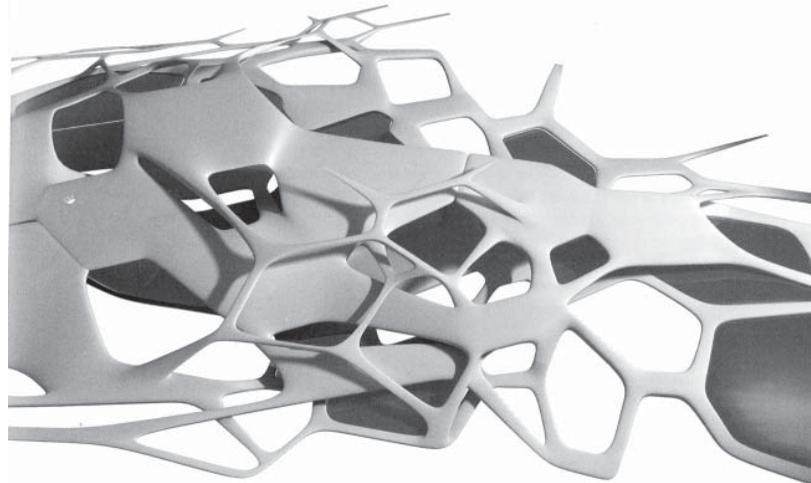


Jun Yu: *Forms of Cellular Aggregation* (2005)
 SCI-Arc 2GBX Studio Instructors: Marcelo Spina, Peter Testa Software: GENR8 by Emergent Design Group/MIT



THERESE TIERNEY

ABSTRACT SPACE: BENEATH THE MEDIA SURFACE

Therese Tierney's 189 pages of *Abstract Space* offers the novice reader of design theory a key set of references, including established names such as Bernard Cache, Deleuze, Derrida, Benjamin, Rittel, and many more, and make interesting links, albeit remotely in some cases, between these references and the changing face of architectural design amidst the increasing use of digital technologies as design media in the 21st century. Inspired by the discussions on the virtual under a Deleuzian influence, there is an attempt at theorizing the generative processes in computational design work while presenting abstraction as the underlying act in design.

Tierney hints in the book that she has been exposed to exciting works of design explorations and associated texts during her studies in California College of the Arts, University of California Berkeley and the Media Lab at Massachusetts Institute of Technology. As the beholder of an eye that has wandered in and around these locales witnessing first hand the use of technology in designs of all kinds, the author's reflections and selections are valuable. Her enthusiasm for the topic

and the related design work, easily discernible throughout the pages, is not naïve at all, and is possibly the most noteworthy characteristic of this book.

Abstract Space: Beneath the Media Surface most probably addresses architecture students eager for design technology and anybody from the field who wants to tune in to the state-of-the-art in conceptual explorations in computational design. Overall the readers can find hasty snapshots of the architectural design field under the influence of a techno-culture in a time frame that starts in the 90s and continues today. The book does not paint an inclusive and objective picture but rather presents an interesting collection of names while promoting explorations in the conceptual limits of the field. Amidst these explorations, Tierney puts forward in seven chapters her argument for the transforming architectural image.

In *Architecture and Abstraction*, Tierney starts by questioning how the architectural image changes as the new technological media are employed in design processes. Foreshadowing her philosophical outlook that will hold

THERESE TIERNEY

ABSTRACT SPACE: BENEATH THE MEDIA SURFACE

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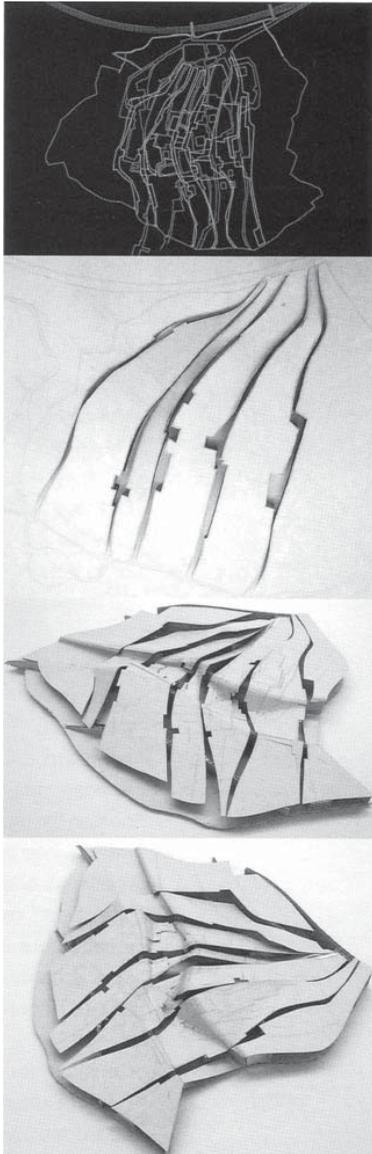
Greg Lynn: *Embryologic House* © Installation p.12

presence in the book, she recognizes that the representational mode of architectural design loses its ground and is exchanged with temporally unlimited design processes. In *Architectural Modes of Seeing*, she discusses that the fundamental cause behind this change may be the gradual shift in the conception of the visual, from the classic representation of a preconceived notion to seeing, triggered with the experiences in the new media. Seeing requires an opening up of the mind connected to the body that experiences. Tierney is also quick to note that the new experiences with the new media bring about new ways to trap vision and that the key is to sustain the explorative mode.

