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A Cybernetic Musing: The IFSR, diagrams and inclusive logic, or — [Both [either [either/or] or [both/and]], and [both [both/and] and [either/or]]]

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Preamble

In this column I do two things.

I introduce the International Federation for Systems Research (IFSR), which has been celebrating its quarter centenary this year. I will not spend too long on the IFSR in general. What I will write about here is one outcome of one debate in a workshop intended to explore its future. In this exploration I am not so much interested in any futures proposed as outcomes, as in a particular way of thinking which is expressed in the second theme.

I also consider a different type of logic: taking Bateson's distinction made through what he called "the syllogism in grass," I write about an understanding of the IFSR, and the situation and context in which it was developed. From this consideration I end up with an extension of the understanding that is, I think, both surprising and potentially very helpful, concerning the relationship of two types of logical operator: *either*/*or*, and *both*/*and*.

Linking these is a strand concerning graphic representation, acting as a sort of glue. Graphic devices have structure and syntax that we too easily overlook, such as a tendency to polarise and exclude. These may be at odds with our intentions, and even what we are arguing verbally and logically. Tables, for instance, establish through their graphic organisation positions of polarisation which may be unwanted.

Introduction: Bateson and syllogisms

Towards the end of his life, Gregory Bateson (1987) wrote of the need for a shift in epistemological understanding, based on non-traditional type of logic. Instead of the traditional causal constructions he suggested we should think in metaphor. In his final paper, delivered via a tape-recording to the conference on "Gaia, a Way of Knowing," he illustrated this change through two syllogisms. The first, a classic syllogism of the form known as Barbara, is this:

Men die.
Socrates is a man.
Socrates dies.

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This syllogism expresses a simple causal logic: if Socrates is a man, and if men die, then Socrates dies. There is an unspoken (but nevertheless audible) "therefore" at the start of the third line.

In contrast, he quoted his so-called "syllogism in grass." This syllogism (of the form Bateson claims has "a rather disreputable name") is anti-causal, or, at least, anti-traditional-causal. It goes like this:

Men die.
Grass dies.
Men are Grass.

This syllogism works as a metaphor: men and grass are identified through their common quality: both die. In dying, men are (like) grass (and grass is (like) men). This is how metaphors work. Metaphors are not literal statements. When we say, for instance, somebody is a "pillar of society," we don't mean this to be taken literally: they are not tall bits of stone or steel, and society isn't a floor or roof resting on them.

The logic of the syllogism in grass is an inclusive logic. In saying men are grass we include both men and grass equally. In contrast, the outcome of the Barbara syllogism is to subsume Socrates within men and ascribe to Socrates the action performed by men (in this case dying: Socrates dies). Here there is only one subject, but there also is an action. This is not a metaphor! I can perhaps show the difference using a conventional logical notation.

men ——> die <—— grass
(if men then die, then die if grass)
Socrates——> men ——> dies
(if Socrates then, if man then die)

International Federation for Systems Research

At a recent workshop on the future of the International Federation for Systems Research I had reason to explore and discover the value of Bateson's syllogism in grass.

The IFSR celebrated its 25 anniversary last April. The major, public celebration was a day of symposia that took place during the European Meeting on Cybernetics and Systems Research conference in Vienna, in the week after Easter. A second celebration involved giving over the "Fuschl Conversation" held on the Fuschlsee near Salzberg to the question of the future of the IFSR. The Fuschl Conversations are an activities of the IFSR. Inaugurated by Bela Banathy about 20 years ago, they have continued every other year immediately following the EMCSR conferences (for an account see Hammond 2004). They follow in a long tradition: cybernetics arose as a subject, in part, through conversation at the dinners Wiener held at his home in Cambridge, Massachusetts; and, in part, through the Josiah Macy Jr. Meetings. There

were three outstanding conversational events (in which participants are free to speculate within a rigourous yet open and supportive group) organised by Annetta Pedretti in the late 1970s exploring the topic of self-reference, which may possibly be seen as of similar importance. I guess such meetings go back at least to the Greek symposium. Espinosa and Umpleby (2006) have recently explored these collaborative, conversational processes.

