

Article

## Design Epistemology

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Received: 6 September 2012; in revised form: 23 September 2012 / Accepted: 25 September 2012 / Published:

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**Abstract:** The liberation from the view that only one way of making sense of experience is legitimate (the one that “corresponds to reality”), which follows from the results of 20th century science and philosophy, puts us into a position to consciously choose and assign a purpose to the creation of meaning; and based on that choice, to develop completely new modes of information, to suit each chosen purpose. We present an instance of this approach, where information and knowledge work are considered as key societal systemic components, and then *designed* as it may best suit the various functions that pertain to this role, notably the function of illuminating the way to all other systemic self-organization. Design epistemology provides an academic foundation for this approach; the Knowledge Federation community implements it in practice.

**Keywords:** design; epistemology; collective intelligence; global problems

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“I shall not hesitate to state here in a few sentences my epistemological credo.... I see on the one side the totality of the sense experiences and, on the other, the totality of the concepts and propositions that are laid down in books.... The system of concepts is a creation of man, together with the rules of syntax, which constitute the structure of the conceptual system.... All concepts, even those closest to experience, are from the point of view of logic freely chosen posits, just as is the concept of causality, which was the point of departure for this inquiry in the first place.”

—Albert Einstein [1]

## 1. Introduction

A popular idea is that science is discovering the objectively true description of reality. According to this view, to fully deserve the reality status, a phenomenon must be explainable in the causal manner, in terms of “scientific concepts” such as energy, mass and Newton’s laws, or chemical compounds and reactions.

Developments in science and philosophy during the past century challenged this view [2], and brought to prominence an entirely different one: While there are multiple ways to make sense of sense experiences, people in a community tend to be socialized to accept one of them as “the reality” [3]. Any system of concepts and propositions limits not only what we can understand and communicate, but also what we can do and be [4]. Science itself is not creating a single view of reality, but a multiplicity of “incommensurable” views (each organizing experience in a specific way, and serving better for some purposes and worse for others) [5]. No longer considered a way to objectively picture reality, science is perceived as “an attempt to make the chaotic diversity of our sense experience correspond to a logically uniform system of thought” [6].

We interpret this change in academic self-perception as a mandate to liberate knowledge work from its subservience to traditional worldviews; and to create and use meaning, and information that conveys it, purposefully and consciously, as they might best serve contemporary people and society. The liberation from the view that only one way of making sense of experience is legitimate, the one that “corresponds to reality”, puts us into a position to consciously choose and assign a purpose to the creation of meaning; and based on that choice, to design completely new modes of information, to suit each chosen purpose.

A century ago, a profound change was under way in the arts: An explosion of styles and techniques, and of creativity, resulted when the artists challenged the assumption that the purpose of art was to mirror reality, by emulating the techniques of Old Masters. A similar change is now possible—and, we submit, also called for—in knowledge work, and in particular in the sciences. The “modern science” that, we envision, may result from this transformation, will however not be an academic equivalent of *l’art pour l’art*-ism but on the contrary, a way to make the positive difference that knowledge and knowledge work can and need to make, in this age.

In this article we present a specific instance of this approach. We first define “design epistemology”, which provides the academic or epistemological underpinnings; we then outline how the mode of information that follows from it is being developed in practice, within a community called Knowledge Federation.

## 2. Definition of *Epistemology*

There are two ways to make a definition: By stating it as a claim (X is Y), and by stating it as a convention (when I say X, I mean Y). Meanings of words can be liberated from habit and tradition by using the second option, and that is the approach followed in this text. The concepts whose meaning is defined by convention making or *postulation* are italicized.

Criteria and other assumptions, as well as methods, can be liberated from tradition and recreated in a similar way, by *postulating* a larger convention which we call *methodology*.

We begin by postulating the meaning of one word, *epistemology*, as “what the creation of truth and meaning is based on”.

This gives us a way to name the more general approach we want to point at as *postulating an epistemology*. This article describes a single act of *postulating an epistemology*, and its consequences.

### 3. Definition of *Design*

The definition of *design epistemology* relies on *postulating* the meaning of *design* as “the alternative to *tradition*” [7,8]. Intuitively, *tradition* may be associated with the way things, worldviews and customs tend to develop in a traditional culture (incrementally, by being tested and adjusted through many generations of use); *design* may be associated with the mindset of a designer (who assumes full responsibility for the result).

