The Co-Emergence of Parts and Wholes in Psychological Individuation

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Purpose: The purpose of the paper is to provide a constructivist account of the "self as subject" that avoids the need for any metaphysical assumptions.
Findings: The thesis developed in this paper is that the human "psychological individual," "self" or "subject" is an emergent within the nexus of human social interaction. With respect to psychological and social wholes (composites) there is no distinction between the form of the elements and the form of the composites they constitute, i.e., all elements have the form of composites. Further, recursively, composites may serve as elements within higher order composites. Implications for a rational theory of ethics are discussed.
Originality/Value: The thesis contributes in a fundamental way to the research programme of radical constructivism by demonstrating that metaphysical assumptions about the nature of the "subject" are not an a priori necessity. Although the thesis in itself is not original, the paper offers a useful synthesis of ideas from a number of key thinkers in the disciplines of cybernetics, biology, psychology and philosophy.
Keywords: Psychological individuation, co-emergence, collective, self-consciousness, interpersonal interaction, theory of mind, conversation theory, conscience.

Introduction

Chapter 6 of Ernst von Glasersfeld's book (1995) *Radical Constructivism: A Way of Knowing and Learning* is entitled, "Constructing Agents: The Self and Others." In the third to last paragraph of that chapter, he states, "…the subject creates not only objects to which independent existence is attributed but also *others* to whom the subject imputes such status and capabilities as are conceivable, given his or her own experience" (Glasersfeld 1995, p. 128). Much as I admire von Glasersfeld for so eloquently setting out the principles of radical constructivism, I believe his assumption about the existence of a "subject" and "others" is one that can be usefully unpacked and elucidated. As its stands, von Glasersfeld's reference to a "subject" posits an entity whose genesis still has to be explained.[1] The thesis of co-emergence proposed here is intended to provide such an explanation. The explanation provides a constructivist account of the self as the agent of construction. It thus avoids the need for any metaphysical assumptions about the nature of the self, as von Glasersfeld seems to believe is the case when, in the final paragraph of the chapter referred to, he states,

> "As to the concept of self, constructivism – as an empirical epistemology – can provide a more or less viable model for the construction of the experiential self; but the self as the locus of subjective awareness seems to be a metaphysical assumption and lies outside the domain of empirical construction." (Glasersfeld 1995, p. 128)[2]

The metaphysical status of the subject leaves von Glasersfeld open to critiques from "postmodernists" and "social constructionists," who both emphasise that the "subject" is constructed or occurs "in language" (see, e.g., Salmon (1989) and McCarty and Schwandt (2000). From the standpoint of rational science, those positions lack coherence and clear empirical foundations. The thesis presented here can be seen as an attempt to develop the required coherent, well-founded explanation.[3]

The paper began as a collage of extracts from various sources, including some of my own earlier papers, which, as a set, were intended to provide the context and justification for the thesis proposed. Through discussion at the PIE conference (see footnote 1) and further reflection, I have refined and modified that set and present them here as what I hope is a reasonably comprehensible linear narrative. I begin with a discussion of the cybernetic concept of "organisation." This is followed by a more extended discussion of the genesis of self-consciousness and personhood, drawing on the seminal ideas of Piaget, Mead and Vygotsky and the more recent cybernetically inspired formulations of von Foerster and Maturana. There is then a brief look at the logic of interpersonal interaction and the notion of "theories of mind." This leads on to an overview of Gordon Pask's cybernetic conversation theory, which, with its distinction between two kinds of organisation, the "mechanical" and the "psychological," affords a useful synthesis of much that has gone before. Finally, there are some thoughts on implications about ethics, with reference to the views of von Foerster and von Glasersfeld.

I would like to draw the reader's attention to the writings of Ranulph Glanville which also address foundational concerns about ethics and the nature of selves and others from a cybernetic perspective. (See, e.g., Glanville 1988, 2002). There is not space here to indicate the many parallels between Glanville's discussion of "subjects" as self-reproducing "objects" and the thesis developed in this paper. I have written about Glanville's approach in Scott (2005).