Drawing our attention to the historical link between the performance arts in the second half of the 20th century and the visual thinking processes adapted by architects, Tierney shifts the focus in *Formulating Abstraction* to the social conscience that calls for exploration in various media. In the subsequent chapter, *Mapping Absence*, she presents a case study that follows this thread. *Nybble-engine-toolZ*, is an art work in which, the digital code is simultaneously used for three different formal expressions: video, a physical space that is produced with computerized numerical control (CNC), and an internet portal. Tierney emphasizes

the “seamless condition between the code, the online visual images, and the physical installation,” and that the work “resists objectness” due to this continuum that lives in time. The exploration in multiple perceptions and in the media that enable one to work in multiple modes seems to give way to processes lived by users as well as by designers, rather than to finalized products in conventional architecture. Drawing on Derrida, Tierney suggests that design comes forth in “not so much the forms of things as the forms between things.”

In *Generative Systems*, Tierney gives a limited account of computational design in architecture with emphasis on systems approaches to design in the second half of the 20th century. She especially draws attention to the second-generation design theorists who worked with the social aspect of design and also presents evolutionary design methods as the mechanisms for open-ended design processes. In this chapter, one reads through a series of sections titled *Constrained Randomness*, *Nonstandard Organizational Logics*, *Iterations and Feedback*, *Morphogenesis*, *The Temporal Image*, which add up to a list of concepts emerging in the description of generative systems, and that perhaps will invoke the interest of some readers specifically. The key statement of the



Peter Eisenman/Eisenman Architects:
Site plan and study models (2002) City of
Culture of Galicia, Santiago de Compostela,
Spain. p.132

chapter comes in the last paragraph: “evolutionary form-generating software has transformed the architectural image into event and performance.”

In *Formal Matters*, subtitled *The Virtual as a Generative Process*, the objective is mainly to theorize the generative process in relation to Deleuze’s philosophical discussions on the virtual. According to the interpretation in this text, the virtual is pregnant, not simply with possibilities that are foreseen in a defined universe, but with anything, so that there is a room for chance and irrational associations. The author’s position is that designers work with subjective intuition in addition to logical thought processes. Revisiting an idea presented in the earlier chapter *Mapping Absence*, Tierney points out that it is the gap (the absence) between the designer’s subjectivity and the systematic method that triggers the search for new solutions.

Finally in the closing chapter, *the Status of the Architectural Image* comes to a conclusion that conceptual activity, enriched by new experiences is imperative in what Tierney chooses to refer to as the architectural design continuum.

The overriding tone of the text, evidenced in the bibliography as well as the choice of words and writing style, is surprisingly a post-structuralist one despite being published in 2005. Nevertheless, Tierney deserves credit for her acknowledgement of the systems approach as an operative force for design actualizations. Moreover, she advocates that it is the duality that the rational systems approach poses with the intuitive designer, which in the end gives way to creativity.

At this point, it is probably fair to advise the readers to approach this brief summary given above, as well as the book, warily. Overall, *Abstract Space* is not an easy read to claim an understanding of. Its difficulty is not due to any philosophically deep arguments, but rather its vague and ambitious language. A myriad of terms, from within or without the design field, are constantly introduced, substituted for one another, and exhausted... They accumulate. The subject matter perpetuates this as well. Architectural office names are difficult to distinguish

from project names, which are often easily mistaken for pseudo scientific terminology. Even the phrase “media surface” in the title of the book is vague. The text is heavily loaded with an unnecessary symbolism that, not only the common reader or a novice reader, for instance, a student of architectural design, but also a computational design expert may not share.

Chapters are well thought of separately in the general organization of the argument, but one wonders if there are too many concepts and sub-arguments tucked into them. Tierney is undoubtedly very excited and interested in the transformation that architectural image is going through. However, almost every design work, every text showcased in this book is presented to be ground-breaking and tempting to hear about, with little opportunity left to discuss the concepts with real grounded arguments. Then unfortunately, the text becomes a parade of namedropping. Some very good young designers and artists, as well as prominent thinkers are cited. But without an articulated set of criteria to evaluate them, all instances seem to push towards the same vague direction called dynamism.

