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INTERNALISM VERSUS EXTERNALISM: A MATTER OF CHOICE?¹

To say something in one's own name is very bizarre. As a matter of fact, it is not at the moment one takes oneself for an ego (un moi), a person or a subject that one speaks in one's own name. On the contrary, an individual acquires a genuine proper name at the outcome of the most severe exercise of depersonalization, when it opens up for the multiplicities that traverse him through and through, for the intensities that run through him.

Deleuze (1990, p. 15-16), my translation.

1. INTRODUCTION

When interviewing Heinz Von Foerster about the past and future of second order cybernetics², I asked him what he found so peculiar about that 'second order' idea in cybernetics. His reply was one without any concession:

as cyberneticians we talk about ourselves. If we do not include ourselves in our experiences then it will be always the other. But it should be *me*, I am responsible for my activity, I cannot tell the other how to behave as a cybernetician (...) So, we have to think about a cybernetics of cybernetics, which I thought would be a second order of cybernetics, a kind of self- application of the notion.

¹ This paper has been published, in Japanese, in the Japanese journal "Contemporary Philosophy", 1996, September.

² At the occasion of the international congress "Einstein Meets Magritte. An Interdisciplinary Reflection on Science, Nature, Human Action and Society", Brussels, VUB, 29/05/1995-03/06/1995, published in Japanese in "Contemporary Philosophy", 1996, September.

In the same interview, Von Foerster expressed himself clearly about the nature and consequences of this second order notion:

The point here is: there is really a somersault, an epistemological 'salto mortale' because the moment you open your mouth *you* open the mouth, but to identify therefore what is coming out of that mouth which has been open is reflecting the open mouth. This is an essential point in the whole thing. It is not going that nice classical way any longer. You speak about something else. Whatever you say, it is *you* who is saying it. And at the moment the separation between you and what you are saying is made, my feeling is that any notion about ethics and responsibility is already subdued, suppressed. You don't need to be responsible if you are only speaking *about* something. But at the moment you speak about *you* then it is you who is speaking and therefore you are responsible.

What a bold statement this is! Can scientists ever get seriously involved with such an idea? Can philosophers? As a matter of fact, it implies that there is no room for hiding, no escape of the speaker possible: everything you say, you said it and it has to be taken into account as such. The words you are speaking are never those of your neighbour. This certainly is revolutionary with regard to the majority of thinkers in the history of philosophy, as most of them are taking exactly the opposite view. Kant, with the introduction of his transcendental method, was perhaps the most prominent example of the latter: first assume the existence of objective knowledge, then analyze the status of this knowledge in terms of its conditions of possibility. Kant is speaking about the possibility of objective knowledge; he is not speaking about himself. There is no room for the idea that in his speaking about something, he is always and inevitably speaking about himself. In a mean mood, Von Foerster would say that philosophers have developed on purpose a theory according to which they are only speaking about something, a language, an objective truth, etc.

Perhaps the reader will be puzzled by these opening words. Indeed, what can be the relation between this second order notion and what is actually called the 'internalist stance' in evolutionary systems thinking? Why or how would an internalist stance be involved with questions of this kind, with ethical questions? This is precisely the issue that I will address, attempting to show (i) that the 'ethical' position sketched above is inherently linked to the second order cybernetic interpretation of self-organization, (ii) that the internalist interpretation in evolutionary systems theory equally finds its source in an attempt to describe self-organizing systems, and (iii) that there are various ways to be an internalist, depending in the first place upon the choices one makes with regard to the interpretation, the behaviour and the description of self-

organizing systems and of the observer as a particular instance of a self-organizing system.

Let me begin by providing some details about the history of cybernetics. It can be helpful, in particular, to understand why and how Von Foerster and other cyberneticians came to the idea of 'second order'.

2. SECOND ORDER CYBERNETICS: THE CONVERSATIONAL STANCE

2.1. WHY SECOND ORDER?

It is well known that first order cybernetics aimed at modelling purposeful behaviour in man and machine³. It did so in terms of control and communication, that is, in terms of *external descriptions* developed on an a priori basis and implemented in one way or another in the machine. Cybernetics of the first order was a theory of the observed systems.

