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Maria Eunice Quilici Gonzalez*, Mariana C. Broens**

On Denis Fisette's "Franz Brentano and higher-order theories of consciousness": a view from the complex system perspective

ABSTRACT

The aim of the present commentary on Denis Fisette's article *"Franz Brentano and Higher-Order Theories of Consciousness"* is to discuss his account of Brentano's principle of the unity of consciousness from the Complex Systems perspective. Initially a summary of Fisette's writings on Brentano's principle of the unity of consciousness is presented. Hypotheses of the Complex Systems Theory are, then, presented in order to provide foundations for an informational interpretation of Fisette's *complexity problem*.

Keywords: Philosophy of mind; Brentano; Consciousness; Complex systems theory.

RESUMO

O objetivo do presente comentário sobre o artigo de Denis Fisette "Franz Brentano and Higher-Order Theories of Consciouness" é discutir sua explicação do princípio da unidade da consciência de Brentano sob a perspectiva de sistemas complexos. Inicialmente, é apresentado um sumário dos escritos de Fisette sobre o princípio da unidade da consciência de Brentano. Hipóteses da Teoria de Sistemas Complexos, são, então, apresentadas para fundamentar uma interpretação informacional do problema da complexidade de Fisette.

Palavras-chave: Filosofia da mente; Brentano; Consciência; Teoria de sistemas complexos.

* University of São Paulo State. E-mail: gonzalez@marilia.unesp.br
** University of São Paulo State. E-mail: mbroens@marilia.unesp.br

Introduction

In the present commentary on Denis Fisette's article "*Franz Brentano and Higher-Order Theories of Consciousness*", we are going to focus on his fresh account of Brentano's principle of the unity of consciousness.

As Fisette stresses, several difficulties arise from Brentano's view on the unity of consciousness; one that is of particular interest here concerns the difficulty of explaining the nature of the objects of conscious experience. In this context, we are going to discuss Fisette's lucid interpretation of Brentano's principle of unity of consciousness from a provisory *informational* perspective grounded upon hypotheses of Complex Systems Theory (GERSHENSON *et al*., 2007; MORIN, 1982; MITCHEL *et al*., 2002; JUARRERO, 2002; HAKEN, 1983, 2000; BAK, 1996). Special emphasis will be given to the *dispositional* nature of informational relations created between physical and non-physical objects. Due to their own peculiar nature, informational relations are not material, but they may entangle a myriad of nested physical elements belonging to the domain of complex (probably self-organized) systems. We are going to provide reasons to support the hypothesis that given the dispositional nature of informational relations, they may constitute a common element that under certain conditions can unify the objects of conscious experience in complex biological systems. It is hoped that this hypothesis could complement Fisette's interpretation of Brentano's perspective on the unity of consciousness.

The aim here is to discuss the nature of the objects of conscious experience from the Complex Systems perspective. The text is organized into three sections, the first of which summarises our understanding of Fisette's writings on Brentano's principle of the unity of consciousness. In the second section, we introduce the main premises of Complex Systems Theory, providing foundations for our informational interpretation, proposed in the third section, of what Fisette calls *the complexity problem*.

Denis Fisette's account of Brentano's principle of the unity of consciousness

One of the central topics analysed by Fisette is Brentano's principle of the unity of consciousness. According to this principle, conscious experience is not constituted by an aggregate of isolated parts, but comprises a whole integrated unity. As Fisette points out, the parts or *divisives* that constitute the conscious experience "[...] stand in a relation of dependence to the whole" (p. 24). He illustrates Brentano's thesis according to which "every mental act is conscious and includes the consciousness of itself." (p. 15). As an example, he considers the act of hearing a sound and the consciousness of hearing the sound, which are parts of the subject's same, integrated, conscious experience. In the above

example, Fisette stresses that according to Brentano, mental acts have a "double object", namely *primary* and *secondary objects*, which constitute the unified experience of hearing a sound. Here, the primary object is the sound, and the secondary object is the mental phenomenon, which characterizes the experience of hearing a sound.

Brentano's principle of the unity of consciousness, as mentioned, raises several questions, one of which is the difficulty of explaining the relationship between the conscious experience itself and the consciousness of having this conscious experience. Fisette presents three traditional approaches to this question in contemporary Philosophy of Mind (p. 21-23). The first, proposed, for example, by Kriegel (2003), suggests that the primary object of consciousness is *represented* by the secondary object. This approach is formulated by Fisette as follows:

> For any mental state M of a subject S, there is necessarily a mental state M^* such that S is in a state M^*, where M^* represents M, and $M^* = M$. (p. 22).