A third concept—*wholeness*—will help us understand *tradition* and *design*. *Wholeness* is the quality that characterizes a perfectly developed and healthy organism, or a complete and immaculately functioning mechanism: All the parts work well and in synergy with one another, and fulfill their purpose within the whole, so that the whole can function well and fulfill its purposes within even larger wholes.

*Tradition* and *design* are two ideal ways to *wholeness*. *Tradition* relies on spontaneous evolution; *design* relies on conscious responsibility for the result.

Those three concepts provide us a fresh view of “global issues” and “sustainability”: When for whatever reason and in whatever domain *tradition* is no longer a reliable way to *wholeness* (e.g., when changes become too large and rapid to be assimilated and tested through tradition), *design* must be practiced and relied on.

Every real-world practice is a combination of *tradition* and *design*. Where we want to make a distinction is the ethical stance: When we follow the *traditional* ethics, we rely on “doing our job” or performing our role as it has been handed down to us by tradition; we practice *design* when we take responsibility for all systemic effects of what we do, and of our profession. A *traditional* designer, for example, would design a chair by making small modification to the traditional object, trusting, usually without questioning this, that the tradition has already given us the right way to sit; he would perhaps make the chair look like a “designer chair”. *Designing* a chair, on the other hand, would begin by asking such questions as “How does sitting in a chair affect our body over the years?” and “Is there a better way to sit?” A *traditional* journalist will do his job as he has learned it through education, and as it has subsequently been modified through trial and error (by doing “what works” in practice). If a journalist would pause to ask “What sort of information do the people and the society really need?” and continue by modifying his work accordingly, he would no longer be a *traditional* journalist; (by our convention), he would become a journalism *designer*.

*Design epistemology* re-determines our priorities; it fosters the sort of attitude one exhibits when stopping the car to change the wheel that has a flat tire. This attitude change has far-reaching consequences, some of which are pointed at in this text.

*Design epistemology* gives rise to the *design mode of information*.

A *traditional mode of information* updates a worldview handed down by a tradition (a discipline, a religion, a culture ...), by using the concepts and the methods inherited from the tradition. In the *design*

*mode of information*, facts and meaning are created as it may best suit the chosen goal—securing or stewarding *wholeness*.

Of the mentioned two ways of making definitions, the first one suits the *traditional modes of information*; the second one (*postulation*) enables us to *design* new ones.

(Although when working under *design epistemology* we are in principle free to *postulate* the meaning of a concept in any way we find suitable, in practice the art of concept *design* is closer to recycling than to re-creation: Instead of creating a completely new expression we keep the existing one, and preserve as much of its traditional meaning as possible, while redefining it to suit the new purposes that need to be served.)

The *design epistemology* fosters an approach to academic research that is alternative to the *traditional* approaches.

A characteristic result in a *traditional* approach to research is a “piece in the puzzle” of the worldview of an academic field; its purpose is to make this “puzzle” more whole. A characteristic result in the *design* approach to research is piece in a different “puzzle”—the one that constitutes our key life-support systems, and in particular our key societal systems (public informing, governance, research, education ...). The art of *design* is to do something that will make all those systems simultaneously more whole.

A characteristic result in *traditional* science is a chemical compound or a new “natural law”. A characteristic result of *design* research is a *prototype*—namely a model, implemented in practice, and placed into practice, with the aim of helping real-life systems evolve towards a more *whole* condition. And to be learned from, and improved continuously.

The *traditional* sciences rely on inherited methods (“the scientific method”). The *design* approach to science has the option to *design* a *methodology*.

A *prototype methodology* called Polyscopic Modeling [8–11] has been *designed* to illustrate this approach. We use the word *polyscopy* to refer to the practice that results by applying the Polyscopic Modeling *methodology*.

#### 4. Definition of *Information*

Polyscopic Modeling defines *information* as “recorded experience”, and explains this definition as follows:

- (1) The substance of *information* is human experience; its purpose is to communicate experience and to make sense of experience;
- (2) Any record of experience can be considered as *information* (more precisely, it may be considered as having an *information aspect*). A chair, for example, is *information*, because it embodies experience about sitting and chair making;
- (3) Any experience worth communicating can provide substance to *information*, including the “Aha!” effect, and aesthetic and ethical valuations.

