



# Fritjof Capra's holism and the structures of philosophical conceptualisation: The logosemantics of complexity<sup>1</sup>

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## Abstract

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*This article explores a field of study that I call logosemantics: the theory of conceptual structures that determine philosophical expressions of ultimate insight. The kind of structures that logosemantics postulates are described with reference to the holistic philosophy of Capra. In particular the conceptualisation of holistic complexity in relation to reductionistic simplicity is thematised. In the course of this analysis the logosemantic place of complexity in the conceptual structure of philosophically foundational expressions is identified, with reference not only to Capra, but also to various philosophical "languages" in the history of Western thought, from Greek metaphysics to systems philosophy and post-structuralism. Attention is also given to some Eastern philosophies. After a purely descriptive analysis of logosemantic form, the possibility of logosemantic criticism is considered. The relation of simplicity and complexity is reviewed again, and an alternative interpretation to the one seemingly favoured by Capra is suggested.*

## 1. Introduction

Out of the European tradition of critical discourse have grown, in our time, discourses that critically distance themselves from this very tradition. One such discourse is that of post-structuralist (some would say: postmodernist) philosophy

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as a whole. Another is the holistic philosophy elaborated by Fritjof Capra, which developed out of the concerns of social movements in the sixties, seventies and eighties, and which sought to unite these concerns with a quest for scientific truth. This philosophy may in some respects be likened to postmodernism, but it has a distinctive profile and a separate identity. This is especially true as regards its respect for, and involvement with, scientific research in (primarily) physics and biology.

My purpose in this article is to look closely at one particular concept that plays a key role in Capra's holistic philosophy, the concept of complexity. There are three goals that I would like to achieve with this analysis.

- First, to acquaint the reader with the theory of logosemantics, which is a theory (which I have tried to develop) about the structures of philosophical conceptualisation.
- Second, to use different discourses on complexity – among them that of Capra – to illustrate and also to test aspects of logosemantic theory. (Thus, we will be in a position to continually compare the logosemantics of Capra's concepts with various other theories.)
- And third, to raise some critical questions about the way that Capra and others – especially systems-theorists – think about complexity, thus demonstrating something of the critical potential of logosemantics (over and above its formal-descriptive potential).

## 2. Logosemantic theory

### 2.1 The conceptual structures of philosophical discourse

Logosemantics is a theory about philosophical discourse. (Not only the discourse belonging to the individual subject, philosophy, but also discourse from other disciplines, as far as this contain pronouncements of a philosophical nature.) The basic premise of logosemantics is that, just as we may study the syntactic structures of everyday language, so we might study the conceptual (logico-semantic) structures of philosophical discourse. Let me give a very brief and informal overview of the most basic conceptual structures postulated by logosemantics.

First of all there is what may be termed the *kernel-proposition* sustaining any body of genuine philosophical discourse, a proposition that can usually be reconstructed from actual expressions featured in the discourse. Such a proposition

is constituted by three conceptual categories, those of *subject*, *operator* and *domain*.<sup>2</sup>

The *subject-category* covers that particular function, entity, structure, process, etc., that the discourse presents as the explanatory discovery of the author, as the important “thing” that in some way structures the whole of reality or large parts of reality. Such a logosemantic subject might be the Platonic ideas or the Greek-Christian *Logos* of ancient times; it might be the Kantian reason or the Marxian class relations or the Freudian psycho-dynamics of modern times; it might even be the Foucauldian power or the Derridean *différance* or the Rortyan contingency of postmodern times.

The *domain-category* covers those sectors of reality that are in some way dependent on the posited subject: for instance, a certain proposition may grant historical processes final authority over all of culture and society; another does the same for “principles of mind” with regard to language, art and morality; another empowers society over science, or nature over culture, etc.

The *operator-category* indicates the precise action(s) performed by the subject on the domain, whether it causes, precedes, grounds, rules, transcends, or comes to expression within the latter, or whatever.

Besides the categories inherent in the kernel-proposition, there is another kind of category that concerns us in this article. This is the *category of (primary) attributes*. The fact is that from the time of Greek philosophy, we see a relatively small set of pairs of contrasting concepts that are used, again and again, to specify the domain and especially the subject of logosemantic propositions. These are classic concepts in the history of philosophy, like necessity versus contingency, finitude versus infinity, universality versus individuality, constancy versus change, and so on. The reconstruction of (part of) an *extended logosemantic proposition* that comprises also the attribute category, might thus look something like this (using the linguistic convention of labelled category brackets):<sup>3</sup>

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2 Usually, a philosophical discourse is generated by a set of logosemantic propositions, relating to each other in specific ways. But to keep the exposition as simple as possible, I will assume for the moment that only one such proposition is at stake, containing the most characteristic concepts of the discourse in question (But this assumption soon changes, when we get to dualistic conceptions.)

3 Logosemantic propositions select from what we may think of as a lexicon of formal ontological concepts. In deriving a proposition from the actual expressions of a discourse, the latter must be reduced to these formal concepts. As regards the notational form of the example-proposition presented here, I have simplified it for ease of presentation (leaving out, for example, the outer brackets that should indicate the category of “proposition”). In a more formal presentation I

(i) [attr contingent] [subj. power] [op. pervade, cause] [dom. knowledge] [attr changeful]

We can see how the above fragment of an extended proposition (featuring only two attributes – one for the subject and one for the domain – and only two operator functions) might play a major role in “driving” a given philosophical discourse that will stress the pivotal role of fortuitously constituted power relations in society, and especially the dependence of disciplinary knowledge on such power relations. This discourse will accept that knowledge is marked by continuous change, but it will want to relate this characteristic to the chance transformations of power relations in a culture or a society. Such a discourse will feature typical “*L-expressions*” (that is, logosemantic expressions): actual sentences from which logosemantic propositions, can (in part) be reconstructed. With reference to the proposition (i) above, compare, by way of example, the following three imaginery sentences:

- “What gripped these thinkers was the disturbing vision of raw power seeping through the foundations of high theory ”
- “What we know is a function of how we are controlled.”
- “This change in perception can now be seen to be the effect of different force-fields, accidentally coming together in the whole power structure we have been analysing.”

Besides the formal ontological kind of concepts featured in structure (i) above, logosemantics provides for a different level of representation – where account is given of the images, metaphors and models that always complement these concepts. For example, the discourse on power we have been analysing, might be inclined to speak figuratively of power (in a systematic way) in terms of, say, the strategies and tactics of war. We can represent this as in (ii) below, where “comp.” stands for the level of complementary figures or tropes:<sup>4</sup>

(ii) [subj power]  
*/comp. war/*

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would also be inclined to present the proposition in the function-argument form familiar from predicate logic, and also used in Jackendoff's conceptual semantics (see note 7).

4 The war-model does actually feature in Foucault's philosophy of power (cf. Foucault, 1980: 114). Of course, there is much more to the matter of figurative complementisers than comes to the fore in this paragraph. For example, certain concepts on the first (formal-ontological) level, appear to be metaphoric in themselves, such as operators like *ground* or *root* for instance.

## 2.2 Philosophical discourse in terms of time and type

Elements of the logosemantic structure we have been considering here, help to define different philosophical *time-frames*, as well as different *types* of philosophical discourse. As regards the former, it is apparent that for example the logosemantic propositions of classic Greek metaphysics and scholastic thought, tend to select attributive concepts like constancy, necessity and universality on the subject-side. On the other hand, it is the opposites of the latter concepts, namely change, contingency and individuality, that are usually selected in modern anti-rationalist philosophies (such as existentialism for example) and also in postmodern thought. If we regard the general structure of logosemantic propositions as part of a kind of universal conceptual grammar for philosophical discourse, then we can think of different attributive choices as contributing to the distinctive character of different philosophical languages, as it were. The author of the discourse that we will be analysing below, Fritjof Capra (1983:17) also on occasion refers to the “language” of a favoured philosophy, namely systems theory.

On the level of complementary tropes or figures, certain images, models and metaphors that are alligned with certain propositional subjects and their attributes, can also be typical of philosophical time-frames. In the case of postmodern thought for example, such figures are mostly meant to communicate a questioning of foundationalist thought. Typical examples are: labyrinth, network, abyss, void, absence, and so on.

As regards *types* of philosophical discourse, such as for example monistic versus dualistic, or structuralistic versus geneticistic philosophies, such types cut across different philosophical time-frames. We find them throughout the history of philosophical thought. Again we can relate such types to logosemantic parameters. In terms of the mentioned examples, we can conceive of monism as a single all-explanatory proposition underlying a given philosophical discourse, a proposition in which one and the same subject may operate on the material, as well as the psychological, social and cultural aspects of reality. Dualism, on the other hand, occurs when two such propositions (with different subjects) are active within the same discourse, the one imposing strict limits on the operational range of the other.<sup>5</sup> Structuralistic thought, again, can be linked to a choice of attributes, operators and images that represent the predominance of form and structure over process; while geneticistic thought is characterised by the opposite of the latter tendency. With regard to the author with whom we are concerned in this article,

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<sup>5</sup> The single or double propositions referred to here, occupy a special “explanatory slot” within the larger set referred to in note 2 above.

his basic conception appears to lean toward a monistic and geneticistic type of thought (Capra, 1983:27-31; 1985:288, 289, 315).