On organisation

Ashby in his 1956 *Introduction to Cybernetics* writes: "Cybernetics might in fact be defined as the study of systems that are open to energy but closed to information and control – systems that are "information tight" (Ashby 1956). Von Foerster, Pask, Maturana, von Glasersfeld, Glanville and Luhmann have all been particularly alive to the epistemological consequences of this "organisational closure."[4] In brief, an organism does not receive

"information" as something transmitted to it, rather, as a circularly organised system it interprets perturbations as being informative. It is important to note that this use of the term "information" is clearly different from the usage in computer science ("information processing" meaning, strictly, data processing, the transmission of data and the transformation of one data "pattern" into another) or by Shannon and Weaver (a measure of the surprise value of a "message") or Stonier (a measure of the extent to which a system is "ordered"). The use of the term by Ashby is essentially the same as that of Gregory Bateson in his aphorism "Information is a difference that makes a difference" and that of Jersi Kerzinski ("Information cannot be separated from its utilisation"), and that of Heinz von Foerster ("The environment contains no information; it is as it is").

Here are some remarkably parallel comments on "circularity" of organisation from Alfred Korzybski, the founder of "General Semantics." From his book *Science and Sanity* (1958, p. 12):

> "Language […] represents the highest and latest physiological and neurological function of an organism. It is […] of uniquely human circular structure, to use a logical term – or of spiral structure, to use a four-dimensional or a physico-chemical-aspect term […] In these processes an 'effect' becomes a causative factor for future effects, influencing them in a manner particularly subtle, variable, flexible, and of an endless number of possibilities. 'Knowing,' if taken as an end-product, must be considered also as a causative psychophysiological factor of the next stage of the semantic response […] This structural and functional circularity introduces real difficulties […] Before we can be fully human, we must first know how to handle our nervous responses – a circular affair."

Both Gregory Bateson and Heinz von Foerster cite Korzybski's "the map is not the territory" with approval.

As von Foerster notes, consideration of the circularly closed organisation of living systems obliges one to adopt a constructivist epistemology,[5] as developed for example by Jean Piaget. Piaget (1972) develops his "genetic epistemology" from the notion of the living system with "cybernetic circuits in equilibrium." His cognitive structures arise because "the representation is in the act." From the starting point of acknowledging that living systems are organisationally closed, we now go on to consider how, in phylogenesis and ontogenesis, such systems become "self-conscious."

On the development of self-consciousness

"Universal grammar" – that which is common to all "languages" when viewed, à la Chomsky, in the abstract as syntactic and lexical systems – requires a logical syntax with negation. In Piaget's account, this logic is imminent in the logic of action and the concept of reversibility (actions may be "undone"). Integration of sensori-motor schemata into coordinated wholes both generates "object permanence" in the environment and a differentiation of subject from object. With the "semiotic function," the organism may represent its own actions (cf. Maturana's phrase "interact with its own interactions," Maturana 1969) There is an accompanying "awareness of awareness"; in so far as the organism's actions are part of a coordinated, co-adapted whole, there is awareness of self (cf. Kagan 1979, p. 293), though, as yet, no stable "self-image" or "self-consciousness."

As there is a "sensori-motor" or "enactive" logic of action, so there is a tacit logic of interaction. An organism's adaptations coordinate sensory and motor activity. In the "dance" of social activity, these coordinations become coordinated. Piaget (1956, p. 256) says of the former: "Without a mathematical or logical apparatus, there is no direct 'reading of facts,' because this is a prerequisite. Such an apparatus is derived from experience, the abstraction being taken from the action performed upon the object and not from the object itself." This is essentially what Mead says of social interaction: its logic arises as an abstraction from the experience of interaction. (Mead's ideas are elaborated on further, below). In this logic, the distinction between participants arises and with it, the "social signs" that will serve later to encode logic. Together, the "tacit" logics of action and interaction provide the "semantic base" that, when "digitalised" as "units of meaning," gives rise to a syntax.

Language arises as behaviours ("languaging") that coordinate "coordinations of coordinations" (Maturana & Varela 1980; cf. Vygotsky 1962; Luria 1961).

Through mutual coordinations, organisms may come to compute themselves and others as "selves," giving rise to the "I/Thou" relationship. That is, by becoming observers of "others," we "transcend into the domain of self-observation" where "I am the observed relation between myself and observing myself" (Foerster 1980).[6]

Maturana (1995) makes essentially the same points in a more elaborated form (the reader should perhaps be aware that von Foerster's and Maturana's ideas are very closely aligned, von Foerster at one time having been a mentor for Maturana), that "[t]he experience that we connote as we use the word consciousness is one of self-distinction as we distinguish ourselves making distinctions" (p. 163) and that "consciousness takes place as a particular relational dynamics when an organism operates as participant in a domain of recursive distinctions in language." (ibid.) Thus, for Maturana, consciousness is experienced by participants in "languaging."