This definition must be understood in the context of our chosen purpose—securing *wholeness* (of human, natural, societal, technical and other systems). *Information* is considered as a key component of those systems, and handled accordingly.

The first characteristic of the above definition enables us to secure the *wholeness* of information—by combining heterogeneous pieces of *information* emanating from different traditions, both ancient and contemporary, both indigenous and scientific; and by treating the differences in terminology and worldview as modeling artifacts, while showing that those heterogeneous pieces of *information* reflect same or similar experiences.

The second characteristic enables us to extend the scope of knowledge-work well beyond the conventional production of text and images, to include the creation of practically anything that systemic *wholeness* might require.

The third point enables us to *design information* that can provide orientation to all other *design*.

The historically first result of *polyscopy* was *convenience paradox* [12], where it was shown that *convenience* (favoring what appears to be pleasant and easy) has a paradoxical and deceptive character, because it fails to take into account the subtle long-term influences that our actions have on our wellbeing (personal *wholeness*). This result is created by combining insights from a broad variety of traditions. On the more detailed level, the *convenience paradox* result points at specific ways in which our wellbeing can be cultivated.

A corollary of the *convenience paradox* result is that the way to wellbeing must be illuminated by suitable *information*; and that when it is, our cultural direction may profoundly change.

The *convenience paradox* example illustrates that *design* is not opposed to *tradition*, on the contrary: *Design* enables us to preserve, organize, combine and put to use the *information* heritage that has been developed within ancient and modern traditions.

## 5. Design of Meaning

Within the *design mode of information*, there is no “objective” way to ascribe meaning to an experience or situation. By liberating meaning from habitual or *traditional* patterns, we allow ourselves to make sense of things and situations in completely new ways.

Among them, we give priority to those that best suit our chosen purpose (*wholeness*).

Polyscopic Modeling orients the *design* of meaning by using the keywords *perspective* and *gestalt*.

We say that we have a *correct perspective* of a given subject (or phenomenon or situation) when we have seen it from all sides and in correct proportions (nothing is left obscure or distorted; we have, as it were, seen through it) [8]. We use *scope design* (see below) to illuminate what may have remained hidden and correct the *perspective*. A suitable metaphor is inspecting a hand-held cup to see if it has cracks, by looking at it from all sides.

A *gestalt* is a way to understand a situation or phenomenon as a whole. “Our car is having a flat tire” is a textbook example of a *gestalt*. A *gestalt* that is *appropriate* to a situation points at an appropriate course of action. By convention, having an *appropriate gestalt* is tantamount to being informed.

A core technical element of Polyscopic Modeling is the notion of *scope*. A *scope* is a way of looking (what we choose to look at, and in what way), which tends to determine the *view* (what is seen). Multiple *scopes* are needed to see the whole, and for other specific purposes. Polyscopic Modeling defines its approach (*polyscopy*) as *scope design*. *Scopes* are *designed* by *designing* concepts (*i.e.*, by *postulating* their meaning) and in other ways.

To attribute a meaning to a *scope* (a collection of concepts), *polyscopy* relies on a technique called *pattern*. A *pattern* is “an abstract relationship”. *Patterns* may be understood as generalized mathematical functions. A characteristic result in traditional science is to show that certain scientific quantities such as mass and energy are related according to a certain mathematical formula; a characteristic result in *polyscopy* is to show that certain (possibly *designed*) concepts are related according to some specific (possibly *designed*) *pattern*.

*Polyscopy* may be understood as the use of *scope design* to correct the *perspective* and acquire an *appropriate gestalt*.

Visual metaphors called *ideograms*, and contemporary media techniques, are used for communicating *gestalts*.

Polyscopic Modeling provides also a general method for “proving” or *justifying gestalts* and other claims: A *scope*, consisting of a collection of concepts (pointing at points in experience) and a *pattern*, are given to the reader, together with the view that those given concepts are related to one another as specified by the *pattern*. The reader is asked to “look through” that *scope* at experience; if by “looking through the *scope*” the reader sees the provided *view*, this “communication experiment” is considered successful.

Hence Polyscopic Modeling shows how the conventional scientific approach can be generalized—made independent of disciplinary terminologies and interests.