Consider another type of thought, very pertinent to the theme of this article. Since the time of the Greek thinkers, we periodically come across a type of philosophical proposition in which the subject's action upon its domain is conceived of in terms of the relation of a whole to its parts (with operators like *enclose* or *unify*), while the subject itself is conceptualised as either in itself a form of organic life, or as closely resembling the latter. This type of conception – which can be referred to as an organistic universalism – groups together such diverse thinkers as Plato, the nineteenth-century philosopher G.T. Fechner, and the early twentieth-century sociologist, Franz Oppenheimer. The analysis which will presently shed some light on the basic structure of Capra's thought, will show why I am of the opinion that he too belongs to this particular philosophical tradition. Of course, Capra's interpretation of this organistic kind of thought is determined by a specific philosophical time-frame (roughly, that of a culture-critical paradigm going back to the early sixties) – which differs much from the time-frames in which other exponents of this type were situated. In other words, there is both a continuity and a discontinuity to keep in mind here.

### 2.3 With regard to deconstructionism

To conclude this section, let me very briefly say something about deconstructionism. In my view, philosophical discourse as such is determined by logosemantic structures like those featured in (i) and (ii) above. In the study of logosemantics, we are confronted with an intricate conceptual machinery of which my introductory sketch gives the merest glimpse. I think that deconstructionism has in its own way gained some remarkable insights into the nature of this "logocentric" kind of conceptualisation. But I take the deconstructionist dream of developing a discourse that can in some way escape the strictures of logosemantic principles of thought, to be misguided. To my mind, there are good reasons to believe that the said principles are part of our semantic competence to conceptualise at a certain level. They necessarily come into play when we want to say something of philosophical significance.<sup>6</sup> Even the deconstructionists themselves cannot but give expression to basic logosemantic principles when they want to communicate in the mode of philosophical discourse (for instance by advancing some claim about the nature of textuality in relation to other social or

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6 I am reminded here of Spaemann's (1993:96) remark that every philosophy makes a claim to totality, and to be making no such claim is to be doing something that does not qualify as philosophy.

cultural phenomena). Ultimately these principles may belong to a specialised capacity that forms part of the cognitive apparatus of the human mind.<sup>7</sup>

### 3. Kernel-propositions in holism and reductionism

Turning now to the philosophy espoused by Capra, let us indeed imagine this to be a (dialect of a) kind of (conceptual) language called “holism”. We all know that this language in which his books are written, is often compared (also by himself) to another language, that I will call “reductionism”. The language of reductionism has served for centuries to express the thoughts of those who see reality in terms of one or two foundational structures from which all other structures are descended, the former often thought of in terms of mechanical models. In contrast, the newer language of holism serves those who see the cosmos as a systemic whole, comprised of interconnected relations and processes, where there are no ultimate foundations, and where the nature of the living organism is a more appropriate model than the structure of machines.

In terms of logosemantic structure, the difference between Capraist holism and reductionist languages become manifest at the level of kernel-propositions. The dualistic philosophy of Descartes, the father of modern reductionism, features two propositions that split reality in two parts: mind (with thought as basic denominator) and matter (with filled space as basic denominator). Simplifying the kind of notation in (i) and (ii), we can informally represent this as follows:<sup>8</sup>

- |       |                      |           |                     |
|-------|----------------------|-----------|---------------------|
| (iii) | • [thought]          | [grounds] | [spiritual reality] |
|       | <u>/mathematical</u> |           |                     |
|       | <u>analysis/</u>     |           |                     |
|       | • [space]            | [grounds] | [material reality]  |
|       |                      |           | <u>/machine/</u>    |

<sup>7</sup> Compare the semantic theory developed in Jackendoff (1983, 1990). I would regard logosemantics as ultimately a (future) sub-theory of the kind of conceptual semantics presented here.

<sup>8</sup> In this and in the following presentations of logosemantic structures, the labelling of the bracketed categories is dropped, and the precise formulations of categorial content (drawing on the logosemantic lexicon and abstracting from syntactic conventions) are replaced, where this is convenient, by more informal terminology. The complementary model or metaphor related to subject, operator or domain, is here indicated by a “boxed” term (an underlined word between two slashes) written immediately underneath the element at issue. As regards the operator choice in the Cartesian propositions, *ground* features here as a typical and representative concept. A more thorough analysis will have to refer to the exact terms featured in Descartes’ own texts.



(v) [the universe] [(ultimately) unifies] [matter, mind, culture, society]  
 /organism, web, net/

The difference with the reductionist mode of thought thus lies in avoiding any *dualistic* (having recourse to at least two separate “God’s eye-view” propositions), *individualistic* (reducing a whole to its basic parts) and *mechanistic* (having recourse to mechanical processes as a basic model) kind of thought. Instead of the model of the machine, holistic discourse utilises the model of the organism, signifying the idea of dynamic indivisible wholeness; also the models of the web or the net, in which everything is inter-connected and in which there are no “basic parts”.<sup>11</sup> (The web/net – together with the labyrinth – is of course also a favourite model in postmodernist philosophy as a whole.)

When we talk about Capra’s holistic discourse, it must be noted that the latter has for some time now (since the writing of Capra, 1985) been informed by systems theory. Systems theory also looks at the world from the point of view of wholes that are much more than the mere sum of their parts. What is postulated here is a dynamic relation between systems and interrelated subsystems, the former being integrated into larger systems and so on, until we arrive at the ultimate system, the universe itself (cf. Capra, 1985:285-332; Laszlo, 1972:79, 80).

We must also be aware of the fact that the vast perspective afforded by systems theory, can in some sense be accommodated from the reductionist point of view. What I mean is that some reductionists may want to expand the cosmologist’s or physicist’s special scientific concept of universe, to a philosophical idea of origin: in other words a universe which features as the first and final frame of reference for our thinking on (not only matters of interest to the cosmologist but also) mind, science, culture and society, and so forth. When these last phenomena come “packaged” with the domain-concept in (iv) above, we have a rather remarkable (reversed) symmetry between this proposition and the holistic one featured in (v).

#### 4. Extended propositions in holism and reductionism: simplicity and complexity

Focusing on the real theme of this article begins with our recognising “one” (or “unitary” or “single” or “simple”) versus “many” (or “multiple” or “complex”) as one of the pairs of concepts belonging to the set of classic primary attributes. Together with the pairs: finite/infinite, constant/ changing, knowable/unknowable, necessary/contingent, universal/individual, it forms a set of some very basic

<sup>11</sup> It should be noted that on the other hand, Capra also makes statements where he argues for the relative applicability of the mechanistic or reductionist model (e.g. Capra, 1983:336; 1985:288). (See notes 12 and 14.)

properties in terms of which the subject of a logosemantic proposition can be characterised. As I have already mentioned above, all of these pairs are also classic philosophical concepts: they crop up again and again when philosophical discourse has to say something about the logosemantic subjects it is always dealing with.

For the purposes of this article I will deal with the said pair of quantitative attributes in terms of one of the possible lexical identities the pair may assume, namely simple versus complex. Certain paradigm-uses seem to mark the appearance of the simple and the complex in philosophical discourse. For example, Greek metaphysics as a whole tended to devalue complexity in favour of the notion of an ultimate and totally undivided simplicity. Roughly, the former was characteristic of the merely phenomenal, the latter of the real noumenal world. This selective logic prevailed through medieval theology and philosophy, with the partless being of God representing the ultimate simplicity. The same logic continued to manifest itself in the modern period, coming strongly to the fore in the classic humanist philosophies of the seventeenth and eighteenth centuries, in methodological precepts and in epistemologies of both empiristic and rationalistic stamp (the former attending to the simple elements of sense-grounded knowledge; the latter to the simple ideas of innate knowledge and the transcendental simplicity of the self). This logic has survived right up to the present day in a variety of discourses and discursive contexts. For example, Chomskyan psychology seems to assume – in what amounts to a typical logosemantic proposition – that the ultimate “principles of mind” that create (interactively and in a variety of “modules”) complex phenomena like language or science or morality or art, are essentially simple, and should be described in theories of conceptual simplicity (cf., e.g., Chomsky, 1980:248-254; 1981:14; 1982:30-31). However, when we turn to so-called postmodern discourse, we see that exactly the opposite tendency prevails. A deep scepticism exists toward the very idea of structures and systems that order and thereby reduce and simplify; instead, the bewilderingly multiple and the teasingly complex have laid claim to a kind of revelatory truth. We are in fact dealing with what may be called a metaphysics of multiplying complexity.