> "Languaging takes place as recursive consensual coordinations of consensual coordinations of behaviour […] There is a recursion whenever […] the re-application of an operation occurs on the consequences of its previous application […] Any level of recursion may recursively become a domain of objects that operates as a ground level for further recursions."

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"Objects arise in language in the first recursion of consensual coordinations of consensual coordinations of behaviour. […] Observing arises as an operation in a second recursion that distinguishes a distinction […] The observer appears in a third order recursion that distinguishes distinguishing […] . Self-consciousness (self-awareness) arises in a fourth order recursion in which observing the observer takes place." (ibid., p. 164).

"The self arises as an experience in the experience of self-consciousness […] self-consciousness and self take place in the dynamic relations of languaging […] The distinction of the self is an overwhelming experience […] . once it takes place the distinction becomes the referential ground for all other distinctions […] The experience of the self as an object obscures its original constitution as a relation […] in the relational dynamics of languaging animals." (ibid., p. 165).

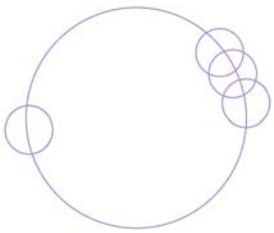
I have tried to summarise Maturana's observations, as his somewhat idiosyncratic prose style and arcane vocabulary can be a little daunting and obscure what, in fact, is a very rigorous line of argument.

In the next section, I develop the key idea of the co-emergence of individuals and collectives in psychological individuation. I go on in the sections that follow to elaborate on this process, first by looking in more detail at Mead's concept of the self as a social process and then, in turn, by fleshing this out by using concepts from the more recent literature on interpersonal perception. My account of self and other dynamics and psychological individuation culminates in a brief overview of key ideas from "conversation theory" (CT) as developed by Gordon Pask. CT is a comprehensively rich theoretical framework, particularly useful for unifying much work that has gone before.[7]

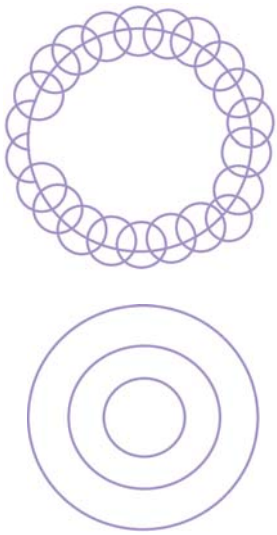
Emergence as singularity

Above von Foerster's use of the phrase "transcendence into another domain" was noted in discussing the emergence of self-consciousness as a singular event. Thom, amongst others, has extended the classic mathematical concept of a "singularity." This problem exercised the mind of the great 19th Century logician, George Boole, throughout his life. Here is a simple example, taken from his writings, of the "law of change of quantity to quality" at work.

Take an arbitrary circle as a starting point and draw smaller circles of fixed diameter whose centres all lie on the perimeter of the first circle:



As the number of smaller circles approaches infinity, a new form emerges:



There are now two "new circles," each concentric with the first circle.

The key proposition of this paper is that with respect to psychological and social wholes (composites) there is no distinction between the form of the elements and the form of the composites they constitute, i.e., all elements have the form of composites. The above is a simple model for this. In words, "A psychological individual is a composite of concepts – but a concept, as a stable, reproducible system is a composite of concepts, is a psychological individual. Recursively, a social system is a composite of psychological individuals and as a stable, reproducible system is itself (has the form of) a psychological individual."

Note that the model serves well for the tacit, non-languaging "awareness of awareness," experienced to some extent by all living creatures (the pre-linguistic "re-ligio" experience of self that Kagan discusses). The dialogic form of I/Thou awareness in which "I"/"Thou" languaging emerges is not encompassed. The form of such a model is discussed below in the section "The logic of interpersonal perception."

