



The  
virtuous  
circle

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# The Virtuous Circle Design Culture and Experimentation

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# Re-Futuring the “Vicious Circle”.

## The Power of Anomaly and Debris to Envision a Chaotic Design System

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Starting from Tony Fry’s view of design as “our ability to prefigure what we create before the act of creation” the paper aims to tackle how to envision the *re-futuring* of the design environment by considering the importance of the debris and anomaly in re-launching a stagnant system. In this sense the paper argues that it is necessary to position the actions generated by the design activity in a continuous renewal cycle, envisioning in this way their future and consequences. In contrast with defuturing (Fry, 2009), and responding to the process of futuring we argue that in order to envision the turbulences created by the present environmental crisis it is necessary to embrace a *re-futuring* strategy towards environmental design and sustainability.

The paper will start from the concept of futuring the anticipatory long-term (10, 20, 30 years) process (Sobrero, 2004), and extend it to design defuturing, or the dislocation of the outputs of the design activities from the “nature of the fundamental exchange” (Fry, 2009) with the surrounding environment, and the importance of debris and residuals as a part of the living system. Challenging the current understanding of sustainable design, it will be shown how, in order to demystify the stereotype of “virtue” it is necessary to envision a design re-futuring in which debris is given a central role in the natural lifecycle.

### Keywords

Futuring, Disruption, Chaos, Anti-thesis, Uncertainty.

## INTRODUCTION

In front of the continuous flow of economic challenges, the industrial design system has to adapt and evolve in close connection with the incoming changes. If previously design was seen as a professional activity and a discipline combining esthetics and pragmatism (Simon, 1969) (Jones, 1992), we point out that throughout time this activity generated its own ecology that abides to the rules of self-referential, living entities.

Rather than seeing design as a dislocated profession, the paper argues that it is necessary to acknowledge and communicate it as an autopoietic system (Maturana & Varela, 1987) whose lifecycle, is closely interconnected with all other manifestations of nature. This argument is based and sustained by Fry's observations on the shortsighted socio-political plans of economic growth which generated and increased the actual period of crisis:

"No matter who or where we are, we live in a world in which political regimes uphold economic systems and interests that negate the future. This has neither been planned nor happened by chance. It is the result of incremental designed action and thinking without vision or critical reflection over a long period of time. The most basic failure is a global system of economic exchange that is actually disarticulated from the 'nature' of fundamental exchange." (Fry, 2010)

In this context we argue that in order to demystify the idea of a smoothly working, virtuous and sustainable design, it is necessary to reconsider the "un-clean" and imperfect nature of exchanges in the biological, social and economic environment and face the environmental mutations and overall damage created by this stereotype. The paper unfolds in three parts:

- i. In the first part, debris, anomaly and residuals will be shown as manifestations of the natural exchanges and therefore integral part of the living environment, allowing the long term anticipation of its evolution, or *futureing*.
- ii. The second part shows how by emarginating and ignoring the importance of debris, the sustainable design discourse deviated from the logic of the living mechanisms. In this context we will argue that design became a self-referential system *defutureing* in this way the outcomes of its activity.
- iii. Finally in the third part we propose that looking at design as an activity that radically changed and will continue to provoke mutations to the environment can help *re-futureing* sustainable design.

## SUSTAINABILITY AND DEBRIS. RECONSIDERING FRINGE OPTIONS TO ENVISION FUTURE ENVIRONMENTAL MUTATIONS.

### DESIGN ACTIONS MEASURED ON THE GLOBAL ENVIRONMENT TIME SCALE.

When James Lovelock was asked about which kind of experiments NASA had to do on Mars in order to verify the presence of some kind of life on the planet, he said that no experiments had to be carried on, based on the fact that the Martian atmosphere were strongly stable, with very little oxygen, methane, or hydrogen, but with an overwhelming abundance of carbon dioxide: no instability, no residuals, no life.