Relating the issue of simplicity versus complexity to the discourses of reductionism and holism, it is apparent that the former qualifies its logosemantic subject in terms of that simplicity that grounds complexity. On the other hand, holism underlines the complexity of wholes or systems in which various elements (some of a relatively simple structure) are dynamically integrated and unified.<sup>12</sup>

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12 A close reading of for example Capra (1985:285-332) will confirm that he sees the items of the domain-category exhibiting levels of relative simplicity. It is at such levels that for example the

Thus, with respect to the subject-category, we can now expand the reductionist and the holistic propositions to respectively (vi) and (vii). (Note that in (vii) we have an example where both elements of an attribute pair are in fact selected to qualify the domain.)

- |       |  |                                  |           |
|-------|--|----------------------------------|-----------|
| (vi)  | [simple]   | [physical entities]              | [ground]  |
|       | [the complex]  | [universe]                       |           |
|       |  | <u>/construction, apparatus/</u> |           |
| (vii) | [the complex]  | [universe]                       | [unifies] |
|       |  | <u>/organism, web, net/</u>      |           |
|       | [complex and (on some levels relatively) simple (manifestations of)] |                                  |           |
|       | [matter, mind, culture, society]                                     |                                  |           |

Proposition (vi) is clearly at issue when the well-known physicist, John Wheeler, referring to the quest for a super-unified theory in his discipline, voices the expectation that “Some day a door will surely open and expose the glittering central mechanism of the world in its beauty and simplicity”. Before quoting these words from Wheeler, physicist Paul Davies (1984:158) remarks that “Such an achievement would confirm the fond belief that the universe runs according to a single, simple, breathtakingly elegant mathematical principle”. (Note the mechanistic metaphors in these utterances.)

On the other hand, it is proposition (vii) that is in evidence when Capra’s holism speaks of the “multidimensional” natural world as one of “infinite varieties and complexities” (1983:35); or (with reference to the small dimensions of the universe) waxes lyrical about the “complex dance of subatomic matter” (1983:278); or quotes a favourite thinker (Gregory Bateson) who finds the world becoming “prettier” the more of its complexity is revealed (1988:79).<sup>13</sup> The tensive relation between the two propositions is made explicit when Capra (1985:70) affirms that “[a]s we penetrate into matter, nature does not show us any isolated building blocks, but rather appears as a complicated web of relations between the various parts of a unified whole”.

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reductionist approaches of behaviourism and mechanistic technology (in the spheres of mind or “mentation”, and of culture and society) can supposedly come to grips with certain phenomena.

13 The complexity of Capra’s universe is located on various levels. Most importantly, there is the small scale complexity of the subatomic world, the large scale complexity of the physical-cosmological universe, and the large scale complexity of the universe as the all-embracing system containing many other part-systems.

Comparing holistic complexity (in Capra) to postmodern or post-structuralist (especially deconstructionist) complexity, we see some resemblance but also important differences. It is true that all these discourses of complexity criticize conceptual models that are associated with modernity, in particular the privileging of “theory” and the latter’s quest for “grounds”, “foundations” and “basic building blocks”. These discourses all implement oppositional metaphors such as the web or the net. But still, they come from different directions and arrive at different conclusions. For example, a true postmodernist espousal of fragmented complexity would still detect some kind of simplifying “grand narrative” in holism’s (systematising) discourse on science, nature and freedom. The holistic feeling for complexity, on the other hand, does not lead to the demonization of oneness and simplicity, that is typical of much of postmodern discourse. From a logosemantic perspective we can say that holism merely lets complexity (on the subject-side) rule over simplicity (on the domain-side);<sup>14</sup> but that postmodernism problematises this rule (which will be seen as yet another attempt to construct some kind of hierarchical order in which our thought may come to rest) in the very name of (an ever-fracturing and fragmenting) complexity. In fact, the kind of deconstructionist critique developed by Derrida, will try to show the untenability of any clear-cut distinction between (in my terms) subject-attributes and domain-attributes, by which some central concept imposes its order and discipline. However, in this process the deconstructionist herself is dependent on a logosemantic concept of complex textuality, on “an indefinite multiplicity of recontextualizations” (McCarthy, 1991:100), in which apparent oppositions dissolve and apparent unities fracture.<sup>15</sup>

## **5. The Eastern connection: spiritual freedom and the complexity of the world**

From the very beginning of his writings, Capra has sought to establish links between a modern scientific view of the world, such as we find in the models of (non-reductionistically interpreted) subatomic physics, and the ancient spiritual traditions of the East, such as Taoism, Buddhism and Hinduism. The argument for

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14 This conceptual rule, which has complexity “recognise” a certain presence of simplicity, allows Capra the possibility to give some space (but only on the domain-side of his proposition) to the reductionist capability of uncovering simplicity.

15 A Derridean approach to the text typically criticises other interpretations for not coming to grips with the full complexity of their material. As to the decentred concept of the sign, this forbids any longing after pure unicity and singularity (cf. Derrida, 1976:91). In a similar way Paul de Man conceives of the rhetorical complexity of textual allegories, offering a logosemantic proposition that gives to allegory the task of generating history (cf. De Man, 1979:277).

such links, if successful, can help to undergird an important goal of Capra's holism: the integration of spiritual wisdom with scientific knowledge.

In terms of the theme of this article, the important question for us is whether there are indeed some Eastern parallels to the logosemantic function of complexity in the holistic proposition featured above. (We thus leave aside for the moment other concepts which are at the forefront of Capra's comparison, such as the dynamic character of reality, cosmic interrelatedness and so on.) To resolve this matter, one first of all has to reconstruct the basic propositions offered in those Eastern philosophies mentioned above, and then ascertain whether the simplicity/complexity interpretation of these propositions agrees with that of our holistic discourse. However, instead of launching into a lengthy and technical analysis of the propositional structures on which the said philosophies are based, I will rather summarise the provisional results of my investigation on this score, and then get on with the comparative perspective.

- **Taoism**

Firstly, as far as Taoism is concerned, its propositional subject will be a concept of ("the way of") nature or the universe. Without giving formal descriptions of operator and domain concepts, it is sufficient for our purpose here merely to keep in mind that the Taoist believes that the mysterious (the attribute "unknowable" is selected) way of nature shows us the right way to live, a way in which human beings realise their unity with nature (the operator *pervade* is frequently in evidence), let go of the urge to shape and control and "let things be". As to the question how nature is attributed with respect to simplicity or complexity, the answer is that the "Great *Tao*", being without divisions or distinctions, constitutes the ultimately simple "oneness underlying all the diversity and multiplicity of the world" (Koller, 1985:288). (Notice the proposition-like expression contained in this quote.) Clearly, the Taoist proposition, with respect to the positioning of simplicity and complexity, seems to be at odds with (vii) above.

- **Hinduism**

Secondly, as far as Hinduism is concerned, the logosemantic story is more or less the same, with *Brahman* replacing the *Tao*. In the Upanishads *Brahman* is the name given to the ultimate external reality. It pervades all, is infinite, unknowable, and unchangeable. In the Vedas this ultimate source is referred to as "That One", and among the properties ascribed to it, there is the attribute of indivisible wholeness or ultimate simplicity. This is also one of the characteristics of the universe we find in the *Bhagavad Gita* (Koller, 1985:19-40).<sup>16</sup>

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<sup>16</sup> The ultimate simplicity of *Brahman* may be conceptualised in different ways: for example either as an absolute unity without any parts whatsoever, or as a whole of which the parts merge into oneness (cf. Koller, 1985:94-96).

• **Buddhism**

Thirdly, we come to Buddhism. According to Buddhist teaching, a correct insight into the true nature of reality can free us from suffering. And this true reality, which is also the true nature of the enlightened person (and carries the status of a logosemantic subject) is one of ceaseless flux, in which all things are interconnected. Our suffering is caused by thinking and living in a way which is out of tune with this reality. As regards the question whether this reality is simple or complex, it seems to me there is some ambiguity in Buddhist teaching on this score.<sup>17</sup> Although the basic view seems to be that of (external and internal) reality as a flowing process constituted by many different interacting elements (*dharmas*), there are also certain traditions that seem to think of the enlightened Buddha nature as one that can be distinguished from the empirical world of the compounded and the fluctuating (cf., eg., Humphreys, 1951:74, 80, 94, 96, 128). Especially in Zen Buddhism, there is an explicit acceptance of the undivided nature of true reality, a primordial singleness before the complex contrasts created by ordinary discursive thought. It seems then that in the Buddhist tradition one can think of ultimate reality either in terms of ceaseless flux and complexity (compoundedness), or singleness and transcendence of change (Humphreys, 1951: 74); or, one can reckon with two ultimate realities – the one (unitary and beyond change) finally transcending the other (compounded and flowing), such as we find in the Abhidharmist teaching for example (Koller, 1985:167).