George Herbert Mead: Self as social process

Mead's (1934) key concept is that of the "significant symbol."[8] A better label, perhaps, is "the social sign." Its significance lies in the fact that communication employing such a sign system is between participants who can "take the perspective of the other." Such signs not only have an agreed or shared meaning, in the sense that an external observer notes that they are used in similar ways by the participants, they also have agreed or shared meanings from the perspective of the participants. In brief, the participants, too, are observers.

Human consciousness and awareness, as now known, is an evolved phenomenon. In modern times, Rastafarians have a concept of self and "super-self" encapsulated in the formula "I and I." Some accounts of the cognition of Australian aborigines suggest that similarly, they lack a distinct concept of individuality: the "individual" psyche is in direct contact with the powers that have created the cosmos.

Mead's account is a framework sufficient to account for this variety of consciousness. The "I" emerges in the dialectic of reciprocal role taking: taking the other's perspective. The "generalised other" is internalised. Thought becomes an inner dialogue between perspectives: the self is a social process. "Self-image" is a social construct and, as noted, may take different forms in different cultures.

It is difficult to do justice to Mead's work in a few sentences. What I admire most is the "holistic" nature of his thought. His concern with thought and language is contained in his larger concern with the relation between an individual and the society of which he is a part. From these concerns, he constructs a more general cosmology and epistemology (Mead 1938 and Miller 1973).

A(B(A(T)))	Level of Understanding or Not	B(A(B(T)))
A(B(T))	Level of Realisation or Not	B(A(T))
A(T)	Base Level (Agreement or Not)	B(T)

Table 1: Dyadic interpersonal perception (after Laing, Phillipson, and Lee 1966): A and B are participants. T is the topic, proposition or object being contemplated or perceived. A(T) means A's perception of T; A(B(T)) means A's perception of B's perception of T … and so on.

In Mead's analysis, the semiotic function, the use of speech and tool using co-evolve. The hand uses a tool in a social context. Skills are transmitted through sign and gesture. With skilled manipulation comes the internal trial and error of "inhibited" responses. "Social signs" first appear as "inhibited" (reflected upon) intention movements.

Mead's conclusion, that thought is an internalised dialogue, comes close to Vygotsky's (1962) thesis but, whereas Vygotsky is at some pains to distinguish the "inner monologue" from the "external dialogue," Mead conceives the former, too, as a dialogue, as conversational in form. Unlike Vygotsky, Mead has his concept of "the self as a social process" to guide his thinking. Vygotsky's vision does not extend that far; he sees only the oppositions: in "internal speech," we know what we are thinking about. At one point, he does use the phrase "when we converse with ourselves" and likens the abbreviated, "tacit" knowing of intimates to the abbreviations in inner speech, but the conversational aspect of inner speech is not emphasised, it remains tacit in Vygotsky's thought.

Newson and Newson, in a critique of Piaget's account of cognitive development, come very close to a similar position to that of Mead, in their insistence that "Knowledge itself arises within an interaction process" […] "Knowing, and being able to communicate what we know need to be viewed as opposite sides of the same coin" (Newson & Newson 1979, p. 272). They argue that the semiotic function arises out of the "primordial sharing situation" (cf. Werner & Kaplan 1963), in which mother (or other adult) and infant "share" an experience. This sharing is "sensori-motor, affective, pre-symbolic," in short, shared awareness. Here Newson and Newson come close to discussion of, to coin a phrase, the effect of affect on affect. Human beings (and other organisms) are capable of feeling each other's feelings and feelings may be shared, including a feeling (or "sense") of oneness and deep, tacit understanding.

The effects of affect are not directly observable as overt stimuli, responses and reinforcers, though, presumably, there are physiological concomitants. The subtle role of affect in human communication is largely missed in "behavioural" approaches to analyses of infant-caretaker interaction. There is a case to be made for the re-evaluation of "learning theory" approaches to child development, with perhaps a place being found for the application of these constructs in the "microstructure" of the interplay of affect in dyadic interaction. An effective and intellectually satisfying "social behaviourism," as proposed by Mead, might then serve to unify extant theories and approaches.

The logic of interpersonal perception

The work of Laing, Phillipson, and Lee (1966) was one of the first studies of interpersonal perception that clearly articulated the way in which human communication entails both sender and recipient having perspectives of each other's perspectives, that is, metaperspectives. This requirement is imminent in G. H. Mead's writings on the nature of a significant symbol, one that "arouses in the sender the same response as in the receiver" (Mead 1934).