Since a *pattern* can represent any kind of relationship, even an emotional one (“X likes Y” is an example of a *pattern*), the described method provides us a way to “prove” (Polyscopic Modeling prefers the word “*justify*”) even obviously “subjective” yet essential insights such as *gestalts*, as well as statements about goals and values—and to give them a legitimacy analogous to the legitimacy of facts.

The construction of this method further illustrates the nature of the academic work that may be founded upon *design epistemology*. Science acquired the key social role of truth and worldview provider for historical reasons, or as we might say “by *tradition*”. The described *methodology prototype* illustrates that a drastically more suitable truth and worldview creation may be *designed* by preserving the advantages of the *traditional* approach, while correcting its limitations. The real-world *methodology design*, of course, must be through a legitimate social process, as explained below.

An example—the *power structure* model of the *traditional* notions “power holder” and “political enemy” [10,11]—will help us illustrate meaning *design*.

A *power structure* is generally not a clique of conspirators (although as a special case it may be), but a spontaneously evolving structure. What binds people into a *power structure* is not only power interests, but also their beliefs and values.

Technically, the *power structure* is a *pattern*. It specifies not only how things in experience are related, but also how their relationship may evolve. As one might proceed in mathematics—explain the meaning of, say, the exponential function by giving examples of exponential growth in various practical situations—the dynamics that leads to the evolution of the *power structure* is explained by pointing at basic insights from several fields including combinatorial optimization, physics, cognitive science, artificial intelligence and artificial life, and showing that they all point at a single general insight.

The key insight (*gestalt*) conveyed by the *power structure* model is that our societal systems (institutions, professions, practices, beliefs, ...) often don’t evolve as its suits their function in a larger

whole, but according to more local power interests. It is as if those interests formed a complex magnetic field, which can subtly orient and organize people. This conclusion is verified by pointing at research results of leading sociologists.

The following consequences of the *power structure* model are relevant to our discussion:

- (1) Various contemporary issues including “global problems” are reduced to a single one—pathological evolution of societal structures. This new *gestalt* points at *design* as the course of action that needs to be taken (we must consciously take charge of systemic evolution);
- (2) *Traditional* ways of making sense, already removed from the “objective reality” pedestal, are seen as potentially part of the *power structure*. Meaning *design* is shown to be a necessary element of the “societal immune system”;
- (3) Specific design decisions taken in the construction of Polyscopic Modeling, such as *scope design*, are seen as necessary. It would obviously be wrong to claim, for example, that healthcare “really is” a *power structure*; it is at the same time essential to be able to “project” healthcare “on the *power structure* plane”, and see to what degree it has developed the *power structure* tendencies [13]. Similarly, the corporate organization in business, the monetary system, the disciplinary organization in academia, our public informing, and indeed any other core social system can be “projected on the *power structure* plane” to reveal *power structure* aberrations. Notice that there is nothing “subjective” about choosing a way of looking to see the things in a specific way: Our chosen task being to maintain societal or systemic *wholeness*, we acknowledge that something that truly is whole must look whole from all sides.

## 6. Design of Knowledge Work

When we work within a *traditional mode of information*, our task is to update a traditional reality picture by using a given or inherited method (of a profession or discipline). Once our update is published, we consider our task as completed and we move on to the next one.

When we work within the *design mode of information*, we make no such assumptions. Our task is not publishing, but to do whatever is necessary to secure that the core systemic purposes are fulfilled. Our first priority is to secure that the methods and the socio-technical systems through which we pursue that task are still suitable (recall the flat tire metaphor). The Knowledge Federation community has self-organized accordingly [14].

Knowledge Federation is organized as a *transdiscipline* (a new form of organization in knowledge work). In a discipline, researchers with similar backgrounds come together to create knowledge within the domain of the discipline. In a *transdiscipline*, researchers and other stakeholders representing a suitable combination of interests and backgrounds come together to work on a specific task of contemporary interest. The specific task of Knowledge Federation is the *design* of systemic solutions for knowledge work—and the corresponding change of conventional practice.