The second approach, proposed by several advocates of higher-order theories of consciousness (represented, in Fisette's analysis, by Rosenthal), presupposes that there is a numerical distinction between lower and higher level conscious states. Fisette summarizes this approach as follows:

> For any mental state M of a subject S, there is a mental state M^* such that S is in the state M^*, where M and $M^* \neq M$. (p. 22).

Finally, the third approach focuses on a *mereological* relation between the primary and secondary objects, both considered as parts of a whole. This whole/part kind of connection is expressed by Fisette (p. 23) as:

> M^* = Representation of the primary object
> M^{**} = Representation of the secondary object
> M = The whole (or complex) unifying M^* and M^{**}
> For any mental state M of a subject S, M is conscious iff there is a M^* and a M^{**}, such that (i) M^* is a part of M, (ii) M^{**} is a part of M, and (iii) M is a whole which M^* and M^{**} are parts of.

Fisette considers that this third view, on the relationship between the conscious experience itself and the consciousness of having this conscious experience, contemporarily developed by van Gulick (2006), amongst others, is shared by Brentano, especially in his later writings. In this sense, he argues that "[...] the consciousness of the primary object and the consciousness of the secondary object are metaphysical parts or, in Brentano's words, divisives that belong to one and the same phenomenon." (FISETTE, 2015, p. 23).

In short, a fundamental aspect of Brentano's theory of consciousness, coherently analysed by Fisette, is the thesis that primary and secondary objects of consciousness are interdependent and constitute a unity. This thesis gives place to what Fisette calls *the complexity problem,* which is: "… the problem of unifying within inner consciousness the entire complex of elements involved in the constitution of our mental life" (p. 24). In what follows, we are going to investigate this problem from the informational perspective in the context of Complex Systems Theory.

A complex systems approach to the nature of the objects of consciousness: any contribution to Fisette's complexity problem?

In his inspiring 1948 paper "Science and Complexity", Warren Weaver proposes a classification of scientific problems into three main categories:

1. Problems of simplicity: Those problems that can be described and solved in terms of two or a few fixed variables.

2. Problems of disorganized complexity: Problems involving numerous variables, whose solutions (if they exist) require probability analysis.

3. Problems of organized complexity: Those problems involving a moderate number of variables and dynamic relations that cannot be solved only by means of probability analysis.

Weaver (1948) stresses that Type 1 problems were successfully investigated and solved during the seventeenth, eighteenth, and nineteenth centuries, guiding great progress in the domain of the physical sciences. Investigations of this type of problem led to the invention, for example, of the telephone, automobiles, and diesel engines, amongst others, but there were clear limitations in the study of biological, psychological, medical, and social problems.

In the nineteenth and early twentieth centuries, Type 2 problems (of disorganized complexity) were investigated in the areas of thermodynamics, logic, mathematics, and aspects of economics involving numerous variables, by means of probability analysis.

It was only in the twentieth century that Type 3 problems (of organized complexity) were investigated. These problems involve a moderate number of variables, and their main characteristic is the dynamic dependency relations that are established in the *communication* amongst members of a self-organized system. The self-organized character of these dynamic interrelations cannot be satisfactorily described only in terms of the probability statistics that seems to be adequate for the analysis of Type 2 problems.

As suggested by Weaver, the power of computers in dealing with information processes, and the interdisciplinary collaboration amongst

researchers in different areas, opens up a promising new perspective for understanding Type 3 problems of organized complexity. In this context, the novelty of the present exploratory commentary is the indication of a possible way of conceiving Fisette's view of Brentano's principle of the unity of consciousness (considered here as a Type 3 problem) from an informational perspective, grounded on Complex Systems Theory hypotheses. In general, the analysis of this theory involves the use of a number of mathematical formulae, which will be left aside in the present case, given that our main interest is to discuss the conceptual presuppositions of the theory. A complex system can be defined as:

> […] [an] organization which is made up of many interacting parts […] In such systems the individual parts - called 'components' or 'agents' - and the interactions between them often lead to large-scale behaviours which are not easily predicted from a knowledge only of the behaviour of the individual agents. (MITCHEL & NEWMAN, 2002, p. 2).