But this is not a report on the IFSR in general, or the Fuschl meeting in particular. The various Fuschl groups are co-authoring papers to create a summarising report. Rather, I will write of extending and re-interpreting the work of the group I was part of. To do this, I recount something of the circumstances at Fuschl: filling in the background to the (Batesonian) point, and giving some flavour of the meeting. I take full responsibility for what I present, including (doubtless) misrepresentations of the positions of my colleagues.

IFSR workshop at Fuschl

At the outset of the Fuschl workshop, participants formed into groups to debate different aspects of the IFSR and its future, reporting back in plenary meetings. The small group I was in was interested in what exactly the IFSR is and/or could/should be: what, if anything the IFSR should be doing. The group was Professor Frank Stowell, chairman of the UK Systems Society, Dr Amanda Gregory, deputy editor of Systems Research and Behavioural Science (the journal of the IFSR); Professor Guenther Ossimitz, editor of the electronic version of Charles François' *International Encyclopaedia of Systems and Cybernetics*. I represented the American Society for Cybernetics and the Cybernetics Society, London.

We struggled hard in our discussions to clarify what the IFSR actually is (how it performs) as opposed to what it would like to think it is. There were occasional visitors to our group. Our plenary reports (made on our behalf by Guenther Ossimitz) remained evasive: we criticised others for failing to consider what they were dealing with as they planned how the IFSR might proceed. We found, again and again, that other groups took much for granted. During the week we worked through approaches from Soft Systems Methodology and Appreciative Inquiry Method, lead by Frank Stowell and Amanda Gregory (see Stowell and Gregory, 2006). This work reflected Margaret Mead's wish that systems should be examined through systems concepts, as expressed in her paper "Cybernetics of Cybernetics" (1968), marking the start of the explicitly cybernetic investigation of cybernetics which lies at the heart of Second order Cybernetics. Approaching the final plenary we had still no conclusion. As far as I could see, still going round in circles about the underlying question of what the IFSR is, or should be.

At this point I drew a map or table of what seemed to constitute our problem: pairs were listed more-or-less in columns, adding more as they occurred. These pairs were intended as contrasts, and soon came to reflect, essentially, us versus them. Figure 1 shows the diagram we ended up with:

Figure 1

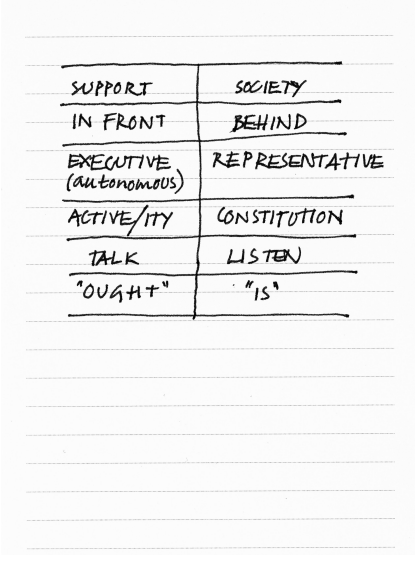
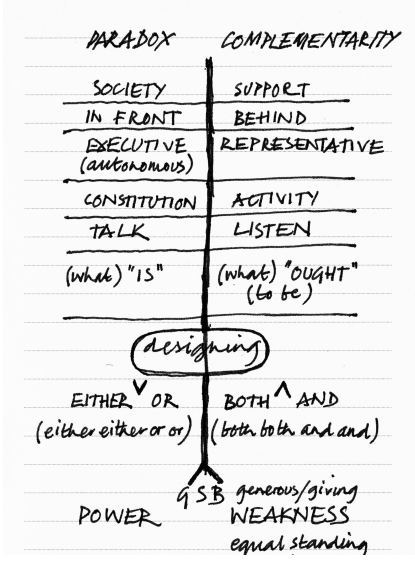


