

Citation: Favareau, D. (2001). Beyond self and other: The neurosemiotic emergence of intersubjectivity. *Sign Systems Studies*, 30 (1), pp. 57-100.

## Beyond self and other: On the neurosemiotic emergence of intersubjectivity

Donald Favareau

University of California, Los Angeles  
3300 Rolfe Hall, Los Angeles, California, 90095 U.S.A.

e-mail: [favareau@ucla.edu](mailto:favareau@ucla.edu)

**Abstract.** The explosive growth over the last two decades of neuroscience, cognitive science, and “consciousness studies” as generally conceived, remains as yet unaccompanied by a corresponding development in the establishment of an explicitly semiotic understanding of how the relations of sign exchange at the neuronal level function in the larger network of psychologically accessible sign exchange. This article attempts a preliminary foray into the establishment of just such a *neurosemiotic*. It takes, as its test case and as its point of departure, recent discoveries from the neurobiological research on visuo-motor transformations and on the widespread cortical phenomena of selectively tuned, single-neuron response to argue for a vision of “intersubjectivity” whereby the *ens rationis* arising as a function of the neuronal semiosphere may be abstracted, constructed, and shared mutually across agents.

### Introduction

Empathy, asserts Hoffmeyer (1996), holds the semiotic antidote to the alienation engendered by the conflation of our organic code duality into narrative agent duality. “Lacan’s reflection theory holds the key,” he posits, as “the mutual empathy between mother and child provided the protection necessary to cope with the unleashing of the awful isolation inherent in the idea of *not*” (Hoffmeyer 1996: 133). Such empathy, continues Hoffmeyer, must be felt and not just reasoned into existence — “the child must, therefore, be capable of empathizing with ‘the other’ even before it can talk” (*ibid*: 132).

Yet at what point in the organization of a semiotic system, it may reasonably be wondered, does the ability to “empathize” take place? If intersubjectivity is, at it appears to be, a prerequisite for language use (and not vice-versa), how many orders of pre-linguistic, biosemiotic interpretation must a creature experience before the dynamic relation of “self” and “other” become robust enough to be brought into relation with each other so as to result in something as seemingly subtle and abstract as intersubjective identification?

Theorists as diverse as Lacan (1977), Bourdieu (1977), Vygotsky (1978) and Tomasello (1999) all attribute the emergence of intersubjective experience in humans (which manifests most commonly at between nine to twelve months of age) as the logical endpoint of an accumulative process of socialized objectification — i.e., the epiphanal and irreversible realization that one, too, is an “object” as well as a “subject” of experience. According to this view, social forces, primarily through language use, finalize irreversibly the invariant self-splitting and objectification of the (presumably) primal “unity” that nature has endowed — the autonomous locus of experience or *self*.

But does not this picture of the emergence of objectivity (by which agents are then supposed to reason syllogistically to intersubjectivity) leave us bumping up again — even way down here in the primal semiotic — against a fundamental dualism between an

incorrigibly dichotic “self” and “other?” Moreover, does not such symbolic and syllogistic reasoning (“ $x$  is  $y$  to me, therefore I must be  $y$  to  $x$ ”) presuppose both linguaform conceptual reasoning as well the very intersubjectivity it is supposed to engender and explain?

For even allowing for the legitimacy of such socio-centric proposals as Wittgenstein’s (1953) assertion that meaning is a function of use or Vygotsky’s (1978) notion of personhood arising out of dialogue, it would be impossible to imagine what fundamentally organizing principles would allow such dialogic meaning-building and system-building to occur in the first place, were it not for our particular situatedness “always already” in a pre-linguistic, superordinate meaning-building system of *biosemiosis*. It is this biological network of sign relations and organization, I will argue, that, at sufficiently complex levels of organization and recursivity, provides for the mutual intelligibility of shared experience that is the necessary prerequisite for socialization, language use, and the ability to negotiate and to co-construct meaning to take place.

Thus, given that some common ground of lived, non-verbal experience must bind agents in a mutually intelligible system of relation and signification before anything like entry into a symbolic world (such as may be collaboratively constructed through language and through the communal exploitation of intersubjective identification) can occur — what invariant biological mechanisms and vehicles for sign exchange in human beings, we may ask, constitute the likewise *lived embodiment* of this experiential “common ground?”

A candidate mechanism that is currently being considered among researchers in the field of the neurobiology of cognition is a class of cells located deep within the brain called “mirror neurons.” These neurons — which are located in an area of the brain long associated with both motor control and with language use — instantiate congruent neural firing patterns both during one’s own performance of certain highly specific, goal-oriented activities, as well as when one is witnessing passively those same sets of activities being performed by someone else.