This last approach rests on a logosemantic structure that has an initial subject operating on a domain, which then acts as a subject itself in relation to another domain. This kind of structure is also in evidence in, for example, the Christian-theological view which holds the world to have been created through the *Logos*, who is eternally generated by the Father, the latter in this respect transcending or preceding the Son. Here we see the concept of God functioning as the first propositional subject, and that of the Redeemer-Word as the second propositional subject. As another example, compare a theory which holds natural evolution (first subject) to be the origin of mind, and the latter (second subject) to be the origin of, say, culture and society.

With reference to the attributes of simplicity and complexity, this logosemantic “stacking” of propositions in (some strands of) Buddhist thinking can be represented roughly as in (viii) below:

- (viii) • [a single] [reality] [transcends] [complex] [nature]  
• [complex] [nature] [pervades] [all that exists]

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17 For a penetrating discussion of different approaches, see Koller (1985: 151-225)

Coming now to the similarities Capra sees between Eastern thought and his favourite scientific theories of the universe, it seems as though some problems exist in this respect. Basically, it boils down to the following:

- First of all, it is not clear that all Eastern philosophies that ascribe a propositional subject-function to some or other concept of nature, view the latter as ultimately simple (a unity without any multiplicity whatsoever). This contrary to Capra's (1983:141) claim that "[t]he Eastern traditions constantly refer to this ultimate, indivisible reality which manifests itself in all things ...". Specifically in the case of some Buddhist discourses<sup>18</sup>, the very opposite seems to be the case. They depict "real" nature not in terms of a preceding simplicity and unchangingness<sup>19</sup> but in terms of infinite flux and complexity. At most the "oneness" that one can conceive of here, is that of the inseparable net of forces and relations. But what gets to be stressed in the Buddhist story about ultimate reality that I am referring to, is the multiplicity of all-pervading forces over and against illusionary unity and singleness. If all this is so, then one cannot really speak of an Eastern spirituality which is the same in its basic elements.
- Secondly, it is in fact only the Buddhist belief in an ultimate complexity (of interrelated processes of change), that can be compared to scientific holism's faith in a universe which is the last word in systemic complexity.
- Thirdly, Capra's references to the indivisibleness (or oneness) of reality he sees depicted in the Eastern traditions, are also problematic on another level. For, in logosemantic terms, the crucial question is whether this indivisibility – in a given context – relates to the propositional *attribute* of ultimate (partless) simplicity, or to the unifying *operation* the propositional subject performs on its domain, binding many parts into an encompassing and integrated unity. The notion of an indivisible reality means two different things in these two different senses. Strictly speaking, the Eastern belief in an undivided wholeness that is in some sense *beyond* all separate things (such as evidenced in the concept of *Brahman* for example), is not really comparable to the holistic theory of an indivisible universe in which all things are (merely) *interrelated* (Capra, 1983:142, 151, 319). It is also not just a matter of the Eastern mystic going further than the holistic scientist in experiencing the unity of all things (Capra, 1983:154). Rather it is a matter of the paradigmatically incom-

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18 See Capra's own reference (1983:155) to Lama Govinda who talks about a net of forces and relations.

19 Like that accorded to *Brahman* for instance, cf. Koller (1985:24-25, 34, 40); Morgan (1953:117-122).

measurable difference between an ancient metaphysics of absolute simplicity (also found in Greek thought) on the one hand, and a modern science of irreducible complexity on the other hand. The former kind of changeless unity is fundamentally at odds with both systemic complexity and systemic unity: it stands to the latter as truth to illusion.

## 6. The rhetorics of complexity

In this section I want to focus more closely on the general conceptual architecture within which philosophical notions of complexity (or simplicity) function. This in order to see how this architecture allows certain attributive manoeuvres or strategies that are effective in “selling” a given propositional truth like that of holism.

### 6.1 Both ordinary and awesome

When studying the structure of logosemantic propositions, one soon notices some interesting rhetorical effects concerning the role of attributes like simple/complex. On the one hand, such attributes seem to be pointing only to what are very evident and very basic characteristics of the subject concerned (for example, that it is simple or complex, changing or unchangeable, necessary or contingent, and so on). On the other hand, these very same attributes have an unmistakable aura of distinction and gravity about them, in the context of philosophical discourse. Consider how the status of a propositional subject may be underlined by depicting it as either changeless or dynamic, either universal or individual, either necessary or contingent. Of the same importance is the subject's pleasing simplicity or its deep complexity – depending of course, on one's paradigmatic presuppositions concerning the admirable option in these choices. Thus certain thinkers (including reductionists) will feel proud to have as the subject of their discourse some “very simple” mechanisms or principles in a given field. Other thinkers (including holists) will feel equally proud to point their followers to “extremely complex” systems that must be investigated.

### 6.2 Esthetic appeal

Sometimes status-marking attributes may even be linked to some kind of esthetic evaluation. In the case of simplicity, we have already referred to qualifications such as “elegance”, “glitter” and “beauty” (in pronouncements by Chomsky and Wheeler for example), and in the case of complexity, we have noted associations with “dance” and “prettiness” (Capra and Bateson).<sup>20</sup>

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20 Ancient and scholastic theories of beauty are particularly preoccupied with mathematical analogies, such as simplicity and symmetry (cf. Visagie, 1984:30-31). These analogies, however, are also central to the physicist's notion of beauty, according to Paul Davies

### 6.3 Stark contrast

One way in which a philosophical discourse may highlight the eminence of its propositional subject in relation to a particular domain is to have contrasting attributes apply to subject and domain, as in (ix) below (where the arrow symbolises some or other operator binding a subject X to a domain Y, and X and Y are qualified by the opposing members of an attribute pair).

(ix) [+A][X] → [Y][-A]

Thus we have in medieval theology the *infinite* God over and against the *finite* world, in ancient metaphysics the *changeless* noumenal realm over and against the *ever-changing* phenomenal realm, or in modern-day psychology or physics the ultimately *simple* principles of mind or matter over and against the *complex* universe. One may note in this regard that Capra's holism does not incorporate this kind of stark attributive contrast: the ultimate governing system, in its complexity, is not arraigned against simplicity as such, but rules a domain in which subsystems of varying simplicity and complexity are incorporated (cf. structure vii above).

### 6.4 Internal attribution

The first function of a propositional attribute is to describe or qualify the subject of the proposition. But on occasion it may also be employed to describe another attribute, so as to underline the status of the latter. For instance, the attribute of individuality (pertaining to the subject of, say, human existence) may be "enhanced" by conceptualising it as an *ever-changing* individuality. Or the attribute of unity, in pertaining to the subject of reason, may be conceptualised as "transitory" (*temporally finite*), presumably to render this unity more attractive to a postmetaphysical world (cf. Habermas, 1992:117); or the attribute of complexity, pertaining to a postmodern celebration of textuality, may be enhanced by calling attention to the further complicating factor of the utter *contingency* of this complexity.

In the case of the discourse under discussion, this kind of internal attribution (attributes referring to each other internally instead of externally to the subject) is manifested when Capra (e.g. 1983:35, 151, 265) writes about the "infinite" complexity of the universe. The already imposing stature of complexity as an ordinary/extraordinary attribute is hereby further magnified.

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(1984:221). Davis (1984:122) refers to Dirac and Einstein in this regard, and quotes another statement by John Wheeler, where the latter says that "[t]he beauty in the laws of physics is the fantastic simplicity that they have", and that the "ultimate mathematical machinery" that is behind it all, is "surely the most beautiful of all".

The recursive application of this rule of internal attribution can also produce the concept of an *incomprehensible* – because of its *infiniteness* – complexity: the idea of a complexity that is so far beyond measure that it transcends our understanding. Compare the structure (x), where the left-pointing arrows indicate the successive qualification of attributes:

(x) [[complex] ← [infinite]] ← [unknowable] [X] → [Y]

It is probably a version of this two-fold attributive coupling that is at issue when Capra (1983:35) informs us that the natural world, being of infinite variety and complexity, is one which “our abstract system of conceptual thinking can never describe or understand [...] completely”.

An interesting phenomenon that can be observed in this regard is the way that different discourses, or different points of view, couple unknowability to different status-attributes. For instance, in Buddhist writings the limitations of conceptual knowledge will also be stressed, but here the unknowableness of reality is often connected, not to *complexity* as such, but rather to *unending flux* (cf. Capra, 1983:308; Koller, 1985:157). Hinduist thinking, on the other hand, will tend to predicate the unknowability of ultimate reality on its attribute of *absolute simplicity*.<sup>21</sup> The relative advantage of the “complexity option” among these choices is that it speaks more authoritatively to an audience schooled in the tradition of modern Western science.

