Building Bridges in Phenomenology:
Matching Heidegger and Autopoiesis in Interpretive Research

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Abstract: *Either Heidegger's remarkable work* Being and Time *or Maturana and Varela's theoretical biology of* autopoiesis *have been used for some time in the information systems field for grounding interpretive research. This paper claims that the phenomenological findings on humanness of Heidegger, and the autopoietic uncovering of the essence of a living being by Maturana and Varela, both pointing out language as grounding, are ontological and epistemological consistent with each other and complementary. That in some aspects Heidegger's theory goes much deeper than autopoiesis, and in other cases autopoiesis details much more issues at stake, makes the fundamental matching of these two theories promising in terms of grounding interpretive research. In claiming the legitimacy of matching Heidegger's* Being and Time *and the theory of* autopoiesis*, this paper intends to contribute to the IS and organisational fields of research by pointing out in this matching a substantial, detailed and powerful body of theory concerning the phenomena of language, action, change, knowledge, information, and world as such.*

Key words: Heidegger, Autopoiesis, Interpretive Research, Basic Theory, Theoretical Development, Language, Action, Ontology, Information Systems.

INTRODUCTION

Martin Heidegger's (1889-1976) (1962) phenomenological findings on humanness and Humberto Maturana (1928-) and Francisco Varela's (1945-) (1980, 1992) theoretical biology, autopoiesis, have been applied for some time in the IS and organisational fields of research. It is the argument of this paper that these theories are ontologically and epistemologically compatible and coherent, and complementary on their findings, namely in what concerns language as ontological foundation of being human. Taken together as grounding for interpretive research they offer us a powerful and detailed body of basic theory about the nature of human beings and their action in the world.

The aim of this paper is to show that from ontological and epistemological standpoints these two theories can be fundamentally matched, and as such to serve together as theoretical foundations for the IS and organisational fields of research. Introna (1997) and Winograd and Flores (1986) used autopoiesis theory and Heidegger's *Being and Time,* although they have relied more heavily on the latter. They implicitly assumed the fundamental consistency of those two theories, but nevertheless did not address head on the legitimacy of matching them. This might have pre-empted further developments to take place.

By showing that Heidegger's findings and autopoiesis can be taken together, from a theoretical position, and should be taken together, from a pragmatic and outcome driven standpoint, as "*bricks* for building" (Nietzsche 1986:261) in research, this paper intends to point out a powerful, detailed and promising body of basic theory on which research into the many challenges that lie ahead for IS and organisational issues might successfully rely.

The issue this theoretical paper addresses is of importance to research activity. I recall that the ontological assumptions, i.e., our stakes on the nature of that which is, and the epistemological presuppositions, i.e., our presuppositions on what knowledge is and how it can be obtained, on which a research is grounded decisively shape the inquiry. One can look forward only on the basis of an assumed background. We must bear in mind that the ontological foundations of any scientific quest whatsoever do not vary with the results, but rather the contrary: the significance of the results can have diverse meanings as they rely on diverse basic theories. "[F]oundations can never be disclosed by subsequent hypotheses derived from empirical material, but (…) they are always 'there' already, even when that empirical material simply gets *collected*" (Heidegger 1962:75). Therefore, the offer of a ground, in all its power and detail, has in itself the potential for revealing new modes and aspects of phenomena under inquiry.

Given this understanding, this paper tries to take advantage of a growing awareness and openness towards interpretive research in the IS and organisational fields (e.g., Myers and Klein 1999, Walsham 1995), and suggests what I think is an interesting, challenging and promising possibility in basic theory development. It is not the aim, nor the possibility, of this paper to review Heidegger's (1962) and Maturana and Varela's (1980,1992) ontological and epistemological proposals. Below very briefly I outline where do these theories stand.

HEIDEGGER'S *BEING AND TIME*

Heidegger might prove to have been the most influential thinker of the 20th century (e.g., Merleau-Ponty 1962, Dreyfus 1991, Polt 1999, Introna 1997, Derrida 1991, Levinas 1996, Sartre 1993, Feenberg 1999, Borgmann 1999, Zimmerman 1990, Wrathal and Malpas 2001). *Being and Time* has been regarded by many as the most important piece of Western thought in the 20th century, ever since it first was published in 1927 (Spiegelberg 1994).

Heidegger (1962) tried to give an account of the world as it is, i.e., he tried do uncover the world that both empiricism and intellectualism always already presupposed whenever they explain that world. Heidegger attempted at uncovering the world previously experienced, to which any theory whatsoever must refer. Kant (1985) considered it a scandal that a proof of the existence of the external world had not yet been produced. Heidegger (1962) regards it as a scandal that such a proof had been searched for. Empiricism and intellectualism fail to see that the world to which they refer is *there*, already, irrespective of whatever is thought about it. The world as such is thus an always already there (Heidegger 1962). Only because that which we are, as we ourselves are, cannot be stripped out of this world always already there, do we come to be revealed as *being-in-the-world* (Heidegger 1962, Merleau-Ponty 1962). A world that is instead of is not, is that which is most evident for us – this one of Heidegger's (1962) central and most decisive insights.