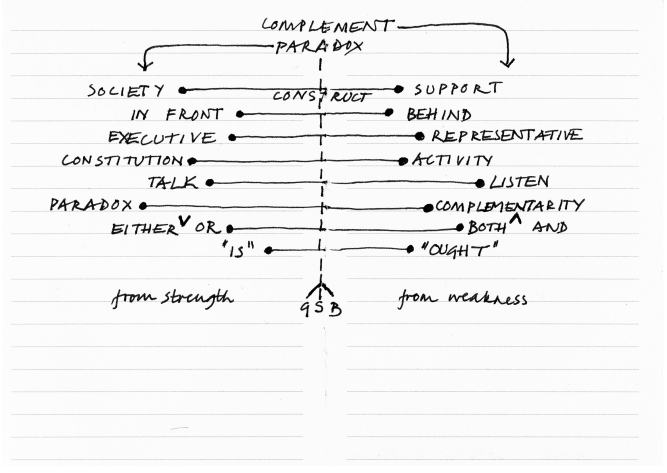
Figure 2



Redrawn on the whiteboard (figure 2), terms were rearranged with those considered desirable on the right side. A vertical line was added between the terms, with commentary terms below. This diagram generated considerable discussion, much supporting it as a summary of our endeavours. It was not intended as this: rather, it was a way to check if I could create a reportable conclusion. Amanda Gregory interpreted the diagram as a finding (rather than a summary). Guenther Ossimitz remarked the vertical line was the mark of a Spencer Brown distinction (1968). Frank Stowell felt the polarisation resulting from the mark of distinction was over-stated, remarking the pairings might also be seen as (like) Kelly constructs.

At the final summarising session I presented a modified, Kelly-ish version of the whiteboard diagram (figure 3):

Figure 3



Our presentation seemed neither successful nor unsuccessful. I don't know if this reflected a degree of fed-up-ness with our group, a feeling that we weren't saying much, or quiet satisfaction.

Why report this here?

Apart from interest in the IFSR's celebrations and the Fuschl process, there is an overriding reason for writing about this. The diagrams can tell us much more than so far indicated.

Comments on the syntax and logic of diagrams

Let's consider, in the first instance, the syntax of diagrams. These comments are obvious, yet it is surprising how often we can forget them. It is common for a diagram to argue visually the opposite of its verbal-formal content, setting up a conflict or paradox that, while it may be sensed, is rarely articulated

A common response to a diagram such as figure 2, especially with Spencer Brown's mark of distinction added, is to interpret it as oppositional: what appears on the two different sides of the distinction line are seen to be in opposition to each other. In figure 2, the terms are so arranged that those we favour appear on one side, while those we don't are on the other. Presenting the material as contrasting and mutually exclusive terms on opposite sides of a mark of distinction (giving the distinction value), we are using an exclusive logic. We are insisting (visually) that we have either

"this" or "that," although we may be quite unaware we are doing this. We are using an either/or logic. By using such a logic, we turn the combined acts of distinguishing and arranging into one of exclusion. We should choose only "this," and never "that." More precisely, in the modification and enrichment of figure 1 shown as figure 2, we have so organised the diagram that the "desirable" qualities that reflect our group are the right hand side, while those on the left are antithetical, and we dismiss them en masse.

A serendipitous benefit may result, for the organising act may create strange conceptual bed fellows. For instance, executive and paradox would not, normally, seem to me to sit well together. Finding them juxtaposed, I am invited to reconsider my "preconceptions."

Figure 3 suggests something else: a measure based on how far to the right (and left) the terms are. The use of lines to join terms is intended to suggest that they might be seen as more joined across some continuum where they form a unity (somewhat as in Kelly's constructs). However, in order to show the continuum between these different constructs as non-uniform, I have placed them out of vertical alignment with each other, which is easily interpreted as suggesting that some are more right or left than others (and thus more, or less, extreme). Furthermore, the length of the line connecting can be translated as indicating, for instance, range. In other words, the graphic conventions used in this diagram indicate more than I had wished: one must be careful not to mislead either oneself, or others, by the assumption of a graphic convention that states (albeit in non-verbal terms) something unintended.

Exclusive and inclusive logic: Both either *either/or* or *both/and*, and both *both/and* and *either/or*

Hidden in the figures is something else of interest. I have mentioned how the diagrams used indicate an exclusive logic we think of as either/or. That was the interpretation our group gave to figure 2. By organising what we took to be the good points on one side and the bad on the other, we set up a contrast leading to exclusion: in the end, one concept (placed on one side) is presumed better. Therefore, it should survive. The other should not.