Knowledge Federation is “the *transdiscipline* for systemic innovation”. Characteristically, Knowledge Federation approaches a socio-technical *design* task (such as to re-create education, or public informing, or the way research and innovation are coordinated) by developing a *transdiscipline* around it, to improve it continuously, and to strategically change the actual practice. In this way “living” societal systems are created (capable of evolving in synchrony with relevant knowledge,

technology and environmental conditions). Knowledge Federation develops the *transdiscipline* model by developing itself.

At a recent Knowledge Federation workshop in Barcelona, this way of working was applied to journalism (or more precisely to public informing). A *prototype* public informing (Barcelona 2011 Good Journalism Prototype) was drafted that has the following characteristics:

- (1) Public informing is created and continually re-created by an innovation ecosystem—where journalists cooperate with knowledge media researchers, economists, sociologists, political scientists, entrepreneurs and other experts and stakeholders as needed. This innovation ecosystem views journalism as a key systemic component and develops it so that democracy may function, and so that systemic solutions to complex contemporary issues may be found;
- (2) Public informing gives direct voice to the public (“citizen journalism” includes also scientists and politicians). A curatorial function is added, which organizes contributions into themes, and highlights the urgent or important ones;
- (3) Key themes are brought further into a “systemic loop”, where experts from relevant disciplines, as well as media artists and others (including “the crowd”) are engaged. The goals are to find underlying systemic causes (for example malfunction of the monetary system; or an unjust bureaucrat); to explain them in ways that will be transparent to general public; to identify “leverage points”, *i.e.*, strategies and actions that can lead to remedial systemic change.

Since the beginning of civilization, innovation has been used to make human work more effective and efficient. Systemic innovation applies innovation to systems that turn our daily work into socially useful effects—where it may make a largest difference.

At a recent conference we motivated the Barcelona Good Journalism Prototype by pointing at an example where a leading European intellectual reached a key insight (that public sphere is disintegrating and that democracy is at risk), but this insight failed to produce a systemic effect, owing to the very systemic problem it identified. We pointed at other similar instances, and at their common root—that effects of knowledge work tend to remain confined to professional communities. The Good Journalism prototype integrates domain experts into our “collective mind” in two ways: (1) By making them part of the “innovation ecosystem”, where their insights can be turned into systemic effects; and (2) by making them part of the news creation, where their insights can bear upon public opinion [15].

## 7. Design Epistemology and Global Problems

Einstein’s adage “We cannot solve our problems with the same thinking we used when we created them” is almost a cliché; if not for the fact “the same thinking” is still largely in use. A remedial way of thinking—“systems thinking”—has been developed academically within systems science. Here is how Jay Forrester summarized its advantages (“planning” here is roughly synonymous to “systems thinking”): “Planning, instead of dealing with problems and their solutions, could deal with the design of social systems to produce systems less likely to generate problems. Planning, if addressed to the design of social systems, would ask not how to fix the present difficulties, but instead what leads the system into undesirable conditions.... Removing causes may take quite different actions from those

aimed at alleviating symptoms. The cost of removing causes is often far less. The influence is much deeper. The improvements last longer.” [16]

Systems science developed scientific terminology and insights that allow us to understand the properties that societal and other systems need to have to function well and be sustainable. At the inaugural meeting of The Club of Rome in 1968, Erich Jantsch gave an opening keynote speech, whose message was that the human systems (including global civilization) lacked feedback (suitable information and information flow) and therefore control (effectiveness, sustainability). The mentioned Barcelona 2011 Good Journalism Prototype was a step in the direction Jantsch was pointing at.

Even systems science could, however, benefit from an epistemology brushup. To see why, imagine (an extreme possibility, suitable for a thought experiment) that instead of deepening and broadening the knowledge about the structure and behavior of systems (the activity that is expected of a scientific discipline studying systems), the system scientists chose to self-organize differently and act strategically towards the goal of bringing a single chosen insight into public awareness and conventional practice. This could have been their most basic insight, namely that the systems approach is a better alternative to the conventional focus on problems and solutions, which Jay Forrester pointed at in the paragraph quoted above. It could have been another basic insight—that “the invisible hand” (or spontaneous evolution, or *tradition* as we have been calling it) as the way of evolving societal structures and systems can no longer be relied on, and that conscious systemic evolution (or *design*) has become necessary. (There can be no doubt that the systems scientists owned this insight, because already Norbert Wiener argued it carefully in 1948, in his seminal *Cybernetics* [17]; and subsequent research reconfirmed it [18,19].) Had any of these insights made its impact on conventional wisdom, today’s status of global problems could have been entirely different!