In trying to address worldhood, Heidegger (1962) claims to have formally indicate the kind of phenomena within which our own being is want it is, *Dasein – a being-there,* dwelling in language, *understanding, thrown, attuned, involved, dealing, in-order-to, for-the-sake-of--which, with-others, handling ready-to-hand* beings*, starring at present-at-hand* things, always and already questioning his own being and possibilities – *caring* for Being. The phenomenological technical terminology used by Heidegger (1962) to address worldhood is

dense, full of new terms and complexities. Yet, *Being and Time* is not the impenetrable treatise that sometimes it is referred to. One might well get into it by using some of the available sound introductions to the text (e.g., Polt 1999, Dreyfus 1991), or academic texts that use Heidegger (1962) (e.g., Introna 1997, Winograd and Flores 1986).

Heidegger in IS and Organisational Research. The work of Heidegger (1977) on technology is a widely recognised turning point in Western thought on this theme (Zimmerman 1990, Feenberg 1999, Polt 1999), so it is likely to be only a matter of time before Heidegger's influence on IS and organisational issues strengthens its momentum. Nonetheless, with the exceptions of Ciborra (1997, 1998) and Ilharco (2002) who directly rely on Heidegger's (1977) notion of *Ge-stell*, as the essence of modern technology, while researching different issues, it is Heidegger's (1962) exceptional work *Being and Time* that has had a growing influence on the IS community for the last twenty years; although this influence has not had a mainstream focus in this field.

Relying on Heidegger's (1962) ontology, Introna (1997) addresses anew the issue of decision making, taking into account the trust which management now places on IT; Coyne (1995) attempts to bring together the notions of action, embodiment, and computer systems design; Introna and Ilharco (2000) phenomenological investigate into our growing engagement with the screens of the IT devices; Spinosa, Flores and Dreyfus (1997) address action and entrepreneurship. Introna and Whitley (1998) were Guest Editors of a special issue of the journal *Information Technology & People* (Vol.11, n.4) dedicated to the theme of 'Heidegger and Information Technology', which published contributions from Dreyfus, Flores and Spinosa, Coyne, Ciborra and Hanseth, and Cass.

The Heideggerian tradition in IS research had its foundations in the early 1980s, triggered in 1982 by Hubert Dreyfus' introduction of phenomenology into a thorough critique of artificial intelligence (AI). In *What Computers Can't Do*, Dreyfus (1982) forecasts with precision the shortcomings that AI would show in the decades ahead. In analysing the issue of skills acquisition, Dreyfus draws heavily on the ideas of Heidegger, the later Wittgenstein (1967), and Polanyi (1973). Ten years later, Dreyfus confirmed and developed his original analyses, in a new book titled *What Computers Still Can't Do* (Dreyfus 1992). Meanwhile, in 1986 two other groundbreaking books applied Heidegger's (1962) findings to IS issues. One of them, *Mind Over Machine* (Dreyfus and Dreyfus 1986) showed how our action in the world does not follow rules that can ever be described. The more experienced the subject, the less able is he to apply rules and reasons to depict why he did what he did, the authors argued relying heavily on Heidegger (1962). The second book from 1986 of interest to the issues I am addressing is *Understanding Computers and Cognition,* by Terry Winograd and Fernando Flores (1986). They reconsider the role that computers have in professional environments. This has perhaps been the most influential work, relying on Heidegger (1962), in opening up a sound path of research for the IS and organisation studies academic fields.

THE BIOLOGICAL THEORY OF AUTOPOIESIS

The biological theory of autopoiesis, developed by the Chilean biologists Maturana and Varela (1980, 1992), has had a growing worldwide impact in the social sciences for the last two decades. It is founded on well-established findings in biology and neurophysiology, but its overall approach is a completely new one. It is moulded within a strong systems perspective, supplying genuinely fresh insights into that which essentially makes a living being to what it is. Heidegger got to the core of the issue autopoiesis addresses when wrote

that to be alive is a *self-bringing forth*, an arising out of itself. Autopoiesis, as *poiesis en heautoi* (in itself)*,* is devised to uncover this *bringing forth* on its own:

> "The bursting open of a blossom into bloom, in itself (en *heautoi*). In contrast, what is brought forth by the artisan or the artist, e.g., the silver chalice, has the bursting open belonging to bringing-forth, not in itself, but in another (en *alloi*), in the craftsman or artist" (Heidegger 1997:10-1).