To end this subsection on internal attribution, let me point out another mechanism by which an attribute such as “unknowable” may act upon the pair “simple/complex”. Instead of “unknowable” enhancing the selected attribute “complex”, the former attribute may, from its position as a central, qualifying attribute, act upon the other attributes in such a way that the very distinction between the different members of a pair (such as “simple/complex”) gets to be blurred. In this case, the discourse will make a point of (in the end) not choosing between the members of an attribute pair. Compare the following statement:

[I]f our interest lies in reviewing fundamental problems of knowledge and understanding, then we find complexity paradigmatic and logical, where there is no pure principle, no unique law, no formula unifying the universe, just the conjunction of logically contradictory principles and a growing obscurity towards the unthinkable, inconceivable, unsayable [...] To conclude, I would say that reality is neither simple nor complex. It is something else. It is enormous, outside any standards, unheard of, it is incredible, it presents many faces depending on our questions. [...] [T]here is more to reality than the human mind is aware of (Morin, 1985:67-68).

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21 In the case of the oldest Vedantic tradition, for example, cf. Koller (1985:85-86).

I must add that one often gets the impression that the explicit refusal to choose between certain attributes on account of a central qualifying attribute such as “unknowable” or “changeable”, does not in the end escape an implicit favouring of one of the members of such pairs, as indicative of the broad direction in which the supposed transcendence of binary choice is actually conceptualised. Thus, we may find that a refusal to opt for either simplicity or complexity is informed, at bottom, by what I will call a *second order idea* of complexity being tied to the concept of our humble ignorance: that of which we are ignorant is so unimaginably complex, that any *simple* choice between simple versus complex, is not feasible anymore. (This is probably the kind of reasoning going on in the quotation above.) Compare also the deconstructionist critique of a unitary privileging of complexity over unitariness – a critique that is itself in the debt of a second order idea of complexity (as I substantively argued at the end of section 4 above). A somewhat similar situation obtains in Eastern thought, when the choice between constancy and flux can be rejected on account of a second-order idea, an all-pervading flux of such dimensions that it seemingly makes any kind of *stance* on the subject of permanence/impermanence problematic.

### 6.5 Promotion to the very top

The “discovery” of a propositional subject is usually communicated with reference to certain status-marking attributes. For instance, a subject such as “nature” can be marked by its supposed infinity (over and against the finiteness of cultural or societal phenomena), or a subject such as “history” or “society” by its supposed contingency (over and against the apparently necessary laws we encounter in the mathematical, physical or biological worlds). These status-marking attributes may feature so prominently in a thinker’s mind, that they eventually undergo a “subjectification”, that is, they are promoted to the rank of propositional subjects. Technically, one can formulate a logosemantic movement-rule in this respect – a rule by which an attribute moves into the subject-position, and the displaced subject moves into a (non-binary) attributive position, qualifying the moved attribute. Compare structure (xi) below where the broken arrow indicates the “route” of an attribute to the subject-position, the original subject X being moved to a descriptive position:

(xi) [X] [A]--[> ] → [Y]

Thus, in terms of the above examples, we can have pronouncements on (nature’s) infinity enveloping the individual things within nature or society, or on pure (social) contingency underlying the epistemic and institutional structures that seem so essential and inevitable to most people. The first of these possible propositions is already in evidence in the thought of the ancient Greek philo-

sopher Anaximander; the second proposition is exemplified in the writings of the contemporary American philosopher Richard Rorty.<sup>22</sup>

With respect to Capra's holism, a similar kind of conceptualisation of complexity can be found in the remarks of a physicist, Geoffrey Chew, whom Capra regards as a pioneer of non-foundationalist physics. These remarks are quoted in Capra (1988) and they are meant to be illustrative of what Capra takes to be radically holistic thinking in the realm of physics.<sup>23</sup> In Chew's view, then, we find that the complex nature of (subatomic) physical processes are such that they can be regarded as the origin not only of (macroscopic) space-time but even of our concept of consciousness (Capra, 1988:61). The former domain presents us with the apriori context found in "Cartesian reality" and in classical physics. In this space-time world, emerging from complex physical events, is found the kind of relative simplicity that makes classical descriptions of reality (separate objects existing in space and time) possible. Notice how, in this conception of Chew, simplicity on the domain-side (where it may also move from domain-attribute to substantive domain) comes to contrast with complexity on the subject-side. Indeed, the notion of complexity assumes such centrality in this model that one can say that "complexity ... produces effective simplicity" (Capra, 1988:62). This is the very opposite of the view that the universe (and space-time) represent "complexity frozen out of simplicity" (Davies, 1984:160).<sup>24</sup> Here, then, we see complexity taking on the role of a propositional subject, reigning majestically over the grand simplicity of reductionist physics, and over the once mighty kingdom of space and time.

A structurally similar conceptualisation is found in the thought of the Jesuit priest-paleontologist, Teilhard de Chardin, whom Capra (1985) also cites approvingly.

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22 Regarding Rorty, a clear example of the kind of logosemantic proposition at issue here is found in Rorty (1989:22), where he speaks of language, conscience and community being the product of time and chance.

23 Note again that when the field of subatomic physics is at issue, the holistic proposition reconstructed in (vii) above, applies in terms of the microphysical aspect of the universe.

24 Space and time are obviously highly prized as possible elements of a propositional domain. Apart from the examples cited in the text above, consider also a view expressed by Michael Green, a prominent exponent of superstring theory, that space and time might in some sense be built out of the "strings" that this theory postulates (*in* Davies & Brown, 1988:125). Or, to move to completely different fields of discourse, consider the post-structuralist idea that textuality is not so much determined in space and time, as that the latter are engendered in and through our experience of written reality (cf. Habermas, 1992:214-15); or the view that modern computer technology (electronic communication) is indeed able to "reconfigure space and time coordinates" (Mark Poster, s.j.:2) And then of course there are the theological propositions that have God ruling not only over the spatial world but also over all of time.

In the context of his theory of evolution (which understands evolution to be moving in the direction of increased complexity), Teilhard views consciousness as “the specific effect of organised complexity”, which Capra (1985:331) notes is “perfectly compatible with the systems view of mind”. The same kind of conceptualisation is also present in Gregory Bateson’s view that (in the words of Capra) “mind is a necessary and inevitable consequence of a certain complexity” (Capra, 1985:315).

A concept that on occasion also appears in the role of propositional subject in Capra’s discourse is that of “interconnectedness”, together with the metaphors of the web or the network. Thus we might read of the quantum interconnectedness of the whole universe being the fundamental reality, that embraces relatively independent parts that are “merely” particular and contingent forms within this whole (Capra, 1983:150, cf. 1988:50-70). Again the conceptual mechanics behind this appears to involve the movement of an attribute of the physical processes constituting the microphysical aspect of the propositional subject: universe. This time the attribute does not involve an intuition of *number* (like simple and complex) but of *space*, and it does not even belong (like simple and complex) to the set of classic binary attributes. But this “ordinary” attribute, namely “interconnected” (with its attendant metaphors) may also attain to the rank of a propositional subject. And again this governing interconnectedness may be qualified as “complex” (Capra, 1983:150).

#### 6.5.1 Determining the power of promoted elements

When an attribute comes into the propositional subject-position, it has access to the operational power wielded from this position. It holds power over a domain that can consist of one or more elements, which domain can be smaller or larger than other domains controlled by other subjects. The larger the domain, in terms of the levels or categories of reality that it encompasses, the greater is the power of the subject, the greater is its status in comparison with other propositional subjects, and the greater is the awe and respect it commands from the audience to whom it is being introduced.

In the case of holistic complexity, we have seen that its (projected) domain comprises not only the whole of objective reality in space and time, but even human consciousness as well – that is to say, just about the whole of reality as it is often conceptualised: the “inner” world of the perceiving subject and the “outer” world of phenomena and objects (strikingly reminiscent of the old Cartesian perspective). One can scarcely imagine how more power can be bestowed upon a promoted attribute.

#### 6.5.2 Concerning complexity theory and chaos theory

References over the last couple of years to the emerging “new science” of complexity (which, according to some, also embraces chaos theory), raises the

question whether this notion of complexity indeed presupposes the kind of “promotion” that we have been discussing, and whether it is in fact reconcilable to Capra’s holism. The short answer to both questions seems to be that, while there is indeed a certain overlap between holism and complexity theory (for example the concern with complex, dynamic and self-organising systems), and while complexity theory allows for a certain order to be generated from complexity, the overall aim of the latter theory still seems to be to finally relate systemic complexity to some simple underlying rules. For example Lewin (1993:14) quotes Murray Gell-Mann in this regard on “surface complexity arising out of deep simplicity”.<sup>25</sup> In logosemantic terms, we thus have complexity operating on something like, say, nature, consciousness and society, with this whole operation taking place *on the domain-side* of a proposition in which simplicity is the governing attribute on the subject-side. Compare (xii) below:

(xii) [simplicity] → [[complexity] → [nature, etc.]]