The major dissatisfaction with this approach was the impossibility to model genuinely autonomous systems, prototypical examples of which can be found in the biological realm. The main question is indeed: how to model systems that develop their goals themselves, that are apparently organized from within, that self-organize? How to understand and describe systems that develop without any explicit external description, apparently without being programmed externally, without certain external goals set in advance? How to characterize this internal organization and how to implement it in the machine?

Von Foerster, the main instigator of second order cybernetics, instead of taking the first order engineering stance, was concerned with biological systems, and quite naturally came to study the way in which systems set goals for themselves, the way in which they develop goals in the course of a particular history. In comparison to the externalist approach of first order cybernetics, one can readily call this an *internalist approach*. The attention indeed shifts from external descriptions in view of control, to questions of 'self': self-organization, self-description, internal development.

The whole question, however, will be to precisely characterize this internalist stance. Does it imply the abandonment of any form of control? Does it necessarily involve, as many authors of second order cybernetics, and quite some thinkers in evolutionary systems today are proposing⁴, a semiotic viewpoint, in

³ For more details about the history of cybernetics, see a.o. Van de Vijver (1992).

⁴ I call those interpretations of evolution semiotic that consider that the description of evolutionary processes requires taking into account natural language and its users. In this broad sense, S. Salthe, K. Matsuno and J. Hoffmeyer are all semiotic thinkers. See, a.o. Salthe (1993); Matsuno (1989). Matsuno & Salthe (1995). Hoffmeyer & Emmeche (1991).

which the observer, as a natural language user, is a central part? In what sense is it internal then?

Let me focus first on the "conversational stance" of some representatives of second order cybernetics, and see in what way this can be called an instance of an internalist stance.

2.2. ABOUT CONVERSATION: INTERNAL OR EXTERNAL?

For Heinz Von Foerster, as well as for Gordon Pask, the answer to genuinely self-organizing systems is obvious: it is necessary to change the viewpoint from observed systems to observing systems: a system is called self-organizing precisely because of the observational means one needs to make the behaviour of the system consistent⁵. As a consequence, self-organization is to be related to conversation. For instance, one can easily describe a human being from an anatomical perspective; the problem of self-organization will not arise. From the moment one speaks to such a being, however, one considers him as self-organizing. Self-organization is a relational property that attributes to the observed system the capability to observe the one who observes, to interpret the one who interprets. As a consequence, the observer remains principally uncertain about the model he builds of the self-organizing system: he has to do as *if* the system is genuinely self-organizing even if there is no objective or ontological basis for it in order to enhance interaction and to improve the consistency of the behaviour of the system.

This kind of answer is familiar to us from the history of philosophy. Pask's epistemological or heuristical position is indeed quite close to Kant's: in order to understand something of internal teleological forms, we have to add meaning, Kant said. Even if we cannot get a grip on goals that would on an a priori basis determine the development and the behaviour of internal teleological systems, we have to do as if these systems were developed in accordance with those goals. To Kant, we will never be able to objectively know internal teleological forms; their internal circular causality will never be describable in terms of a priori principles, hence we have to add meaning in order to make sense of them. Kant's third Critique was rightly called by Philonenko a "logic of meaning", and could as such contain a first part on aesthetics, and a second part on teleology⁶.

⁵ See, a.o., Von Foerster (1960), Pask & Von Foerster (1960), Pask & Von Foerster (1960a).

⁶ See Philonenko, (1984) p. 12. Gadamer's elaboration of "Truth and method", dating from 1960, in a similar way starts with a reflection on esthetics, which constitutes the starting point for the further chapters on truth and language in natural and human sciences. Gadamer explicitly states in this work that meaning is not something that is

So, for Von Foerster, Pask or Gadamer, the encounter with self-organizing systems means the experience of the impossibility to describe and explain the internal dynamics of systems from an external viewpoint. This impossibility clearly implies for them an anthropomorphic as well as an ethical move: (i) we have to assume that those systems are able to interpret our interpretation, and hence, (ii) our own behaviour, our own choices, values and decisions have an essential place in the theory of self-organizing systems. No objective knowledge is at stake: it is the interaction in view of certain goals, like consistency, like survival. It is not appropriate to call this an externalist position, as the objectives of control, and the purported adequacy between internal and external are abandoned.