Autopoiesis generates explanations for the interpretative and hermeneutic characteristics of human beings and their languaging (Mingers 1995:5), which is precisely the ground where Heidegger's (1962) findings move. Autopoiesis differs from the exact science approach because what Maturana and Varela found worthy of investigation was not the empirical evidence, the *data*, that traditional exact science's approaches are always looking for. Instead, Maturana and Varela (1980, 1992) were concerned with the results themselves. Although they handled data previously handled by traditional biological researches, they questioned the assumptions of these usages, namely the implicit ontological presupposition that living beings are open systems in an *objective outer world,* and ended up with radical different conclusions.

Autopoiesis suggests a change of paradigm as characterised by Kuhn's (1996:111) explanation that during "revolutions scientists see new and different things when looking with familiar instruments in places they have looked before. (…) What were ducks in the scientist's world before the revolution are rabbits afterwards", conceding that in the most radical shifts these 'rabbits' were something never heard of before. At the heart of autopoiesis is the claim that living systems are self-organised and self-produced *closed* systems—they are not open systems. This is what Heidegger (1962) meant in that the world shows up to us in accordance to our throwness, attunement, and projection.

Autopoiesis belongs to the Western intellectual tradition of complexity and self-organisation, a current of scientific thinking that can be said to have its modern prelude with Darwin's theory of natural selection, compiled and presented in 1859 under the title *The Origin of Species By Means of Natural Selection or the Preservation of Favoured Races in the Struggle for Life* (Darwin 1985). However, neither autopoiesis nor chaos theories—two prominent schools of thought within the complexity arena—agree with the supremacy of the 'external environment' as presented in Darwin's theory of natural selection. For autopoiesis living systems do not change as their environment alters. Instead, they behave according to their own rules, reacting to both external and internal stimuli. These essentially closed systems are only open to the environment in relation to the elements that actualise—materialise—their being. What they are, as they are, is closed to environment.

Maturana first established autopoiesis' key features in "Biology of Cognition" (1970). However, the word autopoiesis was coined only three years later, when presenting the paper "Autopoiesis: The Organization of the Living" (1973). These two papers are considered both by Maturana and Varela (1992:13) and the academic community in general as the foundational papers of the theory of autopoiesis. They were later published as one book under the title *Autopoiesis and Cognition: The Realization of the Living* (Maturana and Varela 1980). The word *autopoiesis* is a juxtaposition of the Greek words *auto* (self made, self based) and *poiesis* (produced, generated, created). It was formulated to mean self-production, as that identifies the autonomous character of a living being. Maturana and Varela claim that this new word for addressing the phenomenon of life allowed them to escape traditional assumptions and meanings in the domain of biology. The word autopoiesis has proved to be useful, as it unifies and intuitively suggests the basic features Maturana and Varela (1980, 1992) want to highlight: autonomy and self-production. They claim that it "simplified enormously the task of talking about the organization of the living without falling into the always gaping trap of not saying anything new because the language does not permit it"

(Maturana and Varela 1980:xvii). To uncover the phenomena he was addressing, Heidegger (1962) had to coin many new terms as well, among which Dasein, arranged for addressing the phenomenon of man in a way in which the investigator can set him free from tradition, is perhaps the most well-known and powerful one (Dreyfus 1991).

In addition to autopoiesis' influence on the IS and management fields of research, it has made inroads into the social sciences ever since its presentation in "Biology of Cognition". In the mid-eighties, German sociologist Nicholas Luhmann published the work *Soziale System* (1984), which used the autopoietic characterisation of living systems to develop a more general theory of self-referential systems centred on the concept of communication. Luhmann subsequently further developed his theory that there are core principles of autopoiesis at work in social systems (Luhmann 1986; Luhmann 1982, 1988; Van Twist and Shaap 1991). Using Luhmann's proposal, Gunther Teubner, a German law theorist, started a new approach to the understanding of legal systems (Teubner 1988, 1991; Deggau 1988). For Teubner autopoiesis proved useful in creating awareness of the legal system's lack of renewal and resistance in adapting to new issues in the economy and in society at large. The political scientist Bob Jessop (1990) used autopoietic lenses to explain, from a Marxist standpoint, how the capitalist system survives in spite of its tendencies towards crisis and struggle. Walter Kickert (1993) used autopoiesis to understand how public administrative bodies might be able to survive any hostile storms that they may encounter.

