

Cybernetics of Value Co-creation

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Research questions and aims of the study

The paradigm shift from value creation to value "co-creation" calls for a deeper grasp of organizational learning in marketing theory. This paper adopts a cybernetic view of the process of value co-creation to shed light on its relevant aspects and to supply a framework to implement operations and strategies to foster this process. Can cybernetics help to better understand the process of value co-creation? *Can the Viable System Model (Beer, 1979) be a sound approach to shape a more effective value co-creation process able to achieve higher satisfaction and value?*

In this theoretical paper we will show how cybernetic can be effectively used to give a positive answer to both questions above.

To this aim, after describing the issue, we apply a comprehensive systemic approach to:

- Offer a theoretical framework for value co-creation grounded in second-order cybernetics.
- Depict value co-creation as a dynamic process through a series of cybernetic loops of interaction. In this perspective the product is considered as a stable recurrent outcome or eigenform (Miles, 2007, von Foerster, 1981a-d) deriving from an on-going dynamic seeking satisfactory complexity management in the co-creation process.
- Shed light in how consumers and producers can engage in increasingly effective co-creation processes.
- Supply, through the method of variety balances, a framework to manage and improve the quality of co-creation processes and to explore effective ways to foster collaborative strategies. This implies modelling co-creation relationships as homeostatic loops underpinned by amplifiers, attenuators and transducers of complexity.
- Clarify the recursive cognitive and behavioural nature of these loops to support and improve the necessary dynamic stability between enterprises and consumers.

Theoretical framework

The paradigm shift from value creation to value "co-creation" has gradually developed as a marketing concept in parallel with the development and diffusion of digital technologies and a deeper grasp of organizational learning in marketing theory since the beginning of the new millennium. As anticipated by Toffler (1980) more than 3 decades ago, the increasingly

empowered relational capabilities of individual consumers, as made possible today by advancements of digital technologies, have generated a shift in the concept of value creation. Indeed, the old logic of marketing based on the production/supply of goods to a target has become obsolete and ineffective to depict and understand effective processes of value creation (Dominici, 2009; Zuboff & Maxmin, 2002). The field of "Service Dominant Logic" (Vargo & Lusch, 2004 and 2008; Lusch & Vargo, 2014) emerged and value co-creation assumed a key relevance in the marketing literature (Grönroos 2006 and 2008; Woodruff & Flint, 2006; Kalaiganam & Varadarajan, 2006) highlighting the processes by which both consumers and producers interact and participate in the process of creation/production of value (Bendapudi & Leone, 2003; Etgar, 2008). The above mentioned shift means that the consumer is increasingly an active participant and not a mere target that passively receives the producer's stimuli (in terms of offerings and communication). Together consumers and producers, or prosumers, can create an active system of shared meanings through recurrent communications. Consumers' empowerment is challenging the old deterministic and reductionist marketing models (Dominici, 2012; Dominici et al, 2013).

The "co-created" value depends on how prosumers together create the market offerings (Pongsakornrungsilp & Schroeder, 2011) as symbolic meanings of the co-created experience of consumption (Firat & Dholakia, 2006; Firat et al. 1993). Value is, indeed, a complex adimensional experience which assumes different connotations depending on time and context (Holbrook, 2006). This Künian shift goes to the core of the market economy. The most relevant shift is that from an uncontroversial "thing" to that of reality grounded meanings produced by recurrent communication "processes". More than "what" is produced (its physical attributes supplying a "value in use") the focus is on "how" co-created meanings are shared in dynamic communication processes. It is not either the product that creates the symbolic image of itself or a market image that creates the product; it is the potentials of a product, with all its inherent constraints, that are catapulted by producers and consumers communications. Innovation and creativity are grounded in symbolic embodied production reality. Therefore the product is the **crystallization of value in co-creation processes**, or in cybernetics terms, in what may be called structural couplings (Maturana, 2002) and "eigenform" as described in the next section (von Foerster 1981a-d; Kauffman, 2005) .