*Design epistemology* offers a foundation on which “systems thinking” can bear fruit as “systems doing” (recall the flat tire metaphor).

Knowledge Federation has recently developed a strategy and method for real-life systemic change called The Game-Changing Game [20]. The Club of Zagreb—a redesign of The Club of Rome that practices “systems doing”—had its inaugural meeting on 27 September 2012.

## 8. Design Epistemology and Philosophy

From a group of young Athenians who gathered around Socrates as teacher, Plato’s Academia developed, and ultimately the academic tradition as we know it.

Much of the classical philosophy was conceived as a quest for a way to absolute or objective truth through right thinking.

As we have seen, within the *design mode of information*, this age-old search for a good way to truth and worldview continues in a new way—by developing an explicitly stated social convention to base it on, a suitable socio-technical system to implement it in practice, and a *transdiscipline* to improve both continuously. Knowledge Federation has self-organized to enable this development [21]. The Tesla and the Nature of Creativity (TNC) Project implements a strategy for real-world foundations change [22].

## 9. Design Epistemology and Information Technology

In its systemic role of “meme custodian” (developing, selecting and disseminating culturally relevant or worthwhile information or more generally “memes” or “cultural genes”), the academia has a natural and most powerful ally—the new information technology. But owing to academia’s *traditional* outlook (academia practices and teaches the “know-how”, a learned way of doing things, not the “know-what,” performing in a systemic role) this opportunity remained largely unexploited. The gaming industry took better advantage of the new media; the Web got flooded by superficial and commercial content.

Upon delivering the mentioned keynote speech at the first meeting of The Club of Rome, Erich Jantsch continued to think about a practical way to streamline the societal systemic evolution. He concluded that the university will have to play a central role. A year later Jantsch was visiting the MIT, talking to colleagues and administrators and writing a report about the future of the university [23]. In the abstract Jantsch wrote: “The task is nothing less than to build a new society and new institutions for it. With technology having become the most powerful change agent in our society, decisive battles will be won or lost by the measure of how seriously we take the challenge of restructuring the ‘joint systems’ of society and technology....”

Across the bay from Berkeley where Jantsch was living and working, in the SRI-based Laboratory for Augmenting the Human Intellect, Douglas Engelbart and his team were developing information technology to serve exactly the goals Jantsch was pointing at. Engelbart recently described the origins of this pursuit as follows:

“Many years ago, I dreamed that people were talking seriously about the potential of harnessing a technological and social nervous system to improve the IQ of our various organizations. What if, suddenly, in an evolutionary sense, we evolved a super new nervous system to upgrade our collective social organisms? Then I dreamed that we got strategic and began to form cooperative alliances of organizations, employing advanced networked computer tools and methods to develop and apply new collective knowledge.”  
[24]

The technical solutions developed in Engelbart’s laboratory mark the use of computers as it is today. Yet this technology was envisioned to be not a purpose in itself, but as building blocks for socio-technical systems of a completely new kind. Engelbart never tired of emphasizing that the technology and the patterns of interaction by which it is put to use have to be developed together.

That is, however, not what has happened. We have recently used a photo of a rocket-powered motorcycle as a visual metaphor to point at what we called the Information Age Paradox [25]: Information technology has hitherto been largely simply added to the social processes that evolved based on old technology, and as it served the needs of the historical societies—as a rocket motor might be added to a tricycle. The true power of information technology, and its true benefits, will manifest only when we build the “rocket”—new socio-technical infrastructures for knowledge work and new knowledge-work patterns, that can take true advantage of the new technology by responding to systemic or societal purposes that need to be served today. *Design epistemology* embeds this new direction academically; Knowledge Federation is developing it in practice.

## 10. Design Epistemology and Religion

Religion, understood as a system of factual beliefs (that Jesus was the son of God; that Mohammed was God's last prophet...) would not be supported by *design epistemology*, because those beliefs lack evidence in experience. Even the question "Does God exist?" could not justifiably be asked, because it assumes that the concept "God" has an objective meaning, and questions God's existence in reality.