In our present western culture, we consider residuals as a problem, and the current thinking trends point out the need to avoid as much as possible the generation of waste, emphasizing a cautious attitude towards consumption. But nature works on long term, and adaptation of the environment in order to find

new equilibria is possible only in time, while humans focus on rapid, short time changes. These changes take place in present times and do not comply with the evolution time, this generating waste that can eventually determine permanent, mutations of the environment (Galli et al., 2014)

Moreover, we are so arrogant to think that global natural equilibria can be “adjusted” through human activities, and to provide alarms about global pollution, global warming, change of the climate due to anthropic activities, and so on.

## DESIGN AND INNOVATION: FROM ANTICIPATION, TO THE ILLUSION OF SUSTAINABILITY, AND THE REALITY OF ENVIRONMENTAL MUTATIONS.

The future of technological innovations is a long debated theme that changed throughout the years. Starting from the advances of mass production technologies and the fordist approach based on industrialization and standardization (Smith, 1994) to the luddist approach (Randall, 1997) in which the fear of technology innovation generates fringe behaviors, design and sustainability developed in parallel with the changes in the environment.

This evolution was so far seen as a reaction to the present state of the art of the ecological mutations, and shifted in time from the imaginary of living with hope and ignoring the impact of the industrial and economic fast pace advances, to the illusion that the living environment takes care of its own balance no matter the damage created by the economic growth. From *futuring* a world that slowly adapts to the inputs of human activity, the vision of sustainability evolved into illusion, *defuturing* the human activity from the true environmental time scale. *Re-futuring* is therefore seen as the act of dismantling the stereotype of sustainability as a circle of virtuous behaviors, extending it to the integrate the debris and refusal as intrinsic parts of the living environment (fig. 1).

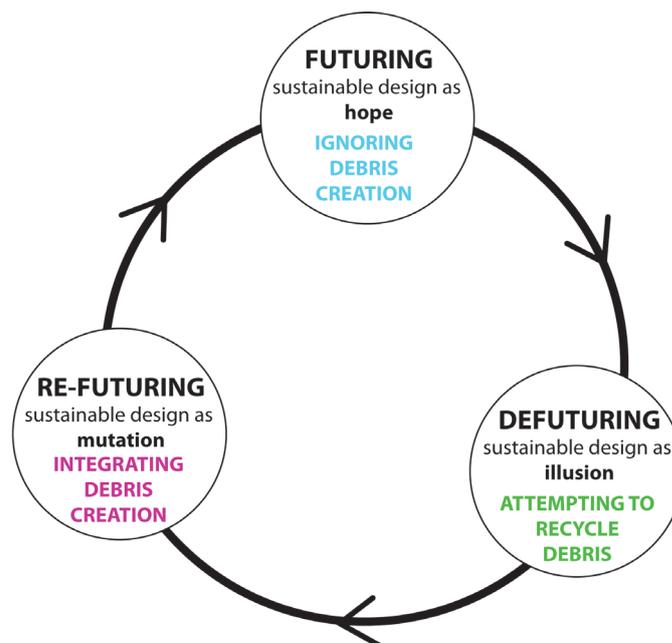


FIGURE 1. Futuring, defuturing and re-futuring the notion of sustainable design

We started with the example by Lovelock, connecting the presence of residuals with the existence of the life: what Nature does is to organise complexity in a large number of processes with feedback, communicating each others, in order to establish equilibrium.

## REPOSITIONING DEBRIS AND ANOMALY IN THE SUSTAINABILITY VIRTUOUS PROCESS.

The role of design in this process is not marginal, and most of the time accelerates the process of defuturing by failing to leverage the environmental impact of innovation; as it is recalled by Victor Papanek:

“Advertising design, in persuading people to buy things they don’t need, with money they don’t have, in order to impress others who don’t care, is probably the phoniest field in existence today. Industrial design, by concocting the tawdry idiocies hawked by advertisers, comes a close second.”(Papanek 1984, p.ix)

In 1984 Papanek showed his frustration with the outcomes of the design practices that closely followed the a false necessity to adjust to the “speed” of the consumer products market imposed by an over dimensioned need for comfort. This type of forced rush un-rooted the design profession from its true meaning, leaving place to the reproduction of a culture of comfort that generated false behaviors and needs, defuturing the design outcomes by disregarding the debris activities they support and create.