Let me now focus on the 'internalist' position as it is present today in evolutionary systems thinking.

3. EVOLUTIONARY SYSTEMS THEORY⁷

Evolutionary systems theory finds its source in the need to incorporate into the biological theory of evolution ideas related to complex dynamical systems and self-organization. If we accept that natural selection alone cannot sufficiently explain all forms of biological evolution, and if it can be shown that evolution is not only at work in biological systems but is present also in some a-biotic systems and is at least partially guided by other principles, then it seems obvious to look for the more general principles of evolution, development or change in systems of different sorts. As such, evolutionary systems thinking is concerned with the concrete material details of change – it is historically more related to the developmental approach in biology – and cannot escape analyzing the constraints that are at work from physical, chemical and biological perspectives. Moreover, in describing those dynamical systems,

'given', observable or measurable at will on the basis of a particular method; it is something that 'emerges' through an act or an experience. His philosophy is one of 'taking part', not one of distance, so characteristic of the scientific method. Moreover, Gadamer claims for his philosophy a genuine universality, to the extent that it is applicable to all domains of experience. In this regard, see also: Ricoeur (1996).

⁷ When speaking about evolutionary systems thinking, I am referring in the first place to the following authors and works: Brooks & Wiley (1988); Csányi (1989); Depew & Weber (1995); Kampis (1991); Matsuno (1989); Salthe (1993); Swenson (1995). In the present text, I will not be dealing with those authors who consider that it is possible to describe and explain self-organizing systems on the basis of mechanical principles. See, for instance, Henri Atlan's viewpoint on self-organization, personal communication (1995), or Brandon's viewpoint on the relation between selection and self-organization: Brandon (1990). Let me just mention that there are a lot of epistemological difficulties that arise in this context, that make me conjecture that the proposed solutions are not providing satisfactory answers in comparison to the 'heuristic' option of Kant or the conversational option of second order cybernetics. For more details, see Van de Vijver (1995).

many authors are signalling the profound epistemological changes that arise in this context. It is in this regard that questions related to internalism and externalism arise, that semiotic as well as structural solutions are proposed.

In the present text, I will deal with the internalist viewpoint of K. Matsuno. The main questions that are guiding my reasoning are the following: (i) do we encounter here the idea that, in describing self-organizing, autonomous systems, we need to turn from observed systems (first order) to observing systems (second order)?; (ii) what does the internalist stance imply as to the status of the subject and the role of language? (iii) is there an 'ethical' move, as described above with regard to second order cybernetics?

Let me briefly sketch Matsuno's position in the field.

3.1. THE INTERNALIST VIEWPOINT OF K. MATSUNO⁸

In dealing with the origin of life, Matsuno defines the *internalist perspective* as the one that takes the material and energy resources as a starting point: "the issue is how to get molecular replication started out of the material and energy resources that could presumably have populated the primitive earth" (1996a, p. 2). Hence, to him, the basic internalist concern will be to understand production processes, i.e. to understand the relation between production processes and products, which is a dynamical relation between processes and static results. The central issue will be to characterize a process in terms of the production of differences and similarities (new productions and strict repetitions). Moreover, evolution obliges us to take into account the fact that productions go on indefinitely, that they take time, that they have the status of events. The internal viewpoint is inherently dynamic.

An *externalist perspective*, on the other hand, is situated at the side of the products, and not at the side of production processes. It focuses on questions of reproduction and control, implying a basically static viewpoint in which it is impossible to arrive at de novo productions.

The distinction between internal and external *measurement* arises in the context of processes and products. Internal measurement is a local kind of interaction that proceeds on purely material grounds: it is the "detection of material origin" (1996, p. 3). Processes produce products that function as boundary conditions in a subsequent internal measurement. Each local measurement takes time; as such it is an event, and it creates events to be measured subsequently. External measurement, on the other hand, is global; it is the measurement of the outside observer that perceives the boundary condi-

⁸ See, a.o. K. Matsuno (1989, 1995, 1996, 1996a).

tions as something static, "frozen in the record". Each global measurement, instead of focusing on events, necessitates the idea of state.

