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Abstract: Complexity in ecology arises not merely from number of components and the direct interactions – such as flows – between them alone. We may talk transactions in general and consider that they may be both material and immaterial in character. Our concerns here simply will be of the latter kind. Ecological sciences of today have troubles in coming together to find ways to address the fact that we do not really understand how to tackle the issues treated under the term of complexity and how properties arise. At the same time biological system at all levels of hierarchy are ontic open, which means that the number of possible combinations of their components at any level reaches numbers that exceeds what can possibly be realized in time or space even if considering the total number of particles in the universe. This means that the very character of this sort of complexity alone provides a feature that ensure development and evolution that at low level of hierarchy is entirely random, indeterminate and non-directional (Nielsen and Ulanowicz, 2011 . Ecological Modelling, 222, 2908) but simply inherent in a heterogenous system together with its extrinsic relations in terms of hierarchical organisation, thermodynamics and informational dependencies (Nielsen, 2000 . Ecol. Modelling, 135: 279; Nielsen, 2007 . Ecol. Complexity, 4, 93; Nielsen, 2009 . Cybern. Hum. Knowing, 16, (1–2), 27). At higher levels of hierarchy biological systems are still ontic open but are met with different and increasingly stronger, more specific constrains. Biological systems are not only formed and shaped by constraints from the inside-outward but external constrains are also imposed by imperatives set by the surrounding environment. Thus they are not truly autonomous but are rather systems that receives a strong influence of outside-inward gradients what can be considered a downward causation. A great part of realisation and more important the cybernetics of these forms of existence involves transfer and decoding of information and in the end that the system exhibit adequate responses to a given situation. Such phenomena are widely known as biosemiotics processes. The same is valid to ecosystems as long as we consider conditions that allow us to interpret them as embedded forms. For some other focal levels – like that of population – the semiotics seems to take over a great deal of the cybernetics, but due to the autonomous part of the steering we have to deal with these systems within a framework of seconder order cybernetics. As we move up ro another form of hierarchy – namely that of more and more advanced organisms – it seem that the semiotics adds up to yet another type of ontic opennes that involves a second order, cyber-semiotic system (Brier, 1996 . Syst. Res., 13, (3), 229; Brier, 2013a . Toronto Studies in Semiotics and Communication. University of Toronto Press, 498 pages). At the uppermost levels we find advanced structural societies, not only the well know examples of ants nests, bee hives but also large scales ecosystems like the Serengeti that seem to be more or less driven by interpretational processes, such as for instance the yearly cycle of wandering of the gnu/wildebeest. It is therefore likely that we need to integrate semiotics in our existing scientific models but only a few modelling approaches if any include this type of transactions in them not to say the possibility to do so. A framework to assist in the development of such type of model is presented.

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