(In general, we have a similar encapsulation of operations on the domain-side, whenever there is some kind of internal governing relation at stake among the entities that constitute the domain – for example, when a deconstructionist proposition has something like “textuality” ruling such spheres as philosophy, science, literature, politics and so on, with philosophy at the root of the rest – cf. McCarthy, 1991:102.)

But now note that, to the kind of holistic thinking we are concerned with here, the reasoning based on (xii) must seem to be reintroducing something of the classic reductionist ideal into the study of complexity. In fact, the propositional subjectivisation of simplicity might be taken to belong to the logosemantic foundations of chaos theory (cf. Gleick, 1987:304). Thus one can immediately understand why someone like Chomsky would have a definite “taste” for this theory as a kind of metadisciplinary framework (Haley & Lunsford, 1994:127-128, 141-143).

## 7. In critique of complexity

### 7.1 The attributive positioning of complexity

In the above sections, we have been undertaking a logosemantic analysis of the structures of philosophical conceptualisation, with special reference to the concept of complexity – all in the context of a discussion of Capra’s holism. The question, however, arises: is there any way from this kind of descriptive theory to

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25 Compare also Lewin (1993:190), where the importance of an underlying simplicity is again established

a *critical evaluation* of the actual content of logosemantic propositions? I believe there are indeed such critical perspectives to be developed, and in the following subsections I will try to illustrate this, again with reference to Capra's theory. The first issue concerns the attributive positioning of complexity.

It is apparent that the basic holistic proposition we have been investigating, tends to attribute complexity to the propositional subject, locating simplicity – together with subordinate forms of complexity – on the domain-side. This allocation of attributes stands in direct opposition to the reductionist kind of proposition where simplicity reigns over complexity. Let us proceed by imagining a conceptual process where the category “slots” of the holistic proposition are systematically being “filled in”. Coming to the imaginary question: “is the propositional subject (the cosmos or universe) one or many?” we can expect to find the concept “one” being selected (by the holistic thinker). Together with the operator *unify*, this accounts for Capra's insistence on the oneness of the universe (e.g. Capra, 1983: 190). However, we have seen that the attribute-pair at issue here also goes under the label “simple/complex”. When the question of suitable attributes is phrased in this way, our holistic proposition seems to select the latter alternative (as structure (vii) above indicates). But the difficulty in this respect is that the concept of complexity is indissolubly (transformationally) linked to the concept of multiplicity. This problematises any one-sided option for unity or oneness *over and against* multiplicity, as far as the propositional subject (the universe) is concerned.

On the other hand, the concept of simplicity which is moved to the domain-side of our proposition, is itself indissolubly linked to that of unity, singleness or oneness. *What we should see, is that the oneness of the universe is given together with the multiplicity to which this oneness relates, a multiplicity that confronts us in the infinite complexity of the universe, this complexity being countered or balanced by the referred to oneness, which is nothing but an element of relative simplicity amidst enormous complexity*<sup>26</sup> Put in another way: even the most jubilant celebration of quantum complexity must still be related to the single reality in which everything exists. And even theories of multiple universes seem conceptually forced to reckon with some kind of unity, for instance that of the quantum context itself. In terms of systems-language: if the

26 A typical problem encountered by the metaphysical celebration of the one over and against the many, is stated by Habermas (1992:120-121) in this way: “How can the one, without endangering its unity, be everything (*Alles*), if the universe (*das All*) is indeed composed of many different things?” (Habermas's own central logosemantic proposition, featuring a certain kind of rationality in the subject-position, seems at times to contain sets of balanced binary attributes, for example in the mentioned essay he argues for the unity of reason as given only within the diversity of its “voices”, and for the need to honour both the universality and the particularity (individuality) of linguistically mediated reason. Compare also note 27 below.)

complexity of the ultimate reality is of a systemic nature, then the system as such imposes unity, singleness and a measure of simplicity.

A brief side-remark here: if there may be reason to doubt whether society as such is to be viewed as an encompassing whole with constituent parts (cf. section 7.5 below), then it seems the same kind of doubt might be brought to bear on the idea of the universe as such an all-inclusive whole. Might it not at least be feasible to think of the universe as an ordered coherence of many different structures (material, biological, psychological, social and so on), without the latter being “located within” a single total structure (mostly pictured in purely material terms)? But note that, even if this was indeed correct, we would not end up with a rampant diversity or complexity without any correlating unity or singularity: the complexity of the cohering, intertwined structures would still be balanced by the unity of the cosmic order that links them all to one another.

Turning for a moment toward the reductionist celebration of simplicity, what needs to be realised by searchers after a so-called “theory of everything”, is that the beautiful simplicity of the envisioned single formula, will of necessity be embedded in reasoning processes, one can say a mathematical matrix, of great complexity – that is, the simple formula cannot be understood (as simple) in any simple way. Michael Green, one of the originators of modern string theory (by many physicists regarded as the most promising candidate for a “theory of everything”), has on occasion remarked on this kind of simplicity that can only be envisaged in the context of sophisticated mathematics, and his collaborator, John Schwarz, has even expressed concern that the mathematics required for an accurate elaboration of the ultimate theory, may be beyond the capacities of the human mind (cf. Davies & Brown, 1988:87, 132).

To generalise: In the case of holism, it seems as if a logosemantic opposition between unity and multiplicity, or between simplicity and complexity, is fraught with all kinds of conceptual tensions and is wide open to “deconstructive” criticism. One might surmise that the same will be the case with other discourses (focused on other propositional subjects) bent on systematically choosing between the simple and the complex. We can speculate that this will also prove to be the case with the other attributes, when it comes to the oppositional relations that philosophical discourses are forever construing between binary elements. (The practitioners of deconstruction have gone some way in illustrating this – in spite of the fact that their own method operates on selective “second-order” ideas. See section 6.4 above.)

The kind of conceptual balance we probably need to practise in this respect, is not so much a question of empirical “findings”, as it is of a preceding conceptual adjustment that needs to be made – an adjustment in which we are not so predisposed to attribute to our propositional subject, whatever this may be, *either*

unity (simplicity) or multiplicity (complexity), *either* individuality or universality, *either* necessity or contingency, and so on.<sup>27</sup> Capra himself frequently urges us to look critically at the conceptual imbalances with which we approach not only our broad cultural environment (1983:15), but also our theoretic and scientific endeavours. One cannot but agree with him when he observes (1985:77):

The patterns scientists observe in nature are intimately connected with the patterns of their minds; with their concepts, thoughts, and values. Thus the scientific results they obtain and the technological applications they investigate will be conditioned by their frame of mind.

From the systems point of view Capra even gives an example (1985:290) of how the traditionally antithetic concepts of freedom and determinism should be harmonised with each other, both being relative concepts and both applying to the same system at the same time: to the extent that the latter is autonomous from its environment, it is free; to the extent that it is dependent, it is determined. Similarly, he balances the stability of self-organising systems against their incessant change (1985:292), and chance against necessity as “complementary principles” (1985:312). Even holism and reductionism are said to be capable of harmonious co-existence, if the “proper balance” is maintained (1985:288). In another context, while not consciously balancing attributes, he nevertheless remarks – in the same paragraph – on both the comparative simplicity of viruses, and on their high molecular complexity (1985:298).

It is also with such examples in mind, that I would (again) contend that even the most complex system has an element of *relative* simplicity – to the extent that it presents itself as a *unified whole*. One could also look at this from the point of view of the structure of our concepts. For, though our concept of something like “universe” obviously entails a multiplicity of elements, these are synthesised in the unifying grasp of one single concept.

Note that this interpretation of simplicity and complexity tends, in the first place, to handle these attributes as complementary aspects or viewpoints related (in principle) to one and the same object or category. (I say “in principle”, because, naturally, in ordinary communication, all of us will, in a given context and within relative parameters, qualify something either as simple or as complex.) Thus perceptual complexity, for example, implies a corresponding *perceptual* and not,

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27 The balance referred to here, is particularly important when confronting the whole debate on postmodernism Cf. Thomas McCarthy’s perceptive remark (1991:13) that “[t]he grand ‘either/or’ structuring [of] much of postmodernist rhetoric sets the particular against the universal: either one is for the totality, necessity, authority, and homogeneity of the universal, or one rejects it in the name of the fragmentary, contingent, spontaneous, and heterogeneous particular. But that opposition simply ignores the dialectical relation between the general and the particular”.

say, a *conceptual* unity or simplicity (as one finds in Kant's epistemology for instance). Similarly, an ant colony is, as such, both a complex structure and a unified, single, whole. One does not have to couple the notion of complexity to the colony as a whole, and that of simplicity only to the structure of the individual ant (as Douglas Hofstadter [quoted in Davies, 1984:63] seems to do, though he does make the point that one should not oppose holistic complexity and reductionistic simplicity to each other). In the same way one can come to understand the most ordinary social situations experienced by human beings as amazingly complex in the very simplicity that makes them experienceable (cf. Searle, 1995:3-4). Again, the categorially unified kind of complementarity I am talking about here, seems to inform some of Capra's own examples of correlative viewpoints (cited above).

