"SED QUIS CUSTODIENT IPSOS

CUSTODES?"

Juvenal, Satires, vi. 347 (quoted in "Oxford English" 1986).

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I

The New Cybernetics (that is, the Cybernetics of Cybernetics, or second-order Cybernetics (eg von Foerster (1974) (1980)) is to be assumed. Without it, there IS no Cybernetics. The argument is not to be presented here, although this is its characterisation. By now, it should be self-evident.

We draw distinctions (Spencer Brown (1969)): the drawing of such distinctions, no matter what euphemisms we choose, creates me (I, the observer, the self) and the other. How this happens, the agency of drawing distinctions, is beyond cognition, for only when the distinction is drawn is there a cognitive entity.

Cybernetics, also known as applied epistemology and practical philosophy.

The consequences are what we research, and generate the tools that we use, and that others borrow from us.

In the drawing of a distinction, both I and another entity are brought into existence. Without distinction, there is, as Spencer Brown asserts, "perfect continence".

Yet, when I become through the distinction drawing, I feel that I was the agent that drew the distinction that created the other entity: this is an expression of my self as a cognitive entity. This is tantamount to me saying that I control the other, in the most general sense, for I come to believe that I performed the act. (The same being an assumption about distinction drawing, must be assumed about the entity: but more of that later).

II

Control is a much misunderstood act. In the description of a control system, we distinguish the controller and the controlled. However, for the controller to control, it must communicate with the controlled, and to know it has controlled, the controlled must communicate back to it[1].

It is this communication that allows and exerts control, so that which is controlled by the controller, itself in effect controls the controller: each when controlled is controller of its own controller. Control exists in the interaction in the loop between

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[1] Devices of this kind are formally presented in my Theory of Objects (Glanville (1975)). An Object (the "O" is the indicator that it is used in my technical sense) is an Object of attention, and the term is used because the word "object" has held, over its history, so many meanings, many apparently contractory, all of which are intended in my technical use. This Theory may be seen to contain, although not always explicitly or even in a well developed form, a calculus for a universe that is based upon Objects which have a form that accomodates, for instance, the notion of control and (as expressed later) self given here, allowing them to collect together, relate, grow and communicate.

the two, each of which is a controller itself, but controlled to and by the other. Hence the use of the expression "control loop". The giving of the roles "controller" and"controlled" is our act, and the roles are arbitrary (Glanville (1987)).

Note that it is we who assume to distinguish, so the control system is that which is distinguished by and from us, by the mechanism expressed above. The control system is a second system the distinguishing of which is contained within the initial system. Both have a distinction that generates them, and both operate as duals in a unity which become through the distinction, and where each is (the same) one thing to itself, but different to the other. That is how the roles work inside the system.

The need for the roles to be mutual within the unity applies equally to the containing distinction, between us and the system just as between me and the distinguished entity. Thus, it is necessary for me to assume the same selfness in the other, and that to the other I will appear just as much an other as it appears to me. Thus, my ability to control it is its ability to control me. This is not unlike the Turing test (the Imitation Game) for intelligence (Turing (1950)): to that which performs as I, I must attribute the form and mechanism I attribute to my self.

It is also why, if the observer isn't in the system, he isn't observing, for observing occurs between the two in their self and other roles of observer and observed[2] . This holds true even for the scientist performing an experiment, who controls the experimental factors yet adjusts them according to how he perceives their performance.

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[2] I should emphasise here that I am discussing a form and its operating mechanism in abstract and in principle, and am <u>not</u> making any argument for an "animist" view: and that the word <u>other</u> should be understood in a wider sense than "to see": the third and later entries in the Oxford Reference Dictionary (1986 edition) capture it nicely: "**3**. to celebrate or perform (an occasion, rite, etc) **4**. to note and record (facts or data) **5**. to remark." I don't, however, like the phrase "facts or data"!

That is how distinctions create both me and the other that is distinguished. Thus, there is reciprocation, mutualism, interaction, identity and a source for cognition. And that is why, again, nothing may be examined before the initial cognitive act, nothing may be said about that which went before the first distinction, or how it came to be drawn, for that is to presuppose cognition.