From the perspective of the Theory of Complex Systems, interactions amongst elements at the microscopic level may produce the emergence of order parameters at the macroscopic level of a self-organizing system. Order parameters can be understood here as emergent informational patterns that express several levels of dependency amongst elements on different scales. As Haken (2000) argues, when order parameters emerge, they subjugate the behavior of the individual elements that have generated them, producing new characteristics at the macroscopic scale (the term "order parameter" is used here, in a technical sense, to indicate the emergent structuring property of a complex informational system). In the case of living systems, under certain conditions, changes at the microscopic level may initiate the emergence of informational patterns that could, in turn, create new informational patterns at the macroscopic scale.

The following two basic properties of complex systems are of special interest here: (a) self-organization, and (b) the holographic principle. Self-organization can be characterized as a process through which new forms of organization emerge solely from the dynamic interaction amongst elements - initially independent - without any *a priori* plan or central controller. This process can be developed in primary or secondary ways (ASHBY, 1962; DEBRUN, 2009), described by Gonzalez & Haselager (2005, p. 7) as follows:

i) *Primary self-organization* involves the encounter between organic or inorganic elements, initially separated (or with independent behaviors). These elements get together […] initiating a spontaneous interaction amongst themselves in such a way as to give place to structures or distinct forms of organization, without a central controller;

ii) *Secondary self-organization,* in turn, happens when under certain circumstances there appear disturbances that provide sufficient conditions for the system that is primarily self-organized to learn how to adjust the

communication amongst its element, creating new stable patterns or order parameters that may control the system.

We understand that both primary and secondary self-organization can constitute the core of organized complexity. If it happens that the holographic principle applies to living self-organized systems, then they may be able to express the unified interactions between their constituent elements at the micro- and macroscopic scales. Morin (2001, p. 150) describes the holographic principle according to which " [...] not only its part is in the whole, but the whole is also in each part."

To conclude the present paper, we indicate the role played by informational patterns in the whole/parts dynamic that is implicit in the holographic principle.

An informational approach to the principle of the unity of consciousness

There is no consensus about the proper characterization of the concept of information in contemporary studies, but most researchers emphasise the *relational* nature of information that comprises the interdependence between actions, events, and messages, amongst others. Inspired by Shannon & Weaver's Mathematical Theory of Communication (1949), Dretske (1981) characterizes information as an indicator of relations that exists objectively in the world. In this sense, given two interdependent events, the occurrence of one provides an amount of information about the occurrence of the other. In contrast, an aggregate of independent events provides no information about their occurrences.

Thus, informational relations necessarily express a conditional property, but they differ from causal relations in that the first involves chance and the possibility of choices. Dretske (1981, p. 20) describes the distinction between causal and informational relations as shown in Figures 1 and 2. Figure 1 illustrates a direct one-way link between the occurrence of the state $s2$ in a source and the state $r2$ in a receptor. In contrast, Figure 2 indicates the many possibilities that resulted in the connection between $s2$ and $r2$.

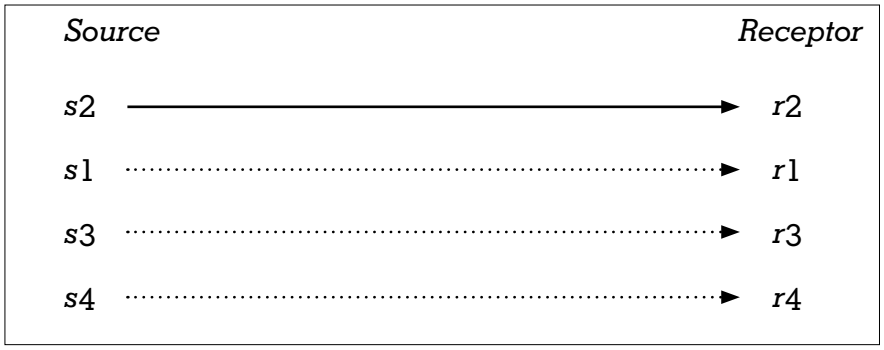

Figure 1 - Diagram of a causal relation, as depicted by Dretske (1981, p. 28).

