

INFOLDING PAUL RYAN: AVERY JOHNSON

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Good article by Paul in the No. 3 issue and the mention of my name in it toward the end was quite pleasing. What I really dug, though, was his willingness to let on that these ideas were some that he was wondering about, rather than his having to make it seem as though he were writing about something he *knows*! It's a breath of fresh air that sweeps away the ubiquitous mustiness of expertise.

I would like to infold—to loop back into—his Part II: *Attempting a Calculus of Intention*. As Paul said, it was Warren McCulloch who challenged the basic simplicities accepted in textbooks as God-given premises. He was thinking hard about relevance, participation, contextuality particularly during the last inevitability of self-reference he went. He years of his life at M.I.T., and everywhere he was and is a strong man. I will always account it as my own extreme dumb luck to have known McCulloch closely for 15 years and for the first five of those I was part of his Neurophysiology Laboratory with a room next door to his office. Warren was a communal type, I saw a lot of him, and he used to worry out loud to all of us about the problems that he was playing with. He had another office—a place of thinking and rapping—the F&T Delicatessen near Kendall Square in Cambridge, and his eclectic search for a calculus of education, and his impromptu search for a room in the Sloan School of Management. He agreed. The title he chose was: "The Implications of Complex Network Coupling and Triadic Relations" and I have a cherished tape of that class period. Only now, almost two years after his death, is its import beginning to lift into communicable pattern that which so many of us have been trying intensely but haltingly to reckon.

What follows has grown out of mulling over his lecture into the people and works that he referred to most often: Charles Saunders Pierce, Hegel, Aristotle, Gotthard Gunther, Turing, Russell, Goedel, and the Stoics, who seemed to have made inroads into the Logic of Relations. However, as I attempt to build upon his ideas, rearranged somewhat by my own wonderings, my hope is that a dialogue will ensue with Warren McCulloch never did satisfy himself that he had a calculus of intention to work with, but he would say the questions right so that "youngsters", as he would call it, would recognize that they had the important answers. In any case, I doubt that he would have expected a relational calculus to reduce happily to words on paper—with or without diagrams. He would more likely have turned to videotape with its facility for infolding and self-reference as the appropriate medium for thinking and teaching about it.

Consider what you might do if you were trying to drive from Hometown, USA to New York City and you didn't have a map. The logical procedure is to follow the arrowhead end of the signs pointing toward NYC wherever they occur and just keep moving. Right. Now try finding your way home again, still without a map. Easy: follow the tail ends of the same signs! Or are those the same signs? They point toward the place from which I have just come, but which road does the tail point at? Where am I? The signs look the same but the countryside is different. How do I get home again? Always easy to get back to NYC, though. Might as well stay there.

And that process, my friends, is very similar to what happened over the years to logic. The crude

simplifications needed then are now habits; the old tricks, the value premises out of which the objective world is built, are impotent in a world demanding relevance.

In our daily dealings with each other, taking the world as it seems and as we wish it to become, we are operating at a level of complexity and of context-dependency where only a *Logic of Relations* could account formally for the intermingling of cross-couplings. Science, unfortunately, in its implacable search for writable truth, has been willing to settle for things so as was interested in how to go about classifying things so as to set up a workable taxonomy to keep things straight for ever after. He succeeded in glueing the Western world into a *Logic of Classes* and its listedness: pigeon-holing named things wherein, for example, one might explore *of Propositions* wherein, for example, one might explore the set of all Truths: statements whose validity may be checked in a manner sufficiently context-free that anyone anywhere anytime may do the checking. The recipes for finding truth are unconcerned with consequences, but only with truth for its own sake. And at the bottom of the stack we find the *Logic of Predicates*, whose simple quality of if-this-then-that makes it easy to teach by rote. Repeat after me: "All men are mortal; Socrates is a man; therefore"

The trouble is, though, that once you go down a step in that ladder—from relations to classes and so on—if you become less than satisfied with your ability to understand the world on the lower rung, you cannot make any formal arrangement of the pieces in your pile that will get you back up a step again. The manipulation of lists of named things does not map them into their all at once at a sufficient number of the *relata* you may be able to see a relation clearly that is lost if the *relata* are considered in more fragmented groupings. Such is the nature of the reading of words or sentences at a glance—easy to do in the cases where the context is pervasive and already grasped; difficult when the material is unfamiliar or is as formal and context-independent as, say, mathematics.

Look at it for a moment as Pierce did. Aside from his proficiency as a logician, he was an interested chemist. The rare gases have no valence bonds; they are keeping their hands in their pockets and therefore make no compounds (except under extreme duress). Some elements have one hand out; the compounds they make can connect the string ends to make rings. But when you start considering elements that have three hands out, you can make compounds that have three wish: two of them together can have up to four hands out, three can give you five, and so on.

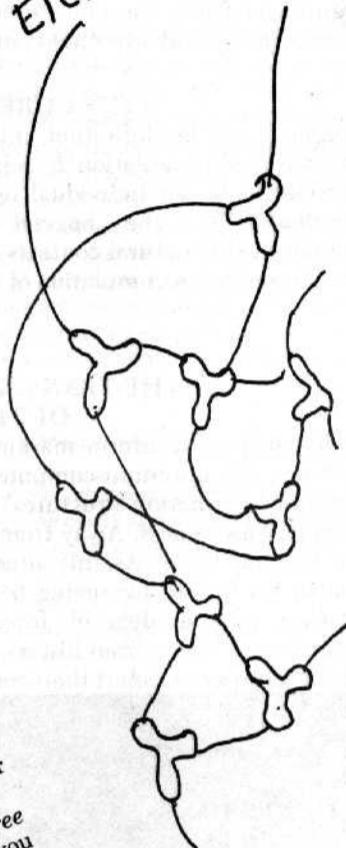
All of the logics on the scale that one finds below the *Logic of Relations* are like the compounds that can be made with the elements that have one or two hands out. The building blocks are at best diadic: simple causes leading to predictable effects. The most complicated statements that can be built are at best rings or strings where "if-this-then-that" can lead from start to finish and produce a closed, formal structure—unassailed by time or by variations in the way that the facts are observed: the sort of "holy, high, eternal noon" of science.

If you have the temerity to insist upon a logic of relations which takes into account the context of the observations or statements of the world, then its building blocks must be triadic. That is, the elements relate cause and effect where the relatedness is determined by a third something which may arise in some other part of the structure—and which might not even have occurred yet! We'll take up this peculiar notion about statements of the future in a moment. For now, note only this: what we are seeking is a *Logic of Becoming* rather than simply a *Logic of Being*.

I say to you: A loves B. In making that statement I am saying nothing essential nor measurable about A right at this moment, nor about B. What I am implying is something like: "If things go well with B, A will be happy about it." I am making a statement about A's process of becoming. We do not have a calculus to deal with such matters. I say to you: It will rain tomorrow. Again, there is nothing either true or false about that

statement today, for what I am really saying is: "I think it will rain tomorrow; I know it will"; I am sure" The statement I make is necessarily self-referent back upon me—I infold myself as tomorrow infolds what I say of it today—and what I have to say about tomorrow's weather tells you something about my process of becoming. We have no calculus to deal with such statements. I ran a race. Is the verb transitive? No. Think about the vastly different way in which flash-back and flash-forward serve to recontext the present. Very different. Flash-back explains, it fills in details and allows you to "see"

Triadic Elements



Diadic Elements

