions, and practices, by acting as selection pressures on development, define what higher mental function is to develop. This approach avoids the contradictive corollary of 'internalization': that social or dialogical phenomena are contained within individuals. Rather than involving the containment of more or better representations of social practices, cognitive development involves *mastering* those practices.

Some may ask, "without some notion of internalized dialogue, what is dialogical about the mind?" The issue turns on how dialogicality is understood. The metaphor of internalization suggests that mind is explicitly dialogical in that its contents explicitly correspond to the social interactions of individuals. That is, although such social interactions may undergo transformation when internalized, those transformed interactions are representations of previous social interactions. We argue, instead, that

the mind is not explicitly dialogical, but rather that the structural-functional makeup of mind is implicitly defined and constructed within an interactive context that is defined by the selection pressures of social interaction. That is what makes mind irreducibly and implicitly social in nature; if it was not for social interaction minds could not develop, yet those minds do not contain explicit representations of social interaction.

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