The above mentioned paradigm shift in marketing was predated by about two decades or more by cybernetics. The epistemology of the so called "first order" cybernetics of the 1940s (Wiener 1948) changed from the 1960s onwards in the direction of what today we call "second order" cybernetics, or Cybernetics of cybernetics,(von Foerster, 1974 and 1981a-d, Maturana, 2002). Von Foerster (1974) discerned between the cybernetics of observed systems and the cybernetics of observing systems (2nd order cybernetics). First order cybernetics gave preeminence to observers observing black boxes out there as "real" things whose existence was independent of the observer. Second order cybernetics put the observer inside the black box as a reflexive observer, contributing to producing as well as being produced by the black box's outcomes. Objects of observation are not anymore conceived as "things out there" but as self-constructed and self-referential systems that "we name them and by doing this we are bringing them into existence" (Espejo & Reyes, 2011: 4). This change represented a shift from the "modern" perspective of the detached observer to the recognition of the observer among the constituents that construct reality (Krippendorff, 1996). As the anthropologist and social scientists Gregory Bateson (1972, 1979) pointed out, individuals always take part in the circularity of the world,

through a reflexive turn that interactively constructs a "reality" (Krippendorff, 2008). This epistemological emphasis "favors the construction of realities that preserve the circularities of participation in networks of conversation" (Krippendorff, 2008: 182). In this framework, we can see the value co-creation as a process through which the human constituents of the value system coordinate themselves in the creation of symbols and artifacts that become part and at the same time modify the relational systems which create them.

In the above epistemology a "product" is the crystallization of value in a co-creation process between producer and consumer, which can be conceived as what von Foerster (1981a-d) called an "eigenform". Therefore the "product" is an embodied token underpinned by processes of value creation, which co-create, through recurrent producer-consumer relations a stable form. In other words for processes of co-construction it is more accurate to say that "the map is the territory" rather than the famous expression of Alfred Korzybski "the map is not the territory". In value co-creation producers and consumers are structurally coupled or in Maturana's and Varela's terms "*we speak of structural coupling whenever there is a history of recurrent interactions leading to the structural congruence between two (or more) systems.*" (1992: 75). By "structural coupling" of organizational actors, in cybernetics terms we mean their structural adjustments in a history of recurrent interactions. Recurrent two-way interactions between producers and consumers are increasingly feasible and common in the digital economy. Whenever this is the case the outcome of these recurrent interactions can be shared meanings for products; together prosumers can be co-creating innovative, symbolic meanings. From the perspective of the producer, accepting that it is an operationally closed autonomous system that is able to develop a capacity to create, regulate and produce social meanings (Espejo and Reyes, 2011), inputs and outputs produce two principal feedback loops; one is the external feedback or market disturbances and the other is, as an active observer of its own states, the producer's internal computing of self-reflective states (Soros 2009).

These recurrent feedbacks trigger operational adjustments or structural coupling of the producer with its market. Behavioural outcomes are congruence between them. Each, producers and consumers as an outcome of these recurrent interactions, reach stable positions or eigen behaviours. This is a process of value co-creation underpinned by the producers and consumers learning (Espejo, 2000). Sustained recurrence may trigger new *eigen forms*; their relationship may be a system in its own right.

In highly effective communication set ups a product is an eigenform which means an embodied symbolic entity, participating in a network of interactions, assuming its wholeness from the producer's structural capabilities and constraints. Products as embodied eigenforms are the outcome of congruent eigen-behaviors between the consumer and the producer, in the process of co-creating a reflective objectivity. It is this stability of the process that constructs the symbolic value of the product. Therefore the product is not a separate object; objects are recursively constructed objects in language. Perceiver and the perceived arise together in the discourse of value creation.

Though value co-creation is a manifestation of productive relationships and eigen-behaviors, its scope is constrained by production and communication capabilities. In cybernetic terms we talk about negative explanations driven by requisite variety. "Variety" is the number of possible states of a system, which can proliferate to very large numbers. Requisite variety (Ashby, 1964) tells us that the variety of producers' outcomes is larger (or equal) than the ratio between the consumers' disturbances and producers responses (Espejo and Howard, 1982) and that if necessary outcomes

to achieve eigen values is smaller than that ratio, stability between producers and consumers will not emerge; their relationship will not have requisite variety.