Some authors claim that autopoiesis has evolved to the point that it could now be regarded as a general theory of systems, not just as a biological theory (Varela 1979, Goguen and Varela 1979, Benseler 1980, Luhmann 1986, 1987, van Twist and Shaap 1991, Capra 1996, Introna 1997, King 1993, Von Krogh, Roos and Slocum 1994). Arguments have also been put forward to show that autopoiesis' relevance can be grasped only if it is seen as a new theoretical paradigm, which, as such, presents itself in many forms (King 1993, Von Krogh and Vicari 1993, Von Krogh and Roos 1995, Von Krogh, Roos, and Slocum 1994). For Capra (1996) autopoiesis outlines a unified scientific conception of mind, matter, and life. He claims that autopoiesis is the first scientific theory that overcomes the Cartesian split of mind and matter – which Heidegger (1962) soundly claims also to have done – taking them not as belonging to separate categories, but as complementary aspects of the phenomenon of life—the process aspect and the structure aspect. Stafford Beer (in Maturana and Varela 1980:63-72) deploys the same argument, emphasising that autopoiesis belongs to the historical recovery of synthesis against analysis, which has taken place from Plato, Aristotle, and Aquinas to the modern day.

Autopoiesis in IS and Organisational Research. The application of the theory of autopoiesis to IS and management research has also been growing—in some cases, as referred to above, Heidegger and autopoiesis have been applied together, yet without a direct account of the legitimacy of that move, or a deep exploration of the consistency and complementarities of both theories.

Early in the 1990s, Harnden (1990) and Harnden and Mullery (1991) used autopoiesis to try reconcile two phenomena which, they say, have been widely separated in many traditional analyses: the way people think and the way computers work. Whitaker (1992) applies phenomenological and linguistic aspects of autopoiesis to outline a new approach to group decision support systems, emphasising mutual orientation and contextualisation. Whitaker (1993) discusses the applicability of Maturana and Varela's work to issues of human/computer interaction, particularly where groups are involved, and analyses the issue of 'context', within a knowledge management perspective, from an autopoietic standpoint (Whitaker 1996).

Vicari (1991), Von Krogh and Vicari (1993), Von Krogh, Roos and Slocum (1994), and Magalhães (2000) used concepts of autopoiesis to address the evolution of organisational

knowledge. Von Krogh and Roos (1995) and Vicari (1991) apply autopoiesis to understand the firm as a living system. Morgan (1986), Smith (1982), and Wealthy (1992) rely in some autopoietic insights to develop new understanding in the realms of organisational change. Broekstra (1998) uses autopoiesis to classify language and conversations as the core of organisational and strategic issues. More recently, Introna and Andersen (1999) use the autopoietic concept of *internal coherence* to explore a new way into strategic management. Mingers (1995) presents a sound introduction and exposition of autopoietic theory, highlighting applications of autopoiesis in management, IS, organisations, law, and other areas. In addition, the general academic literature on autopoiesis has grown enormously over the last thirty years.

MATCHING HEIDEGGER AND AUTOPOIESIS

It is not the aim of this paper to match effectively Heidegger (1962) and autopoiesis. Doing so would be an enormous task, not proper for this kind of paper. Our assignment in this realm is two fold: first, to show that the match has legitimacy—that it can be done on fundamental grounds, its result can stand up to scrutiny, and it is a consistent and sound theoretical development; second, to exemplify how the richness and complexities of both theories, show remarkable complementarities.

Both Heidegger's phenomenology and the theoretical development of autopoiesis appear against a background of historicity in which the most fundamental issue is an ontological one. On this account, taken as a development in basic theory, this matching has the potentiality for opening up many phenomena that IS research address or might address in ways that we can not access on the basis of commonly used Cartesian foundations.

Some of the basic Heideggerian and autopoietic core notions have been around for more than 2,500 years, as part of the Western demand for fundamental ontological thinking. At the same time, the notions that these theories embody have been frequently suppressed because they contradict the background from which traditional ontology emerged. Heidegger (1962) points this out, when promising to undertake a *positive destruction* of the history of Western ontology (Heidegger 1962:41-48). There is no other way to advance in these realms of investigation, because much of the prevailing research—in both science and philosophy—has been based for a long time on the specific understanding of Being as *pure presence*, as *beholding*. This understanding of Being, put forward by Parmenides, developed by Plato and stressed by Aristotle, closes off Being as *unfolding*, as "that which, whether presently or not, presences in unconcealment" (Heidegger 1984:55). The understanding of Being as *pure presence* shrinks Being's relevance to *present-at-hand* (Heidegger 1962) and opens up the way to identify Being with *actuality*:

> "Meanwhile an epoch of Being soon comes in which *bringing forth into unconcealment* is translated as *actualitas*. The Greek is shut away, and to the present day the word [Being] appears only in Roman type. *Actualitas* becomes *Wirklichkeit* (reality). Reality becomes objectivity (*Objektivität*). But objectivity must still preserve the character of presencing if it is to remain in its essence, its objectiveness. It is the "presence" of representational thinking. The decisive turn in the destiny of Being as *bringing forth into unconcealment* lies in the transition to *actualitas*" (Heidegger 1984:57-7).

