

Neosentience and the Abstraction of Abstraction
Bill Seaman
Department of Art, Art History & Visual Studies
Duke University

Extended Abstract:

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This paper will use a survey methodology to point at notions surrounding “the reflexive” and “reciprocity” drawn from the history of Cybernetics as they fall in relation to current “Neosentient” research. Seaman and O. E. Rössler have been involved in a decade long discussion exploring the future of artificial intelligence and its relation to robotics. Seaman coined the term Neosentience arising out of an ongoing “conversation” with Rössler which is articulated in their book – *Neosentience | The Benevolence Engine*. The book is a non-linear compendium of observations, many of which are drawn from the history of Cybernetics and in particular explore “Reciprocity and Reflexivity in Cybernetic Thinking.”

We consider a Neosentient robotic entity to be a system that could exhibit well-defined functionalities: It learns; it intelligently navigates; it interacts via natural language; it generates simulations of behavior (it “thinks” about potential behaviors) before acting in physical space; it is creative in some manner; it comes to have a deep situated knowledge of context through multimodal sensing; and it exhibits a sense of play; it will be mirror competent and will in this sense show self-awareness; It will be competent to go through the personogenetic bifurcation (thereby acquiring the ability to articulate meta-levels and meta-patterns). We have entitled this robotic entity *The Benevolence Engine*. The interfunctionality is complex enough to operationally mimic human sentience. Benevolence can in principle arise in the interaction of two such systems. Each of these “pragmatic” benchmarks (as distinct from the Turing Test) will be discussed in relation to earlier cybernetic research.

Such questions as how do we *Abstract Abstraction*; how can such a system employ informed “reciprocity” – mutual exchanges and relational intra-actions as a central aspect of our and its “coming to be”. In particular one central question is how can we embody the reciprocal nature of human benevolence in the Neosentient — How can the system be optimized such that “A is better off if B is better off” in the words of von Foerster?

For Neosentience research the goal is to understand the human to the greatest extent possible. This is self-reflection on the highest level, being undertaken as a continuous process --- an ongoing “chipping away” at the hardest of questions from multiple disciplinary perspectives that are being brought into dynamic relation. Seaman is currently working on the development of an “Insight Engine” in the service of this endeavor. The object is to employ biomimetics and bio-abstraction. Thus the project of Neosentience is highly paradoxical – one must continue to come to know the human at the highest level to begin to abstract human functionality into a machine. The human is already a computer, an ultra-abstract machine. Cognition, as von Foerster states = *computations of computations*.

The study of Neosentience explores such issues as Science ↔ Art relationalities, important to both Pask and von Foerster. How do we become meta-observers? How do we abstract meta-operations across differing research domains? In particular how can we become meta-creative, exploring the creation of creativity algorithmically (or post-algorithmically)? How do we best reverse engineer our creative natures?

Additionally, the defining of a dynamic relationality across many research fields is a highly important concept to both Cybernetics and Neosentient study. The paper will point toward a series of disparate yet relevant ideas in a somewhat non-linear, non-hierarchical fashion, and discuss how they inform the project of “Neosentience”. In particular, cybernetic notions

surrounding abstraction and meta-level understanding will be explored as they relate to the Neosentient design. One area of interest is linguistic framing and titling that enables complex ideas that are “reflexive” to become embodied and shared. Linguistic frames and jargon shift across research domains. How can we design new context-aware systems that enable relevant jargon translation and use in interdisciplinary and transdisciplinary research and in turn, Neosentient design. We are “Observing Systems” – a lovely bidirectional articulation by von Foerster. A number of foci of relevance here were first articulated by von Foerster in *Observing Systems*. We note the playful embodiment of reflexivity and polysemy in this title and other titles of von Foerster.

Additionally Seaman and Gaugusch in a paper entitled in *(Re)Sensing the Observer* call for an “Open Order Cybernetics”, seeing the open field of growth that language and technology suggest for the human. Open Order Cybernetics, continues to grow infinitely as it re-defines itself both linguistically (self-definition) and technologically [remembering language is also a technology]. This form of ongoing technological growth, as it alters the functioning of the human exhibits a form of abstracted and/or augmented-autopoeisis. This “open order cybernetics” also expands as a new form of observer comes into the picture– Neosentient entities. We must also point to cyborgian technological potentials as well as new potentials for computational linguistic “creativity” and “bisociation”(A. Koestler), informing our “open order” approach. Glanville in conversation with Seaman suggests that Second Order Cybernetics already exhibits such an open order perspective which may well be the case.

Thus, a multi-perspective approach to knowledge production in the service of *Neosentient Design* is currently undertaken, “‘Design’ as every linguistic functionality” [Glanville] is explored. Additionally multiple foci from *Understanding Understanding*, a central von Foersterism becomes enfolded in our research into Neosentient Design and the *abstraction of abstraction*. The notion of patterns and pattern recognition here is central. A compendium of pattern and meta-pattern relations will also be discussed.

The goal is to form a reciprocal intellectual relation with the Neosentient. This is where benevolence comes in – optimizing toward the other. Thus the reciprocal relation of benevolent behavior always seeks to flow bidirectionally. Here the creation of a creative machine, exploring a meta-field of meta-fields becomes the greatest of transcontextual (Bateson) endeavors.

Cybernetics is the transcontextual science and art of pointing both inwardly and outwardly — relationally. Here, in the service of Neosentient Design, one seeks to abstract abstraction and articulate a topology of relationalities or better a relationality of relationalities in the service of insight production, technological creativity and ongoing self-reflection.