Particularly interesting in this regard is the idea that internal measurement carries a leftover: being inherently temporal, internal measurement can only measure what has already taken place, and cannot measure simultaneously what it is now measuring. Hence Matsuno's conclusion: "The leftover that internal measurement carries with itself is the on-going variation induced at the internally formed measuring apparatus while performing measurement, since measurement is taken to be an instance of making variations at the measurement apparatus" (1996a, p. 4).

Starting from this brief sketch of Matsuno's position, I will now raise some questions as to the precise nature of his 'internalism'. I will attempt to address this question by making a comparison with psychoanalysis from a Freud-Lacanian perspective.

3.2. ABOUT A PSYCHOANALYTIC JOURNEY INTO BIOLOGY

To me, reading the articles by Matsuno, is like taking a psychoanalytical journey into biology. Perhaps the author would not agree on that point, or even would not like it, but the text is there to underline my point. And I want to stress the point, because some insight might arise through this comparison. I give some examples:

(i) In psychoanalytic theory, there is a capital distinction between the subject of speech and the subject of speaking ('*sujet de l'énoncé*' and '*sujet de l'énonciation*'). The use of language creates an essential gap between the one who is speaking (the subject of speaking) and what his speaking produces, i.e. the way the subject is represented in his speech (the subject of speech). There is no coincidence possible between the subject of speech and the subject of speaking. In a very similar way, as we have seen, internal measuring creates a fundamental leftover between what is measured and what is measuring. There is an unbridgeable gap between the two. It would be interesting to study in detail the relation with the Lacanian idea of the leftover ("*le manque*") that drives the subject in his wanting (desire), or with Gilles Deleuzes' interpretation of the 'empty place' ('*place vide*')⁹.

(ii) Furthermore, what the subject is saying, i.e. the words that have been spoken by and to the subject and that are, as such, "frozen in the record", function as constraints, as boundary conditions for his future speaking. It could be argued that the unconscious is nothing but the internal measurement, in which the frozen records of the particular history of the subject act as

⁹ See, for instance, Lacan, Deleuze (1969, p. 50-56).

boundary conditions. The subject's speaking and acting is guided by this "source", so much so that it is often said that he is not speaking himself: "it is the Other who speaks"¹⁰.

(iii) Freud as well as Lacan consider the unconscious as essentially dynamic and intentional in nature. Hence the famous dictum: "The unconscious as cause"¹¹. In a similar vein, Matsuno at various places describes internal measurement in intentional terms: "It is the leftover of the self-induced ongoing variation that *drives* internal measurement, while external measurement thus incorporates into itself the capacity of generating and producing variations indefinitely" (1996, p. 4, italics added).

(iv) Finally, a fascinating idea of Matsuno is the one related to the distributedness of the internal measuring agents. There is no monopoly of one internal agent over the others in fulfilling internal measurement. I find this particularly interesting because it really opens up genuinely new possibilities for a non-Cartesian viewpoint in science (see also Swenson 1996). I will return to this in the conclusion.

It would lead us too far to deal with all those points in detail. However, the reason why I elaborated on this parallelism, is that the epistemological choices underlying the internalist stance of Matsuno are likely to appear more clearly.

3.3. WHAT KIND OF INTERNALISM?

In psychoanalysis, as well as in Matsuno's viewpoint, it is evident that the description of the internalist stance itself obliges one to adopt an externalist stance. Matsuno himself admits this: "Needless to say, there is no room for violating the principle [of the excluded middle] within the realm of external description that presumes the integrity of the descriptive subject. This is, however, simply a consequence of monopolizing descriptive agents by a single external agent, which is inevitable in any discourse (including the present article)" (1996a, p. 5). This reminds us of Freud's invention of the psychoanalyti-

¹⁰ Jesper Hoffmeyer touches upon the same questions, coming however to quite different conclusions: "Because of this specifically human code-duality (wo)men are existentially alienated from themselves and therefore they can know themselves. For knowledge presupposes a distance or a non-coincidence, i.e. the self cannot know itself without being able to step back from itself as it necessarily does when talking about itself. The creation of the specifically human digital code, language, holds the key to self-consciousness". It should be noted that the possibility of an 'other' knowledge is not explicitly denied by the author either; the topic is just not really made problematic. For, how do we know ourselves? What do we know of ourselves, of our internal dynamics, on the basis of the code-duality? What Hoffmeyer seems to suggest, is that the only kind of knowledge we can have of ourselves, is an external knowledge. See Hoffmeyer (1996, p. 7).