In this sense the perspective proposed herein is based on the re-interpretation of the three R’s giving emphasis on the Re-thinking of the overall re-cycling paradigm in terms of social behavior. As such we can consider the contrast between the urge to reduce and the need to recover from the shock of the crisis; the rush to re-use and the need to re-mind the purpose of the actions taken; and finally the confusion between re-cycling and re-activate by consciously acknowledging and changing the meaning of a behavior (fig.2).

The first step towards re-futuring design is to acknowledge the debris creation as a natural human activity anticipating as much as taking responsibility for the consequences.

## ENVISIONING DESIGN AS A CHAOTIC SYSTEM

### THE CONCEPT OF AUTOPOIESIS OF THE LIVING SYSTEMS APPLIED TO CREATIVE SYSTEMS.

To better envision this change of perspective we introduce the concept of autopoiesis as a relevant paradigm that helps to envision the context in which the design creativity evolves.

Perhaps one of the best ways to describe the concept of an autopoietic organization is in contrast with the input-output techno-centered model very

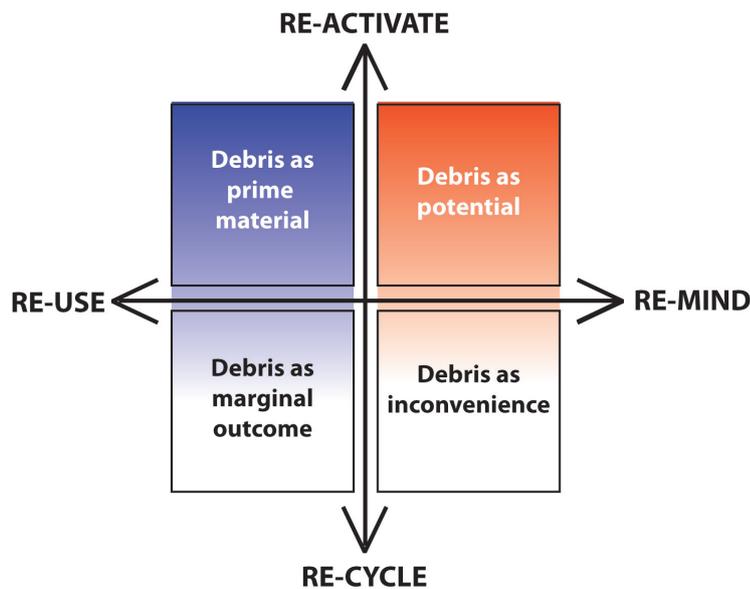


FIGURE 2 Acknowledging debris as a potential and prime material in a re-futuring perspective

much present in what it was previously described as the second generation research methods which approached systems in terms of closed, and external driven black boxes. In one of the earliest attempts to present the autopoietic organization paradigm outside biology, Zeleny outlines how this paradigm, while adequate for understanding the mechanical devices, "...has been intellectually dissatisfying, misleading and inhibitive of the recognition of those organizational features that make [...] systems living or social." (1981, p.3).

These considerations help us delineating the self-referential aspect of the design community of practice (Wenger, 1998). As such we can look at the social groups sharing the same behavior and activities as autopoietic units that display an intrinsic self-standing and evolving internal dynamic that generate an autonomous quality.

As Varela remarks:

"As long as an autopoietic system exists, its organization is invariant, if the network of production of components which define the organization is disrupted, the unity disintegrates. Thus an *autopoietic* system has a domain in which it can compensate for perturbations through the realization of its autopoiesis, and in this domain it remains a unity. In contradistinction, mechanistic systems whose organization is such that they do not produce the components and processes which realize them as unities and hence, mechanistic systems in which the product of their operation is different from themselves, we call *allopoietic*. (Varela, Maturana & Uribe, 1975; 1981, emphasis added)."