Laing, Phillipson, and Lee's construction for dyadic communication is shown in Table 1.

In developmental psychology, being able to compute such perspectives and metaperspectives is known as having "a theory of mind" (Whiten 1991; Baron-Cohen and Wing 1994). Howard's (1971) theory of metagames has a similar structure for a two-person non-zero sum game, such as "prisoner's dilemma." The fundamental point of the constructions is that they permit an analysis of power relations and conflict and stability between participants. As Laing et al point out, if one participant, say A, has an accurate view of the other's, B's, perspectives and metaperspectives, whatever they are, and if B's view of A is inaccurate, A is in a potential position of power or influence over B. Consider, for example, the relations between parent and child, teacher and learner.[9]

In Laing, Phillipson, and Lee's model for the dyad, two perspective levels above the base level are drawn. Howard's results show that, in general, if one is to represent all possible configurations of perspectives of perspectives for n persons that account for possible stability (coordination of action) or lack of it, it is necessary to have n factorial levels above the base level. This fact is in itself a possible reason for error in human communication.[10]

We may conceive of a system where there is, in the words of Peter Cariani (personal communication; see also Cariani 2000), "[S]witching between regenerative, stable, resonance states […]Those systems that can reproduce their own organization […] are potentially conscious […] They are organisationally closed by virtue of their circular internal dynamics." We may then conceive of *two* such entities synchronised in interaction, where each is being "in-formed" of the other and where we can see the dynamics of the one reproduced in the other and vice versa, clearly showing the stable "eigen values" where both are "computing" the same "object" and are "computing" that they both "know" that is what is happening. They may both then "compute" a second "object" such that they both "know" the second "object" stands for or "represents" the first "object," i.e., the second "object" is a Meadian "significant symbol."

Gordon Pask's conversation theory

From different starting points, Pask (1975) has arrived at similar conclusions to those of Mead. He characterises the "psychological individual" as a "self-replicating system of memories and concepts." Figure 1 shows his "skeleton of a conversation," the necessary distinctions made by an external observer. First order signalling takes place in the causal action of processes on processes: knowing leads to doing leads to knowing; memories reproduce concepts that reproduce memo-

ries. Thus, levels of cognition are distinguished as a "hierarchy of control." A concept is a procedure that "recognises, reproduces or maintains a relation," e.g., in context, riding a bicycle, performing a calculation. A description of a concept is a "task structure" that says "what may be done." A memory is a (metacognitive) procedure that "recognises, reproduces or maintains concepts," for example, in context, justifying a method or providing a "chain of explanation" showing how the understanding of particular concepts is derived from or entails the prior understanding of other concepts. A description of a memory is an "entailment mesh" that says "what may be known."

Entailment meshes and task structures, which are coherent and consistent, describe "domains" (e.g., a learnable/teachable thesis) that support "viable" (reproducible) conversations ("psychological individuals").

Second order signalling takes place in the "provocative" interaction of participants. Understanding implies shared perspectives; the cognitive processes of the two participants are to some extent synchronised. In teaching and learning (Pask's main concern), the cognitions of one participant are literally replicated in the other. One becomes the other. Pask argues that the distinctions made by the external observer of a conversation must, logically, also be made to characterise the cognition of an isolated psyche (cf. Ryle 1971). Here, replication is literally self-replication. The "psychological individual" is a stable systemic whole, is "organisationally closed." Thus Pask distinguishes a level of organisation, of coherent structure above that of the biological, that applies both to persons and the social systems that they form. In his "inner conversation," the person explains and justifies himself to himself. In observing himself, he makes the same distinctions as when acting as the external observation of a conversation. In the "outer conversations" that constitute social institutions, the participants agree and disagree and negotiate shared descriptions, explanations and justifications. Self-analysis reveals a similar interaction between "participating attitudes" and "points of view."

The following is attributed to Gordon Pask (quoted in Bateson 1972, pp. 307–309).