Heidegger (1962) claims that traditional ontologies passed over the world, quickly jumping to specific subjects that already implied a conception of being as *present*, as *actualitas*. In whatever pursuit man engages, his understanding of *that which is* in its *which-is-ness* is what is decisive for whatever is to be claimed. Ontology, that is, the primary stance we take on the meaning of Being, projects itself in its overwhelming decisiveness in all further investigation.

The understanding of Being as *actualitas*, as that which presents in actuality, opened a way for a preliminary *mathematisation* of the world, and for representational thinking (Heidegger 1977, 1978, 1984). This *a priori* mathematisation equalises the world to what can be mathematised, ontologically opening up the word to being studied as actual. The difference that something makes in its own being becomes the difference it makes in being present; not the difference as such whether present or not in actuality.

Heideggerian and autopoietic central notions negate the presupposition of Being as *actualitas*. Instead, they point to Being as a *bringing forth into unconcealment,* a becoming, a recovering the most initial meaning of *presencing*—making a difference in the future, in the past, in the present. World as a *bringing forth* thus relies on the difference it makes, for a human being in its individuality, that there is something instead of nothing. As such, the meaning of Being, and therefore of beings themselves, escapes actuality by contextualising itself against a horizon of temporality and historicity.

At the core of the matching of Heidegger's and Maturana and Varela's findings is the intellectual possibility that a background of logic and evidence will reveal that both theories are compatible in their deeper assumptions. I aim to demonstrate this by arguing that Heidegger's phenomenological investigations and autopoiesis' theoretical biology are located in the same ontological and epistemological realms.

Figure 1 - **Heidegger and Autopoiesis Main Relationships**
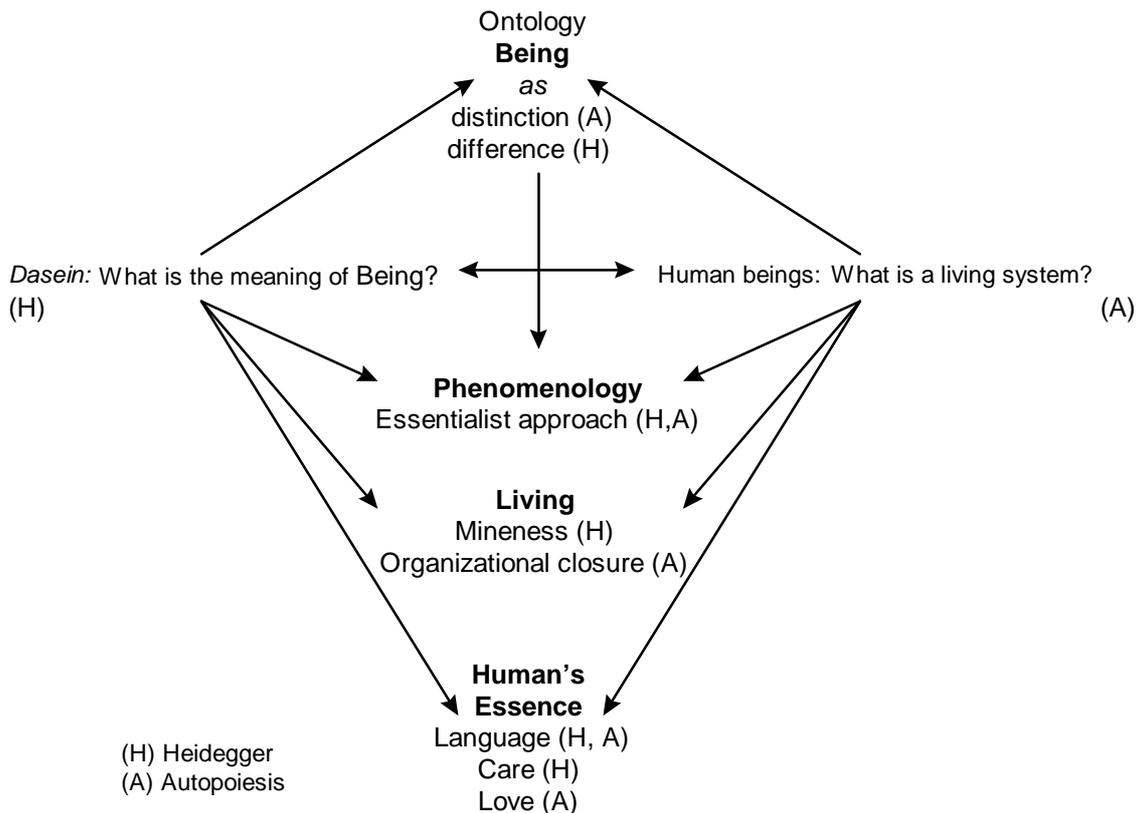
If we start by looking at the two diverse *worlds* to which the findings of Heidegger and of Maturana and Varela intuitively belong, their matching initially show up as something uneasy, even *contra-natura*. The biological theory of autopoiesis firstly shows up against a background of *exactness*, of the quantification and measurement of phenomena. Its biological