## 7.2 The schematization of complementary attributes

When both elements of an attribute-pair apply in a logosemantic proposition, they are usually "schematized" according to some or other order or pattern. Let me briefly describe three such possible schematizations with reference to the simplicity/complexity pair. These are in fact some of the available options that a thinker has in terms of conceptualising the relations between any pair of attributes.

- First there is what I will call the *paradoxical schematization*: here a conception is structured in which the propositional subject will be viewed as both simple and complex, in the sense of the one attribute "turning into the other" as soon as we focus our attention on it, thereby confounding the logical norms of "ordinary" thinking. (In some types of mysticism, this type of unity of opposites is ultimately left behind in a conception in which the "both ... and ..." merely points from afar to the "real" nature of the subject: an absolute and partless unity beyond all opposites – in which case we again have the ultimate selection of simplicity over and against complexity.)
- Secondly, there is what I call the *ontological schematization*: an effort is made to distinguish analytically between the simplicity and the complexity of the propositional subject by referring (mostly) the former attribute to the assumed "essence" of the subject as it exists in itself, and the latter attribute to the way the subject "appears" to us.<sup>28</sup>
- Thirdly, there is what I will refer to as the *functional schematization*: without resorting to either a paradoxical or an ontological complementarity, simplicity

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28 What I am referring to as the ontological type of schematization, in some respects resembles the rhetorical device that Perelman (1982: 26-37) calls the "dissociation of ideas".

is seen as characterising the subject from a certain point of view, and complexity as characterising it from another. This brief overview will suffice as regards the three types of schematized complementarity I wanted to mention here. The schematization component can now be added to our representation of propositional structure, as in (xiii) below, applying to the attributes under discussion.

(xiii) [simple plus complex] [X] → [Y]  
schematization options

To my own mind, it is only the functional type of schematization that really succeeds in avoiding the pitfalls of a mystical irrationalism on the one hand (seeking to escape the norms of logical thought), and a metaphysical rationalism on the other (assuming a world of hidden substances behind apparent reality). Thus I do not think that the kind of complementarity between simplicity and complexity that I have been postulating, should be viewed as an example of the “unification of opposite concepts” that Capra (1983:161-175) sees in Eastern philosophy and in modern physics. Such a unity leads either to a postulated merging of simplicity and complexity (“unity between opposites”), or to the transcending and absolute simplicity of the propositional subject (“unity beyond opposites”), again excluding the notion of a complementary complexity.<sup>29</sup>

### 7.3 Where unity cannot be balanced with multiplicity

The gist of the discussion in the immediately preceding sections has been that a kind of logosemantic balance may be achieved between the attributes of (among others) simplicity and complexity. This also holds for the appearance of these attributes under the labels of, respectively, unity and multiplicity. However, in a certain respect, there does appear to be an interesting imbalance, so to speak, between these attributes under the latter labels.

This concerns the “power potential” of the concepts concerned. It has been established above that the logosemantic category of “operators” comprises the possible relations between subjects and their domains, and it appears as if these are essentially power relations. Now, the concept of unity may function in a logosemantic proposition in the “operator” slot, whenever a certain x unifies (and in a sense simplifies) a certain y. This is not the case with the concept of multiplicity: unlike the notion of unity, it apparently cannot receive an *operational* role. There are, to my knowledge, no examples of genuine logosemantic pro-

29 The issue of “unity between” versus “unity beyond” is somewhat similar to an old paradox in the unity-metaphysics of Western philosophy: the one is regarded as in everything, and at the same time, in order to maintain its distinctive unity, as above everything (Habermas, 1992:121).

positions that have some or other  $x$  powerfully operating on a domain  $y$ , by multiplying or diversifying (or complexifying)  $y$ . In this respect, the “power valence” of these two concepts is asymmetrical. Thus we must distinguish between the general status potential of attributes (by which a certain aura of distinction may be effected, cf. section 6.1 above), and their operational potential. In terms of the former criterion, the one and the many have equal chances; in terms of the latter criterion, the one seems to be privileged over the many – and this simply on account of the way that human thought (apparently) works.

#### **7.4 In the role of logosemantic subject: a cosmic order**

Having arrived at this particular point in the course of my argument, I should perhaps digress a bit on what my own choice for a logosemantic subject would be, the subject to which I would have to bring a conceptual balance between simplicity and complexity. This subject would not be “nature” or “the universe” (nor “knowledge”, or “power”, or some such candidate), but rather the idea of *an order holding for the universe*. My assumption is that the universe, while reflecting this order at every moment of its existence, and in everyone one of its interwoven structures (cf. my side-remark in section 7.1 above), cannot itself be the origin of the latter. The universe rather presupposes such an order. However, I do feel inclined toward a “holistic” conception of this order, in assuming it to be *one overarching reality* in which not only the laws of nature but also certain (given) social, moral, spiritual and other principles are *unified*, while all these *complexly interconnected* laws and principles operate on distinct and irreducible levels within this unity. Which unity can be thought of as the one, ruling and redeeming, “text” for reality – a conception that would, I suppose, have more in common with ancient Jewish understandings of the power of a preceding *logos* over reality, than with Eastern naturalist philosophies. Of course, someone like Chomsky also holds that the social, moral, political, and other aspects of human behaviour are ruled in some sense by preceding principles; only he locates the source of these principles in the human mind (cf. Haley & Lunsford, 1994:182-186).

The anti-reductionist “flavour” of this conception of a preceding cosmic order is apparent in the way that it allows us to analyse fundamental phenomena of our experiential world, like justice or art, with reference to corresponding principles that hold for them within the cosmic order of things; rather than simply reducing them to other phenomena such as historical change or psychological mechanisms. (Although the latter will of course be in some way *connected* to the former phenomena.)

Though I assume the order of natural laws and normative principles that I am talking about to have some kind of reality outside the human mind, I do think that this order is reflected within the structure of the latter. For this reason we can

say, as Chomsky would push us to say, that the principles of for example logosemantics are to be found within the mind (specifically that faculty of mind that allows for the construction of “theories” of reality), but with this qualification, that these cognitive principles only reflect a pre-existing “script” of principles “written” for the operations of the mind.

After this digression regarding a possible alternative to the logosemantic concept of a systems-theoretical universe, I will now return to the main route of my analysis and move on to the next and final subsection.

### 7.5 The paradigmatic “colouring” of complexity: systems theory

As stated earlier, logosemantic propositions nearly always function within a interpretative framework of some sort: some kind of tradition, or worldview, or school of thought. In the present context, let us call this framework a *theoretical paradigm* – which paradigm provides the immediate conceptual context within which a proposition is advanced. (In section 2 above, I distinguished between paradigmatic types and paradigmatic time-frames.) The central proposition that houses Capra’s notion of complexity is also contextualised in such a paradigm – which itself consists of some interconnected sub-paradigms (see the Introduction and section 2.2 above). One of these sub-paradigms goes under the name of systems theory. And when it comes to the systems understanding of complexity, there are some conceptual problems to be faced.

These problems have to do with the way that (the theory of) systemic complexity handles *difference*. The problems with difference that I will deal with here, occur in the social sphere, in two contexts: the context of social institutions and their inter-relations, and the context of phenomena of dissent in society. Let me briefly identify the problem of difference on these two levels.

With regard to social institutions, my own feeling is that, in the interests of freedom, the complex diversity of these institutions should be acknowledged, without our seeking to impose some kind of inclusive societal whole on this diversity. Any such effort, whether conceptual or organisational, may result in relativising the internal freedom and autonomy of institutions. For instance, we all know that though they exist within the territorial boundaries of the state, the nature of the family or the university is such that they cannot in any way be viewed as *parts* – even largely autonomous parts – of the juridical-administrative structure of the state. Now the problem with the systems view of institutional complexity seems to be that one does in fact end up with some kind of overarching societal whole in which this complexity comes to be organised as the parts (subsystems) of a unifying whole. To me, this implies that institutional

differences can then only concern the “particulars” of parts that are otherwise qualitatively equal because they belong to the same system.<sup>30</sup> But are there really only differences of degree between say family life, the world of business, and the university establishment – or are there rather fundamental, qualitative differences? Is the distinctive knowledge concern of the university really to be viewed as ultimately subordinate to the higher law of the larger system that embraces it? In this regard, I also refer to a perceptive remark by Thomas McCarthy (1991:178) to the effect that whereas social systems theory tends to focus on the *environments* of systems, it is not necessarily useful in reconstructing the *inner dynamics* of a system such as the state for example. Consider, finally, the political implications attaching to the ideal of a (scientifically devised) systemic blueprint of society: the allure of a more effective political control over societal complexity, in the name of a great encompassing whole to which all must bow (cf. Schuurman, 1985:23-29). The question may indeed arise whether this “treatment” of complexity is not essentially reductionist in character – reducing real (and wholesome) difference to a decreed unity.