"I phrase it from the point of view of a 'philosophical mechanic'; that is to say

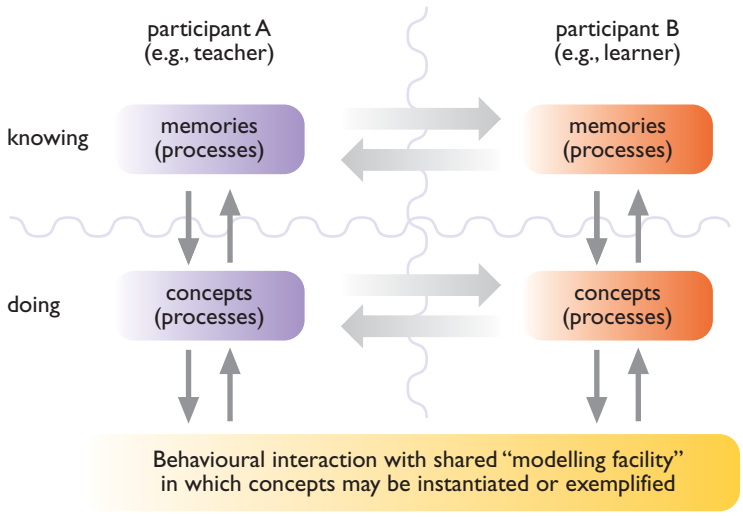


Figure 1: Pask's "skeleton of a conversation." The horizontal arrows refer to "provocative interaction" between participants. Pragmatically, any utterance has the form of a command, interpreted (in context) at the level of knowing (learn! remember!) or at the level of doing (do!). For B to understand A, he must be able to instantiate A's concepts (as models or exemplars) and also be able to show how A's concepts are inter-related as learnable, memorable wholes.

[…] If you think in mechanical terms, you can think of a population of general-purpose computers called 'brains,' in which, given a suitable programming language, it is possible to run classes of programs. Now we are at liberty to redefine an individual as being not one head, one general-purpose computing machine, but one named class of programs. And we can interpret the reproduction of this named class of programs, not at all in a biological sense, but in the sense of reproducing and perhaps evolving a class of programs bearing the same name. This is consonant with the motive of the individual to reproduce himself; it does not introduce the problem of overpopulating the world with general-purpose machines; and it does allow for the perpetuation of the individual and the proper interpretation of the term 'consciousness,' as an inbuilt wish to reproduce that which specifies *me*. This isn't of course such a strange point of view, because although you may be mildly offended if I call you a class of programs, you should really be equally offended if I insisted that you lived inside your head. Isn't it evident that you are distributed through a lot of these general-purpose machines? Don't you love? Don't you dislike? Don't you take part in the self-images of other people? If you do you are saying that you partake of the nature of a class of programs. This is simply a statement of that fact.

"I use the word 'program' to designate any well-defined 'formula for' or class of 'formulae for' with the possibility of having underspecified goals in it; in other words, it's a heuristic procedure. I refer to the individual as a class of 'formulae for […] me,' where 'me' is my name. And the important point about this is that these "formulae for" might be run in any convenient machine, including the brain […]

"In a sense there are two parallel sorts of evolution: there is biological evolution going on, and then, because of this interpretation of the individual, one can perceive a separate sort of evolution that I refer to as 'symbolic evolution,' which is perhaps exemplified by this conference.

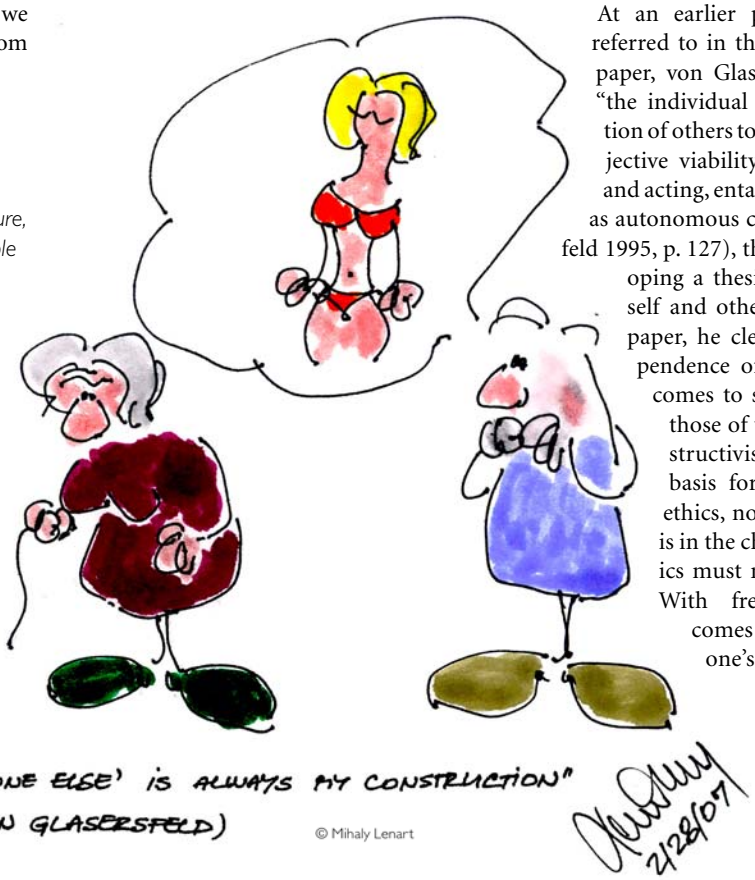
To avoid overpopulating the world with general-purpose machines, what we have to do is control the symbolic evolution process. To do so, I believe that the first thing we must do is redefine what we mean by an individual, get away from this idea of individuals as heads."