If we abstract from life and define autopoiesis as a general form of system building using self-referential closure, we would have to admit that there are non-living autopoietic systems, different modes of autopoietic reproduction, and

general principles of autopoietic organization which materialize as life, but also in other modes of circularity and self-reproduction (fig.2). In other words, if we find non living autopoietic systems in our world, then and only then will we need a truly general theory of autopoiesis which carefully avoids references which hold true only for living systems. (Luhmann 1986 b, p. 172) (Seidl, 2004)

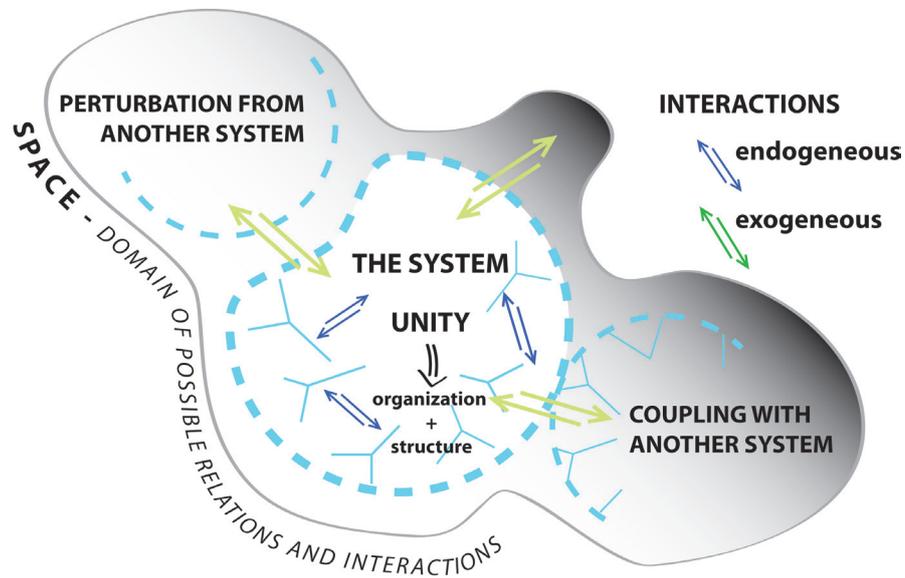


FIGURE 3. The autopoietic system. Modified from Iba (2009)

## DEFUTURING OF THE SELF-REFERENTIAL DESIGN SYSTEM

Bringing autopoiesis into the realm of social sciences Luhmann indicates the components of the system in terms of elements that exchange information using communication codes. This brings us to the definition of the systems with an autopoietic organization according to the nature and semantics, of its communication language. For example, the code of the legal system is legal/illegal; the code of the economic system is payment/non-payment; the code of the system of science is truth/untruth; the code of the political system is power/non-power. Each of these systems communicates about itself and its environment according to its specific code: for example, in the legal system something is either legal or illegal, or has no relevance at all; for the economic system something is either a payment or a non-payment, or has no relevance to it: that is to say, whether something is legal or illegal is irrelevant to the economic system. (Seidl, 2004 p.36-37).

An even further interpretation of the autopoietic paradigm is its application to the creative systems. In order to explain the creative process, outside the psychological or sociological framework, Iba proposes the interpretation of the creative systems as autopoietic systems in which discoveries are synthesis of three selections: idea, association and consequences. To sustain this argument

he points out the difference between the “self-organization” based on structural formation and “autopoiesis” based on system formation (Iba, 2009, pg.6623).