With regard to the matter of social dissent, the problem with the systems approach is the following. A property of natural systems seems to be that they either maintain themselves through and in spite of change (and far more conservatively than one would predict from knowing only about the changing subsystems), or eventually totally transform themselves in the path of evolutionary change (cf. Capra, 1985:292, 311). If this is more or less the model for social systems, how can we account for fundamental dissent *from* the system arising *within* the system (in revolutionary politics, radical social movements and so on)? I am talking here of dissent which experiences itself as something quite apart from the integrating system, and not as some mechanism within the system, by which the latter in fact succeeds in dynamically conserving itself. Or are the actions of the radical social movements in fact only part of a *naturally* self-regulating societal system? Again, this seems at odds with the basic intuitions of *freedom and normative responsibility* upon which a “counter-cultural” politics bases itself (and to which Capra himself subscribes).<sup>31</sup> Viewing the difference that radical protest makes as part of our cultural complexity is one thing; viewing it as part of the complex behaviour of an encompassing and integrating system is quite another

The issue of systemic complexity versus freedom and dissent can also be approached from another angle. It is well-known that besides the sphere of social

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30 This qualitative equality is affirmed in Luhman (1973:173-174), cited in Strauss (1988:178).

31 Cf. Dahrendorf's (1961) criticism of the systems-approach used by sociologists, discussed in Strauss (1988:194-197)

action, Capra's thinking is also directed to the sphere of personal transformation (spiritual growth). In fact, both these worlds come together with that of scientific knowledge in his program for a holistic philosophy. It, however, seems to me that specifically the systems-theoretic understanding of complexly-interlocking wholes is, as such, in fundamental tension with the ideal of personal transformation in its fullest sense. The former starts from, or works toward, an allegedly "pure" scientific analysis of the *all-embracing natural horizon* within which both material phenomena and normative behaviour are *objectively controlled* by complex systems on various levels. The latter starts from the goal of *personal freedom* that is to be attained by various practices of self-care, aimed at *subjectively transcending* the "givenness" of the world around us. Instead of attending to the *scientifically disclosed complexity* by which subjectivity is ruled and the technological means by which this complexity might be managed, the transformation ideal rather searches for a *serene simplicity* inside and outside of us, through which liberated subjectivity may rise above the constraints of the objective world.

The nearest that the systems-approach can probably come to this latter ideal, is by contemplating, from an administrative-managerial perspective on organisational complexity, the desirability of something like a world religion – in which diverse elements from contemporary religions are actually combined (thus Laszlo [1994], quoted in Schuurman, 1985:26, 92) This seems to me quite far removed from, and even opposed to, the radical kind of spirituality endorsed by Capra and others (and for which I have a degree of sympathy, even though I regard the goals of this spirituality as somewhat unrealistic). Though I am aware of the fact that Capra seeks to combine the two different ideals I have sketched above (for example by moving from the nature concept of the systems theorist to that of the mystic), my impression is that their "inner logics" are in fact quite incompatible – at most one can try and externally harmonise them by in some way interfering with the inner logic of either the one or the other. This is of course not to say that scientific complexity cannot be harmonised with spiritual simplicity: the problem is rather how science and spirituality as such are perceived within some or other conceptual framework.

In this context, it must also be remarked that the central tension between the natural-scientific and the normative-emancipatory modes of thought that seems to be the ultimate issue here, cannot be resolved by combining, or replacing, a mechanistic model with an organistic one that appears applicable to both the material and the spiritual worlds (cf. Capra, 1983:336 for example). The reason for this is that both of these models in the end lead us only to a *pre-normative frame of reference*, and the organistic model in its modern cybernetic sense cannot but favour the naturalist-scientific stance (cf. McCarthy, 1991:175-176). It seems doubtful whether simplicity and complexity in the spiritual, social and cultural worlds can really be understood by abstracting away from the normative

content of these worlds in what amounts to naturalistic reductionism. To me it even seems a bit ironical that a (propositional) recognition of complexity can be joined to theoretical perspectives that in fact seem to deny that there might be a multi-layered complexity to reality that is not reducible to some or other natural substratum.

## **8. Conclusion**

Having subjected the basic design of Capra's holism to a logosemantic analysis, we have come to understand this approach in terms of the conceptual rules of philosophical conceptualisation. It is in the context of these rules that the idea of the universe as a unified whole has come to stand in a new light. But it is the accompanying idea of systemic complexity that was the main focus of our investigation, and at least the basic outlines of the logosemantic story of complexity have emerged. We have seen how different rhetorical effects can be accomplished with this attribute, in the language of holism, but also in other philosophical languages. Along the way, new perspectives have been gained on the tense relations between Capra's scientific holism and mainstream physics, esthetic postmodernism, spiritual transformationalism, the social movement culture, and aspects of Eastern philosophy.

In my opinion there is more work waiting to be done on the concept of complexity (and on all of the other philosophical attributes), within the analytical framework sketched in this article. To my mind the latter offers something of a new path for philosophical reflection, one which promises rewards in terms of intellectually challenging work and deep-delving reconstructive theories. And though such a reconstructionist perspective seems to have more in common with postmetaphysical formal-descriptive approaches to cognition than with the traditional philosophical search for (and defense of) substantive origins and foundations, it can nevertheless pack a telling critical punch. For we found Capra's holism to contain a certain conceptual imbalance between complexity and simplicity – at odds with his insistence on a kind of complementarity between other system properties of the same sort. We also found that systemic complexity has some problems in recognising and honouring certain kinds of difference – among them the kind that radical social movements have come to signify.

In closing, let me make one more remark on Capra's holism, with reference to the concept of complexity. The theoretical complexity of this approach itself is located on different levels: from the subtle root-dialectic between nature and freedom, to the creative synthesis of widely diverging worldviews (ranging from mystical Eastern doctrines to nuclear physics to social movement politics), to a spectrum of theoretical positions that entail a certain anti-reductionism and a certain anti-scientism (1983:16; 1985:42, 89), in combination with a qualified defense of scientific rationality, an accomplished emancipatory critique of culture

and society, and an endorsement of progressive spiritual ideals. Thus this model has obvious advantages over others of a different type, regarding the real complexity we face when engaging in serious intellectual reflection on the world around us. Yet the question is whether one of the basic components of this encompassing synthesis, namely the systems-theoretical understanding of complexity, does not tend to bring with it its own brand of (what might be called) reductionism and scientism, which ultimately must work against some of the other components of the model.

In light-hearted vein, I end with some thoughts in home-made verse, that sort of summarise the findings of this article on another level – a technique I borrow from the published proceedings of a landmark symposium on complexity (Aida *et al.*, 1985).

How strange for us to contemplate  
thoughts with which the world we confiscate  
our thinking on the great simplicity  
our vision of the ultimate complexity  
so caught up in the rules of the game  
the mind's freedom so put to shame

But while the mould that to our thoughts brings nurture  
is so utterly cast in the iron of human nature  
their bright colours remain a free creation  
gloriously open to our bold innovation

Let us then celebrate  
and in our discourses narrate  
the Many in conjunction with Singularity  
Seamless Unity in systemless Complexity

### Postscript

Some weeks after the conference at which the initial paper was read, Capra's book *The Web of Life* (1996) was published. A few remarks about this work are in order. Firstly, the book is a continuation of Capra's holistic philosophy: it is meant to expand on certain themes discussed in *The Turning Point*. Therefore the analysis presented above is still very much to the point. Secondly, the new book contains a chapter entitled "The Mathematics of Complexity" – which is of obvious importance for the theme of our investigation. However, everything that Capra says in this chapter (and elsewhere in the book) regarding the notion of complexity, seems to presuppose the conceptual framework sketched out above. Of special interest is the fact that he now refers explicitly not only to complexity theory, but also to (its offshoot) chaos theory. His treatment of these theories, however, only seems to underline the basic tension thematised in subsection 6.5.2 above: the fight for supremacy between complexity and simplicity. The inherent logic of holism and systems theory points to an ever-preceding complexity; chaos

theory, for its part, assumes a sovereign simplicity at the root of the latter. Capra still seems to be unaware of this deep rift, a conceptual polarisation of the kind that postmodern deconstructors like to get their teeth into.

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