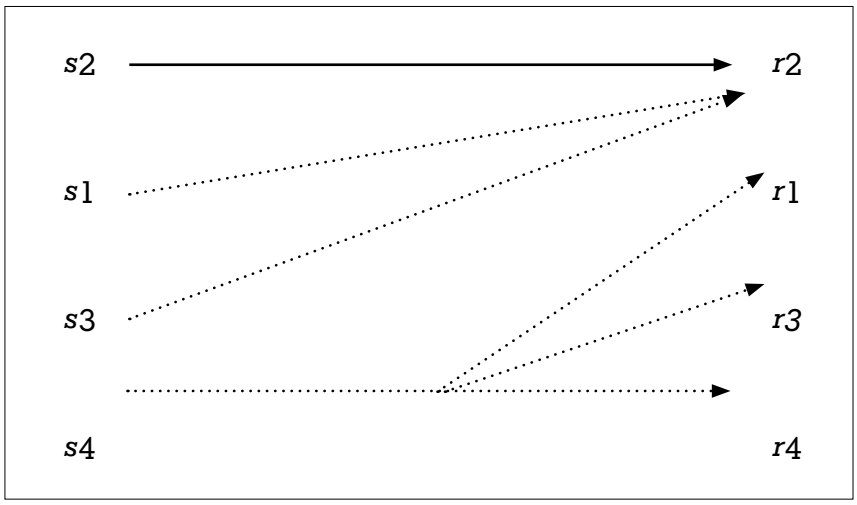

Figure 2 - Diagram of an informational relation, as depicted by Dretske (1981, p. 28).

The difference between informational and causal relations allows *meaning* to be developed in the first type of relation, but not in the second. Considering this important distinction between causal and informational relations, our hypotheses are that:

(i*) Information, characterized as ecological "invariant" features of the world, may constitute the basic elements of the primary object of consciousness;

(2i*) Invariant features of the world may give place to affordances, in that they have the potential to enable organisms to encounter opportunities for action (GIBSON, 1986; TURVEY, 1992).

(3i*) In complex biological systems, meaningful information emerges in consciousness as a result of the agent's adaptive interaction with the environment.

Even though hypothesis (2i*) belongs to Ecological Psychology, and is well known for its anti-representational view of perception-action, we understand that it can be "hired" here to describe the basic informational interaction between agent and environment.

In a related way, Dretske (1992) and Adams (2003) propose the concept of natural *meaning,* understood as an indicator of events in the world, to explain the basic informational relation established between agent and environment: in a certain environment, smoke naturally means, or indicates, fire. In contrast, non-natural meaning is what they call *genuine meaning*, which involves systemic reasons and learning. According to Adams (2003, p. 475-476): "… the word smoke does not naturally mean or indicate fire, but it does semantically mean *smoke*". We understand that information with *genuine meaning* could be a candidate for illustration of Brentano's secondary object of consciousness.

Considering the suggestion of Dretske and Adams that meaningful information can be described in terms of natural and genuine senses, our provisional hypothesis is that both primary and secondary objects of consciousness can be understood as having the same informational nature, despite their specific differences. If this hypothesis is acceptable, then Fisette's *complexity problem,* concerning the unification of the elements involved in the constitution of our mental life, could be investigated from the informational perspective enriched by Complex Systems Theory.

Final comments

To conclude this provisional commentary, we are going to indicate possible contributions of Complex Systems Theory to the analysis of Fisette's *complexity problem,* considered from an informational perspective, as outlined in Section III.

In his inspiring systemic approach to information, Bateson (2000) argues that information is *the difference which makes a difference* to organisms. In his perspective, differences do not make any difference to stones, artefacts, and even machines. According to him, the biological world encompasses nested relations - patterns of information - that provide dynamic organizations, some of which are shared amongst all living beings. However, not all patterns of information constitute objects of consciousness, and this seems to require the perception of relevant differences in the context of action.

From our perspective, in complex biological systems information exchanged among the communicating parts allows self-organizing processes to be established on different scales. By means of secondary self-organization (as indicated in Section II), dispositions may be created and developed in the form of habits and abilities that allow the establishment of constraints for thought and action.

Given the *dispositional* nature of informational relations that may be created between physical and non-physical objects of complex biological systems, we suggest that they constitute a common element that under certain conditions can unify the objects of conscious experience. This hypothesis could complement Fisette's interpretation of Brentano's view on the unity of consciousness. Furthermore, the holographic principle, indicated in Section II, could help in addressing Fisette's *complexity problem*: "[...] the problem of unifying within inner consciousness the entire complex of elements involved in the constitution of our mental life." (p. 24).

In summary, we have here considered information as a self-organizing process of pattern formation that allows the establishment of conditional dispositions in complex biological systems. In these systems, high-level informational structures might emerge that have the ability to create and

change habits through secondary self-organization. These high-level informational structures may well be seen as the secondary objects of consciousness, emergent from the interaction amongst primary objects (which are also informational patterns, with different structures). In dynamic communication, both of them may produce unified conscious experience. From this perspective, a conscious experience is not constituted by an aggregate of isolated parts, but comprises an integrated whole of informational patterns that communicate on different scales.

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