It is this *either/or* logic of exclusion I now wish to look at.

While in the figures the mark of distinction divides and excludes, at the bottom of figure 2 there is an odd contrast: *either/or* is contrasted with *both/and*. The contrast is obvious: either/or is exclusive while both/and is inclusive. But, in contrasting them, a relationship of exclusion is set up. That is to say: we can either have either/or, or we can have both/and, but we can't have both. The way they have been set up is recursive: and it's recursive in either/or.

But need this be so? Should we necessarily favour the either/or logic of exclusion? It seems to me, in our culture, we have primarily come to think in terms of exclusion. As Bateson points out, the logic we have chosen demands we see alternatives as being in opposition: that one, and only one, should emerge victorious. The (graphic)

structure of the figures promotes exclusivity, polarity: either we chose the lot on the left, or we chose the lot on the right (summarising simply!). Spencer Brown's mark of distinction can be seen as creating exclusion: according to the drawer of the distinction, that which is distinguished comes into being. It is not what is excluded, or outside that distinction.

Re-forming belligerence

So why did I want to include, on the "good" side of the diagram, both/and? In order not to use either/or logic. As I constructed our figures I had noticed, that neither our small group, nor the other groups in Fuschl were getting anywhere by setting up the opposition of either/or, with its associated exclusiveness. I wanted to find a way to change this. It was both/and thinking that I was looking for, yet, in spite of this, I had set up a situation so that the inclusive both/and *was set in opposition to* the exclusive either/or. The way the figures were structured, the way I was thinking of both/and as an option in contrast to either/or, undermined this intention. The either/or operator sets up a conflict resolved only by the exclusion of one option. In counter-distinction, both/and is not an alternative, it is an over-arching operator that allows others, including either/or (and both/and), to exist within its span. To set it up (as in the figures) as an option in what is actually an either/or arrangement of contrast and exclusion—to give the operation either/or precedence—is to undermine the intention. Both/and should not be in opposition to either/or, for that is an either/or operation: it must, rather, include it. It should, therefore, not be on the "good" side of the diagram—or the bad. It has no side. It contains, and can contain its own contradiction.

It should be clear that, because of how the elements in the diagrams are arranged, the choice is always either/or. This is how the logical operation is recursive. Unintentionally, in our figures we are determined there shall be an outcome in favour of one side or the other, and it is that determination which renders it impossible for both to co-exist. It is the inadvertent consequence of the graphic means used.

If we do not want this belligerence, we must either re-interpret the implication of distinction (or the Kellian constructs of figure 3) to indicate not either/or, but both/and: the distinction does not exclude, but includes: the point of drawing it is not the option of choosing one side or the other, but to chose both in relation to each other.

> In other words, the logic of either/or is to exclude: either *either/or*, or *both/and*.
> But the logic of both/and is to include: both *both/and*, and *either/or*.

The first of these statements excludes the second at its meta-level, but the second, at its meta-level includes the first. That is how it is inclusive.

This is a sort of inter-dependence, an interactive inclusiveness that allows that each side reveals somehow an aspect of the other, that there is a metaphor: men are grass is not a statement to be taken literally. We both look beyond the difference to

find what might be held in common, and take what we find in the difference in men to throw light on grass, and in grass, on men.

Thus, Bateson's final command to us in his last paper (which further develops a position he first presents in "Form, Substance and Difference" (1970/1972b) where he talks about the unity of the organism and its environment as providing the "correct" unit for understanding in the age of cybernetics) can be seen in action. And its benefits can be understood, as well as the danger of accidentally losing it.

Conclusion

The diagrams, which enable this understanding, may also incidentally create the difficulty: diagrams don't simply manufacture an unwitting deceit undermining intention. They also reveal this undermining. It is not a case either of the desirability or the undesirability of diagrams. It is a case of both/and. We need them while we need also to be wary of, and even to reject, them. We need somehow to be able to hold both positions at once: or, at least, to reject one or the other of them only insofar as we are inclined to see them as harbingers of exclusion and bellicose victory. Our both/and includes both *both/and* and *either/or.* This is Bateson's epistemological change, in action.