This article thus attempts a threefold purpose: (1) to argue for the necessity of applying to such traditionally formulated research findings an explicitly neurosemiotic perspective, (2) to provide a condensed overview of the majority of mirror neuron research extant in the manner that it is presented in the neuroscience literature itself, and (3) by way of illustrating the potential explanatory benefits of applying (1) to (2), to challenge the prevailing notion in the field that the phenomenon of intersubjectivity made possible by the mirror system is the result of rational, deliberative *convergence* (i.e. — agents matching others’ external display with their own internal representations and reasoning syllogistically to arrive at a similarity relation).

I will be argue, rather, that the neuroscience data on mirror neuron activity suggests instead that *intersubjectivity per se* may be the natural, pre-reflexive result of a biosemiotically *emergent* process — and that one’s own unitary lived experience of a neurally primitive motor representation that is *mutual across agency* provides the fundamental iconic grounding upon which both subsequent “self” and “other” representations are hypostatically abstracted.

### **On the necessity of establishing the discipline of neurosemiotics**

Commenting on Krampen’s proposal to establish the investigation into phytosemiotics a decade earlier, John Deely, in 1991, termed “surprising...the fact that twenty years elapsed between Sebeok’s statement on the dimensions of semiotics [issued in 1968] and the concrete advancement of such a proposal” (Deely 1990: 98). Equally if not more surprising, perhaps, is the fact that a full decade and a half after the publication of Patricia Churchland’s (1986)

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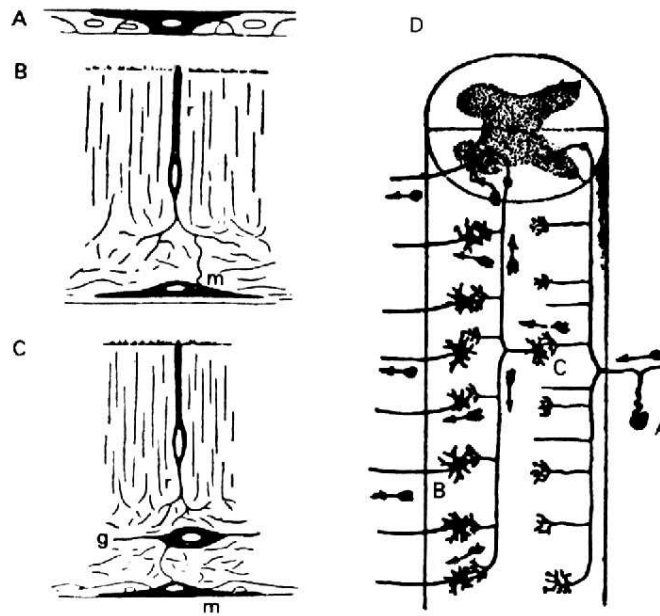
sign activity prior to its subsequent incorporation in a system of psychologically processed events.

This unfortunate conflation of “sign” with “symbol” exacerbates an already too dichotic understanding of the relationship of mind to brain, relegating all sub-psychological processes to biologic mechanism and idealizing all psychological processes to the realm of immateriality. Across such an ontological divide, one cannot reasonably talk about erecting bridges — one can only chalk out the lines of demarcation and become resigned to taking sides.

Such artificial balkanization of experience, however, poses acute problems for the explanations of traditional cognitive neuroscience. Accordingly, an interesting kind of “double-talk” often characterizes its literature. Thus we find that it is hardly heterodox within the discipline to speak of the living activity of neuronal cells as a series of ‘signals’ (never “signs”), whose individual purpose is ‘communication’, whose aggregate function is ‘information processing’, whose distal ‘object’ is some external or internal stimuli, and whose (proper significate?) ‘effect’ is, in fact, a multiply mediated response to multiply mediated stimuli. C.S. Peirce, we may assume, would have found this neuronal arrangement evocative.

Unfortunately, the abiding fear of anthropomorphization that attaches to an inadequate understanding of semiotic theory has made the use of explicitly neurosemiotic terminology anathema to the theorists of traditional neuroscience. Such fear is, of course, both counterproductive and unwarranted, for the role of the neurosemiotician — like the role of the cognitive neuroscientist — is not to “anthropomorphize” the individual activity of communally mindless neurons but to understand how the communal activity of individually mindless neurons actively anthropomorphizes, in a very “minded” fashion, *us*.

To begin examining this process at (or near) its beginning, then, let me first attempt to illustrate how even a cursory acquaintance with the evolution of the basic circuitry which comprises the human brain and nervous system reveals the inherently *semiotic* nature of the specialized *neuronal* cell, as that evolution (and those cells) are depicted schematically by one of the pioneers of modern neuroscience in Figure 1.



*Figure 1.* Stages in the semiotic evolution of the nervous system. (A) The motile cell of a primitive sponge responds to surface contact directly with a reciprocal wave of contraction.

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