¹¹ See, for instance, S. Freud (1915).

cal technique (free association), with which he attempted to define a laboratory situation in which psychic phenomena would be studied. So, to construct a theory about internalism implies a fundamental epistemological externalist shift. The concepts of internal dynamics, of leftover, are basically and inevitably externalist. Quite similarly, the notion of the unconscious is an externalist concept¹².

In both cases, external concepts do never render the dynamics, the evolution of the underlying processes: they are taken to *express* the internal dynamics. The internalist viewpoint attempts to reconstruct the internal dynamics starting from the frozen records: the boxes surrounding us do have insides, which need to be studied. Indeed, the main point is here to articulate the relation between internal and external. Salthé refers to this as the combination of structuralism and materialism (cf. Salthé, 1996, personal communication): "For me materialism is the preferred term for the fact that nothing can be realized in our world without the opposition of friction. This includes the accession of deep structures in surface realizations. In other words, the difference between deep structure (reality) and surface structure (actuality) is the scarring of history made necessary by contingency (caused by the fact that there is not only a single thing going on in the world). Structures are realized only with the elaborations necessitated by history".

What is then the basic difference between this form of internalism and an externalist approach? A first answer would be: the attention for the internal dynamics, for the generation of forms, for the emergence of frozen records. As I said, internalism is essentially dynamic: for the internalist, the meaning of things (of forms) lies in their generation. For the externalist, it is impossible, even needless to take into account this generation.

4. CONCLUSION

To conclude, let me return to Von Foerster's viewpoint and the basic differences with Matsuno's type of internalism. The shift in the meaning of the term internalism cannot be denied.

(i) Internalism with Von Foerster refers to the fact that the experience of self-organizing systems obliges one to adopt an anthropomorphic viewpoint, in which the system is considered as being able to observe the one who observes, to interpret the one who interprets. Internalism is here 'being part of', leading to an essentially interactionist and ethical viewpoint. I suppose Stan

¹² Some have even stressed the basic transcendental nature of Lacanian psychoanalytic theory. See, for instance, Baas (1992).

Salthe would speak in this regard of a form of animism, which, quite logically, has no place at all in current science.

(ii) Internalism with Matsuno, on the contrary, assumes that there are boxes which have an inside, that can and should be studied in their relation with an outside. The type of relation between inside and outside is one of expression.

Gilles Deleuze makes a distinction that applies quite well to the above difference between the two internalist positions. There are two ways to read a book, so he says:

Or one considers a book as a box that refers to an inside, and then one goes looking for signified, and even, if one is more perverse or corrupt, one goes looking for the signifiers. The next book will be treated as a box contained in the previous one, containing it in its turn. One will comment, one will interpret, one will ask for explanations, one will write a book about the book, ad infinitum. Either the other way: one considers a book as a little asignifying machine. The only problem is: 'does it function?', and 'how does it function?'. How does it function for you? If it doesn't function for you, nothing will happen, just take another book. Deleuze (1990, p. 17), my translation.

Internalism or externalism, it clearly is a matter of choice: "What do you want a book for?", "What do you want science for?", "What do you want to be an internalist for?". But it equally is a matter of defining the capability of choosing, of defining the capability to raise the pertinent questions. One of the essential messages of Matsuno's internalism is related to this aspect, even if the interactionist or ethical perspectives were not explicitly touched upon by him. As a matter of fact, Von Foerster seems to consider the possibility of choice as something unproblematic, something inherently linked to a central agency called the subject. See his words cited at the beginning of this paper: "at the moment you speak about *you* then it is *you* who is speaking and therefore *you* are responsible". What we get with Matsuno, however, is a perspective of choice linked up with the problematic relation between internal and external. Choice is to be situated between a (perhaps infinite) number of distributed internal agents, and an external agent that in a certain manner expresses, but never adequately, never fully represents the internal dynamics. This viewpoint could well lead Matsuno beyond his actual way of distinguishing the internal and the external stance. If there is a way of making this distinction, and hence, if there is a way of speaking in one's own name, it leads us to different horizons, and to a different ethics, in particular.

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