origins, and the word *autopoiesis* suggest a diverse realm of research, of *reality*, from that of Heidegger's phenomenology. The word autopoiesis in spite of showing considerable advantages has shown some weaknesses as well. The meaning of the English expression 'auto' is nowadays far from its Greek origins, which meant *self*, *self-produced* or *self-generated* (MW 2002). Auto is today commonly used as an indication of automation. In contemporary culture, auto means a machine; to be precise, a complex machine such as an automobile or an electronic device.

However, this initial perception is not sustained as one digs deeper into both theories Figure 1 presents a scheme of the main notions and relationships that characterises this match.

Heidegger addresses the question of man during his investigation of the meaning of Being. We, as we ourselves are, are the kind of being for which our Being is an issue. Heidegger noted that being is the *is* itself, and this *is* means that which makes a difference for us (Polt 1999). We are beings entangled with the *difference* Being makes for us. The Being of a being (Heidegger 1962), that is, the essential way in which a being unfolds, is that which makes a difference for us (Polt 1999). In its essence, that is, in its reduced beingness, a being *is* the difference. The Being of IT is the difference IT makes for us.

But how can this difference be grasped? Against what should this difference be accessed? The answer is both surprising and evident: the difference arises between the Being of a being and nothing. Our noting that there *is* also embodies the difference-ness in which our own being arises. This difference-ness belongs to our own being, which means all beings are beings as long as they make a difference for us; beings are beings as long as we distinguish them from a background in which we both are (Maturana and Varela 1980, 1992). To distinguish is to experience a difference. Thus, to be rigorous, Heidegger's *difference* is Maturana and Varela's *distinction*. The difference a being makes for us is the distinction we make of that being. These notions correspond to each other, which matches Heidegger and autopoiesis in crucial aspects of their theories.

Although Heidegger's findings and autopoiesis emerge from diverse paths of investigation, they both point to the same phenomenon. Heidegger's differences and autopoiesis' distinctions embody the same ontology—an ontology in which living beings, and human beings in particular, already find themselves in a world they know (Maturana and Varela 1980, 1992), they understand (Heidegger 1962), they have experienced (Heidegger 1962; Maturana and Varela 1980, 1992), and in which they are already distinguishing and making differences. A human being always and already has distinguished a world in language, in which he or she is thrown according to his or her own rules, uncovering, assuming, and suggesting differences.

As human beings, we are always already distinguishing in the future, in the past, and in the present (Maturana and Varela 1980:xx). It is in temporality that beings matter for us (Heidegger 1962). In the world, we are the experiences we have gone through, the regularities that have shown up in keeping us alive, the comportment we take up in order to adapt to a world we always and already have been brought forth. This key ontological claim belongs to both Heidegger and autopoiesis.

Heidegger's basic description of man as a being-in-the-world, although detailed at a different level and with different intentions, is in several aspects close to the autopoietic description of living systems as closed systems. If we ignore the specific technical terminology of each investigation, we can verify that the notions they are pointing to are quite similar. They both use the phenomenological concept of essence to address the phenomena they are investigating. Heidegger refers to it as the Being of a being. Maturana and Varela call it organisation: the characteristics that make something to be that something; "those relations

that must be present in order for something to exist" (Maturana and Varela 1992:42). Being of a being or organisation, both these notions point to the phenomenological concept of *essence*, which, for example, can be verified in the following passages:

> "We do not *know* what 'Being' means. But even if we ask 'What is 'Being'?, we keep within an understanding of the 'is', though we are unable to fix conceptionally what that 'is' signifies" (Heidegger 1962:25; italics from the original).

> "We have to be aware that merely asking the question of how to recognise a living being indicates that we have an idea, even if implicitly, of its *organisation*" (Maturana and Varela 1992: 42; italics from the original).