Implications for ethics

"We need to make parents and teachers pure, before we can make children so" (Mary Boole 1972, p. 10).

In recognising that self-awareness and self-reflection arise in "languaging," which is necessarily a social affair, von Foerster has been lead to develop a theory of ethics (see, for example, von Foerster 1993). He notes that *conscience* and *conscious* have the same roots, a point also developed by C. S. Lewis (1967). The essence of the argument is that we are conscious (we "know with" ourselves, *L. con-scio,*) precisely because we "know with" others. Awareness of the mutuality and interdependence is the root of conscience: we know, *without being told,* that the "other" is what makes us a "self," that we owe her our respect, our care, our love for helping us be a "self" at all. Unfortunately, all too often, this tacit knowledge is not fully alive in us. We err; we sin.

At an earlier point in the chapter referred to in the introduction to this paper, von Glasersfeld discusses how "the individual needs the corroboration of others to establish the intersubjective viability of ways of thinking and acting, entails a concern for others as autonomous constructors" (Glasersfeld 1995, p. 127), thus, though not developing a thesis of co-emergence of self and others as outlined in this paper, he clearly sees the interdependence of self and others and comes to similar conclusions to those of von Foerster that constructivism provides a rational basis for the development of ethics, noting, however, that "it is in the choice of goals that ethics must manifest itself" (ibid). With freedom to construct comes responsibility for one's actions.



Notes

A version of this paper was presented at the conference on *Problems of Individual Emergence* (PIE), Amsterdam, 16–20 April 2001.

1. I have written more about von Glasersfeld's contributions to constructivist epistemology elsewhere (Scott 2001).
2. This metaphysical assumption about the status of the subject is a recurrent theme throughout von Glaserfeld's seminal book. I have not had opportunity to explore how consistent are his views there with those expressed in his other writings, earlier or later.
3. Whilst writing this paper, I came across Thibault's (2004) account of self and other emergence. As far as I can judge, his arguments and critiques with respect to Mead, Piaget and Vygotsky are very similar to those I present in this paper. However, whereas in this paper, I draw extensively on the cybernetics tradition to provide conceptual foundations (von Foerster, Pask, Maturana), Thibault's draws mainly from developmental linguistics and discourse analysis.
4. Various forms of "closure" are distinguished in the literature. The usage here follows that of Pask and Maturana, a system is organisationally closed if amongst its products are those elements that are necessary for the system's persistence (reproduction) as a system (a composite of elements).
5. The earliest account of this argument from von Foerster that I am aware of is in von Foerster (1960). The reader is directed to von Foerster (2003) where that paper and many later ones in von Foerster's oeuvre can be found.
6. Mead in a similar way distinguishes the "I" and the "Me," the process of being a self distinct from the outcome of the process of observing, objectifying self as a "self-image."
7. CT in its comprehensiveness is also technically and terminologically complex. For reasonably accessible introductions, see Glanville (1993) and Scott (1980, 1982, 1993).
8. Mead here is using the word "significant symbol" to refer to socially constructed objects that coordinate behaviours. This is in contrast to the more commonly held view that a "symbol" is a special kind of token that represents an object. For an extended discussion of "What is a symbol?," see Scott and Shurville (in press).
9. For more on power relations see Scott (2006).
10. I have developed this argument elsewhere (Scott 1997).

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