These considerations help us approach the definition of design as an autopoietic creative system based on the synthesis of idea, activity and output. In this case we can consider the functional system as a *closed operational* one, *open for interactions* with other functional systems; in the case of coupled social autopoietic systems, this brings forward a symbiosis of communication codes. In this case the functional system of design or innovation/non-innovation is coupled with the sustainable/un-sustainable, or the code of the global environment. From this perspective, we argue that the sustainable innovation discourse (Geels et al. 2008)(Larson,2000)(Manzini, 2007) has to be envisioned as intrinsically generating anomaly and debris. The design defuturing comes from neglecting this issue and choosing to look at design as a community of practice based on structural formation and dislocated from the rest of the global environment. The model of autopoiesis helps in this sense to reveal the duality of the design first as a self-referential system and therefore closed from operational point of view, and second as part of a whole, and integrated in the environment through social interactions and material exchanges. Debris comes as a natural result of the endogeneous activity and interactions, that are only influenced by the external factors without being synchronized with them.

From social perspective perhaps one of the best examples is the growth of the technology centered communities of practice which evolved dislocated from the physical environment in which they emerged. The silicon valley phenomenon, now present all over the world, is such a community that generated its own internal social rules. In these communities of practice that extended to entire urban clusters, refusal and debris gain a central importance and anomaly is a sign of evolution.

Extrapolating this model, the design community can be envisioned as having an autopoietic organization, in which refusal and debris have to be acknowledged as central cultural values of the creative and innovative activities.

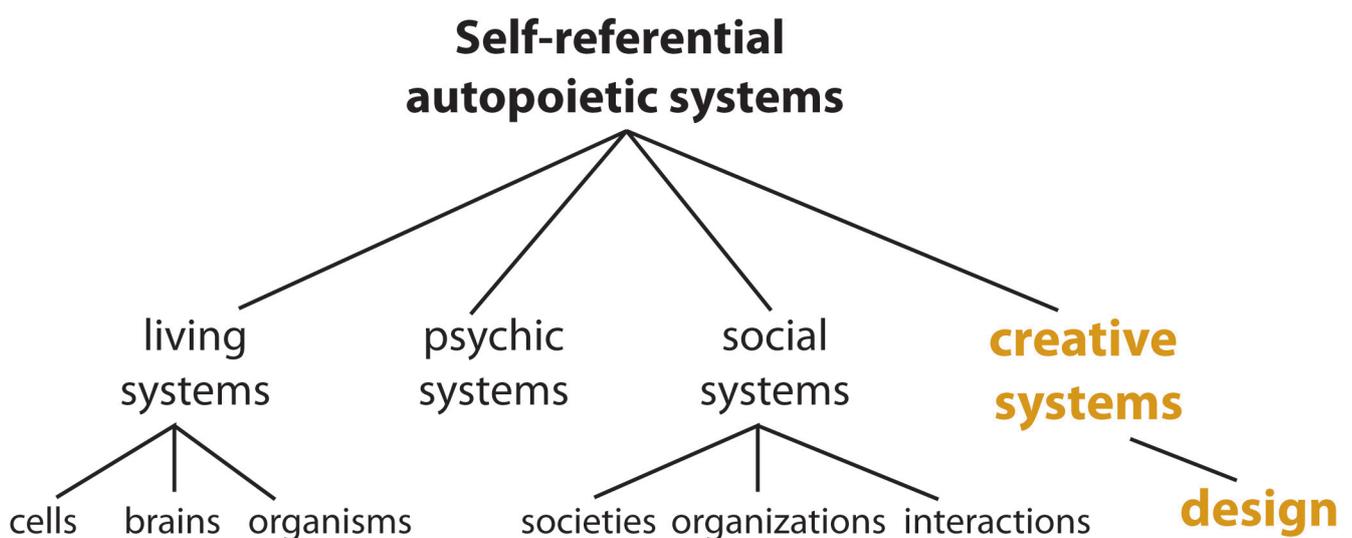


Figure 4. Design as an autopoietic creative system. Modified from Iba (2009)

## DEMISTIFYING THE VIRTUOUS CIRCLE. ANTICIPATING MUTATION OPTIONS.

### THE FAILURE OF THE VIRTUOUS CIRCLE. THE REALITY OF THE ALLOSTATIC SYSTEMS.

Having seen the nature of the design activity as generated in a self-referential system that is connected to the overall global environment by interactions, two critical points have to be underlined. In the first place there are two types of interactions and exchanges that take place in parallel: endogeneous or within the autopoietic system and exogeneous with the surrounding environment and other systems. The evolution of the interaction exchanges has to be seen within a time frame.