> "We had to accept that we could recognize living systems when we encountered them, but that we could not yet say what they were. One could enumerate features of living systems such as reproduction, heredity, growth, irritability, and so on; but, how long a list was necessary? When would the list be completed? In order to know when the list was completed I had to know what a living system was, which was, in fact, the question that I wanted to answer in the first place by producing such a list" (Maturana and Varela 1980:xiii).
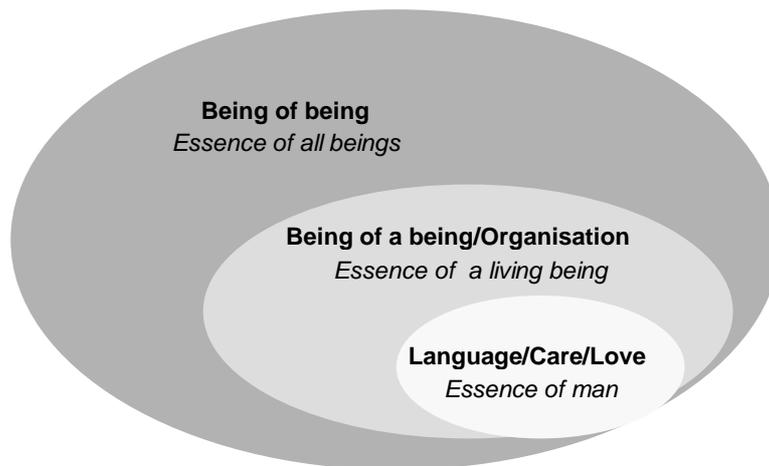
These passages point to, more or less explicitly, to the phenomenological concept of essence. On these grounds there is a correspondence between the autopoietic concept of organisation and the Heideggerian notion of Being of a being (Heidegger 1962). Being of being is for Heidegger the beingness of Being itself, the essence of all beings. The Being of a being is Heidegger's articulation of the essence of a being—that which makes an entity the being it is. This is precisely what defines the autopoietic notion of organisation. Human being, as the kind of being that is human, therefore must be defined by its own human essence, both from Heideggerian and autopoietic standpoints. For Heidegger, human's essence, immersed in being-in-the-world, is language and care (Heidegger 1962); for autopoiesis it is language and love (Maturana and Varela 1980, 1992). These notions unite both theories at their most essential findings.

To Heidegger, the phenomenon of *care* is that which Man *is*. Man is the being whose essence, in what is most fundamental for him and distinguishes him from all other living beings, is *care.* This *care* is essentially *caring for Being*. Care *a priori* unites the essential modes of *being-in*—attunement, falling, and understanding—and it is *how* man essential unfolds in the world. For Maturana, human societies are based on recurrent interactions that take place in languaging, which is revealed to be the social necessity on being human. For Maturana, languaging is enmeshed in, and with, the central feature of human existence: love, the seeing of other as partner, the caring for others (Maturana and Varela 1980). Language/care/love are therefore basic common findings of these investigations.

This matching of Heidegger's *care* and autopoiesis' *love* at a grounding level of human beingness is a phenomenon clearly hinted at, besides other thinkers, by the Russian writer Leo Tolstoy (1982: Book IV:1165): "Love is life. Anything at all that I understand, I understand only because I love. Everything is – everything exists – only because I love. All is bound up in love alone."

Dreyfus presented this theme of the entanglement between care and love to Heidegger himself. Dreyfus (1991) says that, in a conversation he had with Heidegger, he pointed out that care in English has connotations of love and caring. Heidegger "responded that that was fortunate since with the term "care" he wanted to name the very general fact that *"Sein geht mich an"*, roughly, that 'being gets to me'" (ibid.:239). Figure 2 illustrates the entanglement of essences we are referring to.

Figure 2 - **The Entanglement of Essences**

Being of being
Essence of all beings

Being of a being/Organisation
Essence of a living being

Language/Care/Love
Essence of man

Although Maturana and Varela did not mention the application of the phenomenological method, their research approach relies strongly on a phenomenological perspective. Maturana and Varela use, to a lesser or greater extent, some of the key techniques of the phenomenological method of investigation, as synthesised by Spiegelberg (1994): the *description* of the phenomenon—for the case the description of concepts, notions, and relations that identify the phenomenon of a living being; some etymological procedures, this time for creating the new word *autopoiesis*; a thorough analysis of the ways in which the phenomenon of living systems appears; a strict addressing of the concept of essence, as that which is sufficient and necessary for a living being to be what it is; a critique of the relationships between elements and essences in the domain of living beings; a challenging search for deeper signification of what it means to be a living being, much in the way prescribed by Heidegger (1962) when designed a last phase to the phenomenological method in order to address, through ontological hermeneutics, possible concealed meanings of phenomena.

Autopoiesis is not based on new empirical work, but amounts to a substantial reconceptualisation that takes no conclusion for granted, and accepts no results other than those that stand up to a rigorous pursuit of consistency through logic and self-evidence—even though that "may lead to unconventional conclusions" (Mingers 1995:5). This is precisely the kind of approach that Edmund Husserl (1859-1931) (1964, 1970, 1995), the founder of phenomenology, intended for the phenomenological method.