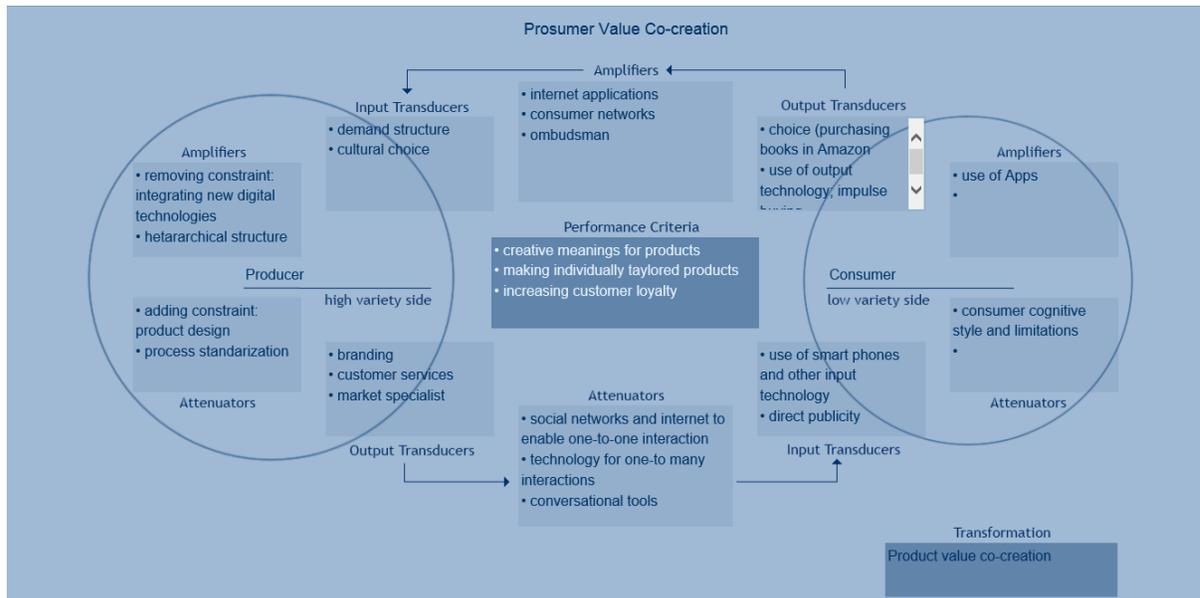
The Viable Systems Model for managing value co-creation.

The Viable Systems Model –VSM- (Beer, 1966, 1979, 1981; Espejo & Reyes, 2011) is an advanced model that includes the concepts of second order cybernetics and Ashby's Law of Requisite Variety to depict, understand and manage organizational and inter-organizational process like that of value co-creation. The VSM, supported by an effective methodology, can shed light on the relational dynamics of value co-creation by supplying a deep and cohesive framework that highlights the relevant relations among co-creation agents, allowing us to consider the whole systemic context. The application of the VSM helps to shed light on how consumers and producers can engage in the co-creation process.

The co-creation system relies on producers (supply) variety and consumer choice. From a cybernetic's perspective, the more these relationships are dominated by poor variety balances that impose the values of either consumers or suppliers at the expense of the other, the more likely is that the loop between them will push undesirable markets or weak enterprises or both, reducing the chances of desirable, ethical and innovative products and/or services that increase quality of life and contribute to a better society. Consumer/producer relationships can be predatory or collaborative (Mulgan 2013) and the VSM can be applied to explore strategies to reduce the former and increase the latter.

Current technologies are increasing producers' capabilities but consumers' competencies for making choices are increasingly over demanded. As variety overwhelms customers' cognitive capabilities, redressing this imbalance is necessary to make more sense of the markets. Too much choice may paralyze individuals' decision making, leading to a waste of resources and increasing psychological dissatisfaction (Schwartz, 2009). People find themselves under pressure to choose and may not have time for good decisions. The challenge for prosumers, relationships is enabling behavioral options in between what Schwartz (2009) defines as the open ended satisfizers, who accept whatever product is vaguely satisfactory and the inward looking optimizers, who become increasingly paralyzed by a chaotic decision space beyond their evaluation capacity (Boisot and McKelvey 2010). From a cybernetic perspective, as implied in the previous section, when the variety of disturbances is high and the variety of responses is low, questions arise of whether customers are operating under any form of unnecessary structural, conversational or cognitive constraints (Espejo and Watt 1988). The principal argument is the need to consider the functioning of homeostats; how is the Law of Requisite Variety asserting itself in each occasion? (Espejo, 2000 and Espejo & Reyes, 2011). These relationships by nature are homeostatic loops. They are increasingly bi-directional thanks to the digital technologies (Tapscott et al. 2008, Tascott 2009), which enable co-creation process through one-to-one and one-to-many transactions (Rust, et al. 2010). In the cybernetic language of this paper digital technology and communications enable improving an enterprises' complexity management through more effective cognitive, conversational and organisational structures. To this aim we propose examining a model of variety balances for "Prosumer Value Co-creation" (Figure 1). We propose this model as a heuristic for eigen values in value co-creation processes.

Figure 1- Prosumer Value Co-creation



Keywords: Value Co-creation, Viable Systems Model, Cybernetics, Eigenform, Requisite Variety

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