The dislocation from the time factor or as mentioned before defuturing of the design comes from the asynchronicity of the endogeneous and exogeneous exchanges that generate at an increased speed an internal growth of energy and resources that cannot be absorbed by the slower speed of the overall global environmental system. This discontinuity in the rhythm of exchanges creates anomaly and debris.

To fully understand this phenomenon let us consider several stances in which allostatic systems function.

- locality and specialization: if an activity is done in a small area and intensively, maybe other activities are not sufficient for creating the proper antagonist feedback (e.g. acid rains due to specialized industries such as steelworks); in a similar way, the fact that an area is specialized, without a proper variety of processes cannot provide sufficient antagonists;
- speed of the changes: if an activity modifies its behavior quickly, it is possible that new kinds of residuals cannot find processes to feed; it is the typical behavior of disrupting innovation;
- environmental response: on the reverse, if an environment modifies itself quickly, activities living in equilibrium with it can succumb;

### CORRUPTING THE IMAGINARY OF THE VIRTUOUS CIRCLE

All the above examples are not only part of our reality but also emphasize the distance from the abstract view of any form of sustainability and the actual unsustainable environmental imprint of the design activity. This is due to the duality of any creative act that is intimately correlated with destruction. As the design activity grew intensely productive seeking continual renewal it also carries on the antagonist act of destruction. Moreover the ongoing innovation paradigm intrinsically imbedded in the nature of any design activity, implies the excess of resources in seeking novelty and improvement of already existing and functioning products, services or systems forcing therefore the generation of artificial needs. Needles to say striving to innovate doesn't respond to the actual

biological or evolutionary need of the natural environment but to a competitive behavior implied by the mass market and the consumerist society. The creation of innovation carries on the destruction of resources and generates economic, social and cultural debris.

The notion of virtue it is difficult to pinpoint in particular because of its multiple interpretations in different cultures and religions. Nevertheless to start understanding the contradiction between the illusion of virtue and the reality of the design output we propose the Aristotelian philosophical stance in which virtue is defined at the balancing point between excess and deficit of a certain trait (Aristotle, *Nicomachean Ethics*). As such it is extremely problematic to place an activity that generates excess in the context of a “virtuous circle” that supposedly prevails ethical balance. Belonging to the realm of ethics, not only the concept of “virtue” is subject to cultural interpretations (Hall, 1976) (Hofstende, 1984)(MacIntyre, 2007) but also integrates reversibility according to given political circumstances.

## IN THE MIDST OF THE VICIOUS CIRCLE.

The metaphor of the “virtuous circle” is perhaps better understood as a provocation and trigger to introduce the much debated conflict between environmental sustainability and the practice of design. To echo Papanek’s view on design, Dilnot expresses his frustration with the contrast between design and sustainability:

“Sustainability is that which most cruelly exposes design. Nothing reveals more sharply both the necessity and inconsequentiality of design: its (absolute) necessity as capacity, and its almost complete irrelevance as a value, or indeed as a profession.” (Dilnot, 2011)

Beyond the provocatory nature of Dilnot’s perspective, the quote calls for a re-positioning of the impact of the design as a generator of un-sustainable activities considering them for their true meaning verified in a historic time span. In order to do that we can consider twelve of most serious causes for the environmental unbalance and crisis as outlined by Jared Diamond: loss of habitat and ecosystem services, overfishing, loss of biodiversity, soil erosion and degradation, energy limits, of the, freshwater limits, photosynthetic capacity limits, toxic chemicals, alien species introductions, climate change, population growth, and human consumption levels. (Diamond, 2005). By striving to overcome or provide fast and local solutions to global environmental problems “sustainable” design does only increase their impact and multiplies their noxious consequences, impeding the absorption and re-circulation of the remained material in the living environment.