The study of the phenomena that pertain to living systems is what Maturana and Varela call the phenomenology of the living, or biological phenomenology (Maturana and Varela 1980:73 ff., 88 ff., 97, 112 ff., 114). This phenomenology is a theoretical development, which has taken into account results of previous scientific research. In a manner that is consistent with the rigour of the phenomenological method of investigation, it rethinks and reconceptualises anew those findings. Autopoiesis takes a middle way—a "via media" (Maturana and Varela 1992): there is an external world, which we access only on our own terms. We cannot get to know the world objectively, as the world, but only the world we bring forth. This kind of argumentation is in line with that of Heidegger, who added that the world always already experienced is that which is primary self-evident for us. Yet, that we are in the world does not mean that we know 'objectively' this world.

Autopoiesis comes very close to this Heidegger's position, as Maturana and Varela intend "to understand the regularities of the world we are experiencing at every moment, but without any point of reference independent of ourselves that would give certainty to our descriptions and cognitive assertions" (Maturana and Varela 1992:241). The fundamental autopoietic change over the theoretical apparatus of exact biology, is that cognition is not concerned with objects. "As we know how we know, we bring forth ourselves (Maturana and Varela 1992:244). "We who are flesh-and-blood people are no strangers to the world in which we live and which we bring forth through out living" (Maturana and Varela 1992:129):

> "Bring forth a world is the burning issue of knowledge. It is associated with the deepest roots of our cognitive being, however strong our experience may be. And because these roots go to the very biological base (…) this bringing forth of a world manifests itself in all our actions and all our being" (Maturana and Varela 1992:27).

Cognition is thus effective action (Maturana and Varela 1980, 1992); it is already acting in-a-world that we understand (Heidegger 1962). The circularity between action and experience, this inseparability between a particular way of being and how the world appears to us, tells us that every act of knowing brings forth a world. "All doing is knowing, and all knowing is doing" (Maturana and Varela 1992:26).

For Heidegger (1962) and for Maturana and Varela (1980, 1992) world, that *is* as such, is the grounding of language/action. Our grasping of the world is dependent on the historicity within which we approach the future. When Maturana and Varela (1992) say that we can only know a world we bring forth, they are arguing that we can only get to know a world in *our own terms*. These *own terms* are for autopoiesis the mediation of our own body, and structural coherency, and for Heidegger (1992) the primary mediation of our own projection and throwness—that is, of our tradition, culture, and past from where we come, within which we move, always and already towards the future.

CONCLUSIONS

To conclude, Heidegger and autopoiesis travel diverse paths, while both address the issue of what it is to be human in fundamentally similar manners. I argued in this paper, and hope I have showed, that their ontological and epistemological positions are consistent with each other, that Maturana and Varela's (1980, 1992) method of investigation bears strong phenomenological contours, and that the results both theories achieve are fundamentally similar and/or complementary. It is precisely this complementarity, that is, that in some aspects Heidegger (1962) goes much deeper than autopoiesis – e.g., in addressing the issues of temporality, or of handling entities in-the-world – and in other cases autopoiesis details much more the issue at stake – e.g., the relationship between cognition and action, or the entanglement of actuality and essentiality, that is, structure and organisation – that makes the matchability of these theories, and therefore the aims of this paper, worth of noting and hopefully promising in terms of grounding interpretive research.

Table 1 - **An Illustration of Some Corresponding Notions in Heidegger and Autopoiesis**

Autopoiesis		Heidegger
Niche		**Involvement Whole**
The whole in which a living system always and already finds itself immersed, as it is perceived by itself.	?	The whole of involvement and references in which one always and already finds herself/himself.
Organisation		**Being of a being**
That which makes something to be part of a specific class. The relations that define a unity as a unity of a particular kind constitute its organisation.	?	That which makes a being to be what it is. The way in which a being unfolds as what it is. An ontological dimension—the 'is-ness' of a being.
Structure		**A being**
The components and relations that actually constitute a particular unity and make its organisation real. An 'actual-ness', a 'such-ness'.	?	An ontic dimension of reality; a 'that-ness'. A concrete something as actual, as a 'here' or a 'there'.
Structural determination		**Throwness**
What the entity perceives in its environment triggers compensations, which are determined at each particular instant by the structure and history of the perturbed entity.	?	The alreadyness of Dasein's being-in-the-world. Thrown into the world, always already with its past projecting towards the future.
Identity		**Mineness**
Organisation in a structure. The unity of interactions, as it is experienced—from its own perspective—is identity.	?	*Be-ing* in the world as it is *mine*. Always and already in-the-world, *Dasein is* in *mineness* as it is what it is.
Distinction		**Difference**
A perturbation that a living system distinguishes in its own niche, according to its own structure.	?	That which matters for *Dasein* as it is always already living its own life.

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