This is also the origin of the so-called "problem of self-reference". For, if I, as an outsider (an other), open up the circularity of the dual that is the unity, and attribute a fixed role to each of the participants in the circle, I am breaking the structure, and I am not allowing the reciprocity I have argued for. I am applying something from myself: the other to the system. I am controlling the control system, and since the control system is controlled, why should the control system that includes me, not be controlled, and the control system I am forcing into separation and fixed roles not be, itself controlling?

Thus the question "SED QUIS CUSTODIENT IPSOS CUSTODES?" But who will guard the guards?

III

Hence we have developed two forms of description, each with very different qualities. But, until recently, we accepted only one, for the other was discounted as illogical.

Not that the description is the thing, anyhow, as Wittgenstein (1922) showed. For, in a description-act, there are 2 entities (both others) that appear to be as one, for the purposes of the moment. And yet, it is impossible for 2 to be the same, for if there is no difference, there are not 2. The same is different (Glanville (1980)).

And yet, the very act of description falls, necessarily, into the one of these forms of description that was the only one we would accept, and thus added to its uniqueness in acceptability.

IV

The two forms of description are these:

The new is the self: where there is a unity caused by the interactive and mutual roles of a dual interacting. A unity that is without frozen roles and operates as a process.

The old is the other: where unities are dissolved by the separation and freezing of the roles and the destruction of interaction. A unity that was, now broken into opposing and frozen roles.

In the case of the self, the self is the content, is its self, and refers only to itself. (Thus, it cannot be referred to by the other.) Its reference to its self as its self, within and only as its self is the form and mechanism that gives it existence, that surrounds and embodies the distinction within. This is how it gets its stability, and its stability is not open to examination by an other without the self-ness being broken.

This is why Goedel's (1931) finding is not relevant: for it insists on reference outside, since the criteria are external to the system, and are of another. Goedel's Theorem has nothing to tell us about self-reference (Glanville (1987)) for neither it nor its criteria are within the self, nor can they ever be. It is also why logical concerns, such as paradox, are not relevant.

But it does lead to the Question of Cybernetics (Glanville (1987)) - rephrased: what can we and should we do about it?

In contrast, in the case of the other (which is the only case we have admitted until recently), the cleaving of the unity into two fixed roles from outside, the creation of a controller and a controlled (as we have depicted them) by no other controller acting on them as controlled, leads to fixity, regression (potentially infinite), the use of arbitrary end reference points

(eg standards to act as other reference points), and hence to notions of linear, uni-directional causality (another form of control) (Glanville (unpublished), Wittgenstein (1956)). And this is how it is judged to exist, to be stable.

It is as if the self were a wheel and the other the trace left by the wheel being ridden over the wet sand.

V

We may now answer the question "But who should guard the guards?"

There are 3 solutions, and these reflect different approaches.

Firstly, the guards may guard the guards. This is the solution of the self.

Secondly, the guards may be guarded in some chain of guards which ends with a guard of final responsibility and ultimate power. Should he become corrupt, the system fails. This is the solution of the other. In current popular parlance "the buck stops here".

Thirdly, there is a conceptual combination of the two, in which the guards guard the guards in an indefinitely large circularity that eventually ends up back at the first guard. By this time, it is assumed the problem will have gone away. Argued for by Varela and myself in respect of limitations of Spencer Brown's proposal (Glanville (1979), Glanville and Varela (1980)), this is the solution of bureaucracy.

VI

Finally, we are left with the notion of stability.

It can be seen that there are 2 sorts of stability. Self stability, and other stability. Neither can appreciate the alternative form

without endangering itself. For, for an other stability assessment of self stability, the unity of the self has to be split, and it has to be subject to criteria that destroy the self. Equally, other stability can only be appreciated by the self by creating a new unity in which the other conjoins with the self.

It cannot be said whether self-stability is dynamic or static, for such concepts are external and irrelevant. But, although it is often forgotten, it can be said that other stability may be either.

VII

There is a story that I greatly enjoy, not I hope apocryphal, told about a lecture given by B.F.Skinner. I usually tell it to illustrate other control, because it is amusing, obvious and wicked.

The class he was lecturing to decided to smile when he moved to the right and frown when he looked to the left, while lecturing. He ended up standing in the rightmost corner.

But the students also had frozen grins on their faces. The control was mutual and interactive, and as unlike Skinner's behavioural model as you can get until you ask the question about why the rats running the maze correctly make the scientists smile.

VIII

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