Re-futuring has to be seen in this sense not as another effort to adjust the already corrupted mechanisms of sustainability and design but as adopting a strategy of conscious awareness demystifying the illusion of virtue in the design practice.

## CONCLUSION. WEIGHTING RE-FUTURING STRATEGIES. LIVING WITH ENVIRONMENTAL ANOMALY AND MUTATIONS.

“To be free is, in the sense we have seen, *to be capable of one’s own impotentiality*, to be in relation to one’s own privation. This is why freedom is freedom for both good and evil.”

(Agamben, 1993, pg. 183)

We started from considering and re-proposing the paradigm of futuring introduced by Tony Fry in 2009 in the realm of the design activity as a lens to read and reveal the change in the imaginary of sustainability and its passage from hope to illusion and to mutation, moreover we introduced the term re-futuring as a way to envision the continuous a mutation in the future and the impossibility to predict the consequences of the ongoing design innovation and the anomaly they will generate in a longer time span. As a way to understand the dynamics behind the creation of debris and anomaly we proposed that design has to be looked at as a self-referential creative system whose interactive exchanges happen in a chaotic manner and react to internal factors and external alterations.

The introduction of the design as a creative self-referential system triggers the acknowledgement of the paradoxical relation between virtuous and vicious, creation and destruction as being intimately connected and consistent parts of any living system. In this sense the manifestations of the living systems cannot be attached a positive or negative value because they intrinsically contain both good and evil. The re-futuring strategy starts from Fry’s action plan and by “[...] confronting the defuturing nature of the status quo as a confrontation with finitude, human being and the destruction of our being in time” proposing the acknowledgement of our impotentiality to change things through action as a strategy of re-futuring. This implies the acceptance of the consequences of the un-natural acceleration of time and of the asynchronic development of the human species in relation to its development, and acknowledging the decadence of the design activity. The unpredictability of the future is therefore part of the re-futuring strategy and has to be understood as linking the consciousness about the corrupted and chaotic aspect of the design actions and the uncertainty of their projection in the future. As Christopher Langton underlines:

“Innovative systems constantly veer toward the “edge of chaos”, to those environments that are neither fully predictable nor fully anarchic. We need structure or everything falls apart. But we also need spaces that surprise us. Because it is the change we don’t expect, with the people we just met, that will change the way we think about everything.” (Langton, 1997)

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# THE VIRTUOUS CIRCLE

CUMULUS CONFERENCE 2015

## DESIGN CULTURE AND EXPERIMENTATION

Design comes out of the interaction between a practice, which seeks to change the state of things, and a culture, which makes sense of this change. The way this happens evolves with time: practices and cultures evolve and so do the ways they interact; and the attention that is paid at different moments to one or other of these interacting polarities also evolves. In the current period of turbulent transformation of society and the economy, it is important to go back and reflect on the cultural dimension of design, its capacity to produce not only solutions but also meanings, and its relations with pragmatic aspects. Good design does not limit itself to tackling functional and technological questions, but it also always adopts a specific cultural approach that emerges, takes shape and changes direction through a continuous circle of experimenting and reflecting. Because the dimension and complexity of the problems is growing, it is becoming evident that to overcome them it is, above all, necessary to bring new sense systems into play. This is ground on which design, by its very nature, can do much. Indeed, the ability to create a virtuous circle between culture and practical experimentation is, or should be, its main and distinctive characteristic. However, for this really to happen it is necessary to trigger new discussion and reflection about the nature and purpose of design practice and culture.