There is, however, a realm of experience, which may be associated with the word "religion" (although "spirituality" is often preferred). Aldous Huxley pointed at its idiosyncratic character in *Perennial Philosophy*: "(T)he nature of (religious experience) is that it cannot be directly and immediately apprehended except by those who have chosen to fulfill certain conditions, making themselves loving, pure in heart, and pure in spirit. Why should this be so? We do not know. (...)" [26] Huxley showed that the experiences of "those who have chosen to fulfill certain conditions" across cultural traditions are surprisingly uniform.

*Design epistemology* invites us to liberate the phenomenology of religion from outdated beliefs and mores, and to develop our understanding of it further; and then to find ways to communicate what is most relevant in it—to contemporary people.

When our understanding of the phenomenology of religion deepens, the human tendency to stubbornly hold on to a traditional reality picture—now commonly identified with religion—will be recognized as an impediment (not only to truth but also) to religion, whose goal is to transcend the boundaries of "ego-self" and of the associated realm of experience. In "The Embodied Mind: Cognitive Science and Human Experience", Varela, Thompson and Rosch call this tendency "grasping" and diagnose: "There is a profound discovery of groundlessness in our culture.... This is generally seen as something negative.... We feel, therefore, that the solution.... is not to try to find a new ground; it is to find a disciplined and genuine means to pursue groundlessness.... Grasping can be expressed not only individually as fixation on ego-self but also collectively as fixation on racial or tribal self-identity, as well as grasping for a ground as the territory that separates one group of people from another." [27]

Religion, understood in accord with its etymological meaning of "re-connection", has the potential to reconnect us together into new societal structures—and thus provide a way to higher psychological and social wellbeing, as the founders of religions envisioned.

## 11. Conclusions

We are living in a precarious moment of human history, where the old way of evolving socially and culturally—*tradition*—can no longer be relied on, while its alternative—*design*—is not yet in place. We have pointed to the *traditional modes of information*—where meaning is restricted by an inherited worldview, and what we can do is restricted by an inherited language and method—as an impediment to evolution. We have pointed at *epistemology* as a leverage point for enabling change. *Design epistemology* is offered as a research *prototype* to illustrate the type of work that can now be developed on this *foundations frontier*, and its possible consequences.

When we defined the *design epistemology* we did not say anything new; indeed, we have only repeated what Einstein said in the passage we quoted in the preamble: Information does not reflect

reality but experience; and the “toolkit” (language, method, criteria ...) we bring to the task of communicating experience is our own creation.

The only difference was in the way we said that: Einstein made his statement as his “epistemological credo”; we stated ours as a deliberate choice, that is, as a convention. This, however, turned out to be “a difference which makes a difference”, because it was a step that brought us from *tradition* to *design*; *postulation* or convention making provided a foundation for deliberate departures from *traditional modes of information*, and for *designing* new modes. We showed how a particular mode can be developed on *design epistemology* as foundation, which may help us resolve both fundamental-academic and practical knowledge-work and social anomalies, and open up manifold possibilities for creative contribution. Those possibilities were illustrated by polyscopy, Knowledge Federation, Barcelona 2011 Good Journalism Prototype and The Game-Changing Game.

What new cultural direction, and what human condition, might result from this re-evolutionary change? We point at an answer by updating the parable that has served for the related purpose in our tradition, namely the Biblical creation myth. Adam’s eating an apple from the forbidden tree of knowledge and his resulting expulsion from Paradise might in a modern interpretation be understood as symbolizing the end of our unconscious immersion into nature and the beginning of civilization. Our ancestors assumed a proactive attitude towards nature: “In the sweat of thy face shalt thou eat bread, till thou return unto the ground.” Culture resulted from cultivation of soil, which with time enabled commerce and art, philosophy and science. But this first phase of our cultural evolution, the tradition, operated through an unconscious immersion into—culture! Our ancestors treated their culture’s worldview as reality; they were socialized to accept their social order as similarly immutable as the natural one [28].

The condition to which the spontaneous development of our civilization has brought us calls for a similarly radical step—we must now develop a taste for another kind of hitherto forbidden fruit of the tree of knowledge, and assume a proactive attitude towards our cultural and social environments; just as once upon a time our ancestors began to understand nature and cultivate land.

We predict that this will lead us to a whole new phase of evolution.

We let the epigram “*design* is the alternative to *tradition*” point at this fertile new direction.

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