At the moment of composing this text, we can again see what I now understand to be the terrible consequences of (two sides each following) an either/or logic in the Middle East, where that logic is given free rein to dominate while what is needed is something much more inclusive. Both Israelis and members of Hezbollah (and so many non-participants) die. The construction both Israel and Hezbollah would surely be better than the construction either Israel or Hezbollah.

You can't impose freedom any more than you can impose peace. In "From Versailles to Cybernetics" Bateson (1966/1972a) also wrote about peace (dishonestly) imposed on the Germans at the end of the Great War and the dreadful consequences of that. We see such consequences today, in the Middle East, and elsewhere, perhaps most dramatically in the threat to transatlantic flights and the drama of terrible deaths the threat predicated. We do not need any more either/or thinking, but we persist with it: and as a result it will, I fear, take years, decades even, for both/and thinking to help us all past this and heal us.

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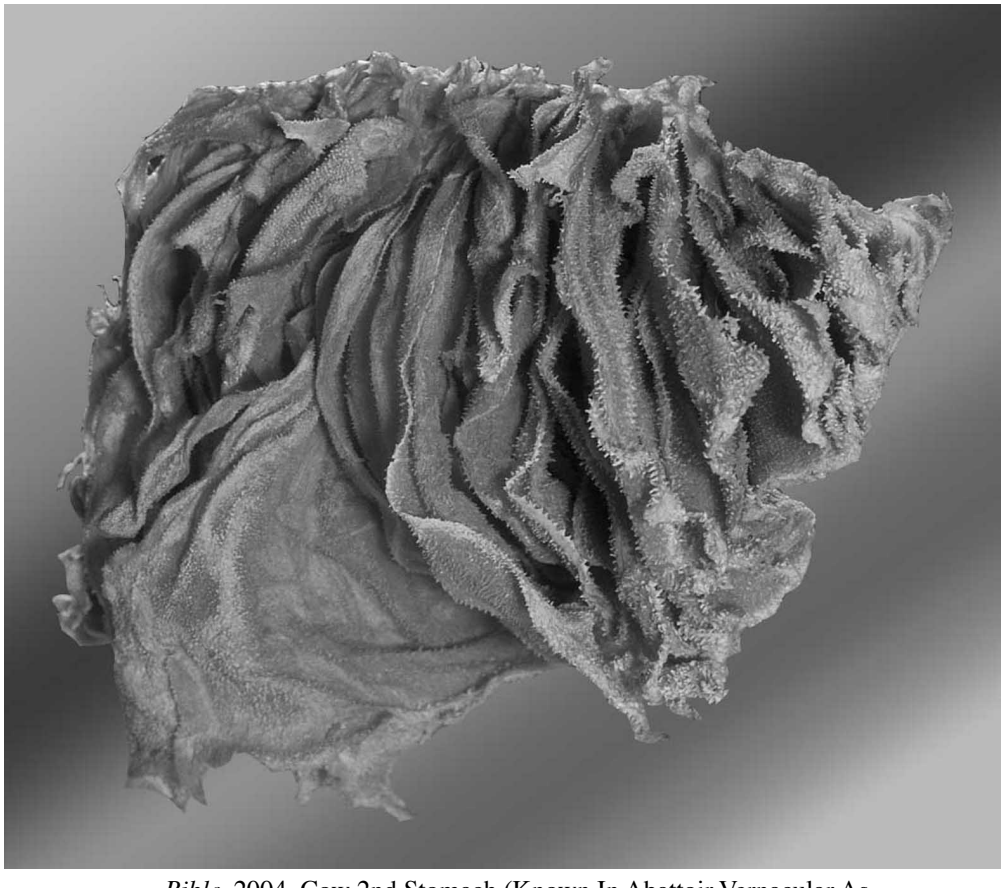
Note: The IFSR's web site can be found at http://www.ifsr.org/.



Bible, 2004. Cow 2nd Stomach (Known In Abattoir Vernacular As "Bible Stomach"). 200 x 100 mmp