With good intention, the author has included transdisciplinary references most of which are loose links to scientific notions and figures. Unfortunately, due to the haste in which they are handled, their validity is debatable. The interest architects have in everything that might vaguely relate to or influence the design process and products, comes through in this book and thus might be appealing to the novice reader. In this sense, the book is possibly a positive contribution to architecture students’ vision of the field. However, it is likely to turn off physicists, computational biologists, and even some architects with the wide range of concepts cited superfluously in it. Also, readers who are not native speakers of English should especially make a note that there is not much of a valid terminology to learn from *Abstract Space*.

A straightforward structuring of the argument lacks in the book and, perhaps to the author’s credit, an appropriately rhizomatic approach is dispersed well throughout, to the level of the sentence and the choice of wording.

Shortcuts between distant concepts, jumps between debatably related references reach an ultimate point in this exemplary paragraph:

With regard to generative processes, during the mid-twentieth century the mathematician Alan Turing developed a theoretical model of the modern computer, the Universal Turing Machine. He also published a paper titled 'The Chemical Basis of Morphogenesis.'^[...] In it he ventured that the computational behavior of genes could result in a morphology. By showing that patterns could be generated by simple chemical reactions, together with the process of diffusion (the Second Law of Thermodynamics), this resulted in a significant shift in perception of how the processes of development could be viewed. It also contained the first applications of computational modeling in biology.^[...] (p. 116)

Written almost two decades apart, Turing's work on what are known as the Turing Machines and the article related to morphogenesis are of entirely different topics. The Second Law of Thermodynamics is an unnecessarily scientific reference for good old diffusion. Finally, perception of how something is viewed is a convoluted thought. To the author's credit, a good paragraph just a page later clearly summarizes the motivations behind the conception of this book:

In order to effectively grapple with the complexity of design today, designers need new methods of viewing and organizing the solution field. Computational design solutions evolve through the interplay and integration of multiple data platforms. This involves dynamically developing designs that

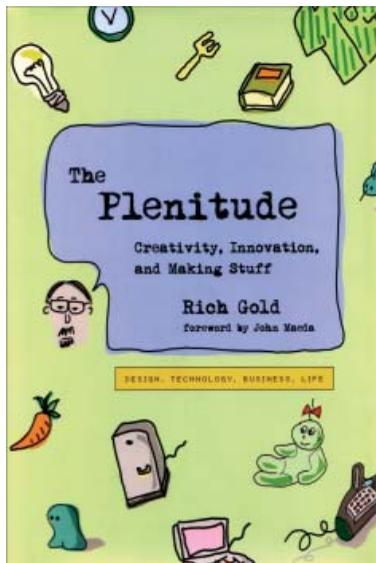
are organized in terms of relationships, rather than just discrete objects. (p. 119)

The book displays images that are in line with the tone of the book, inspiring, thought provoking, and complex. One page out of two presents an illustration, providing a rich visual library for the reader. The images sometimes coincide with the words in the text, although seldom on the opposite page. This is very useful for the reader to follow. Yet some of the images are not directly referred to in the text, and more often than once, one wonders what they tell. By appropriately choosing to adorn this particular book with many images, the author also runs the risk of deeming these visuals generic, even if the real intention is probably to show that each, in itself, is unique and thought provoking. As if to verify this, almost all the images display a uniform language of thin lines, complex curved forms, and scientific looking graphics.

Tierney, with every interesting concept she introduces and exciting design work she showcases, poses inexplicit questions, rather than providing answers. The reader is mostly left wondering while trying to follow the main argument through these new windows the author constantly keeps opening. Tierney at the very end quite generally claims that "questioning is fertile." Whether she is referring to her own questioning or not is up for questioning as well... ironically. In short, *Abstract Space* is for the reader who can endure a confusing text and is ready to appreciate its vibrant tone.

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RICH GOLD

THE PLENITUDE: CREATIVITY, INNOVATION AND MAKING STUFF

(Massachusetts Institute of Technology The MIT Press, 2007, xxii + 111 p. Cambridge, Massachusetts, London, England; Hardcover) ISBN 978-0262072892

(All illustrations by Rich Gold)

RICH GOLD

THE PLENITUDE: CREATIVITY, INNOVATION AND MAKING STUFF

In the foreword of *The Plenitude*, Rich Gold (1950-2003) is introduced by John Maeda (1) as "... an artist, composer, designer, inventor, lecturer, and writer." (2) Insights into Gold's personality are provided in the preface, written by his wife Marina de Bellagente LaPalma, in which she traces his life, particularly in his early adulthood, and recalls his intellectual and cultural influences. Returning to his roots, she discusses his

background in the avant-garde tradition, which inspired his manifold activities within both academia and business, where he worked at various times for Sega, Mattel, and Xerox PARC.

The Plenitude is a graphic textbook, autobiography, and also a very practical read, full of ideas and thoughtful insights. The book was written during the final year of Rich Gold's life. He

1. John Maeda is a world-renowned graphic designer, visual artist, and computer scientist at the MIT Media Lab, and is a founding voice for 'simplicity' in the digital age. He is the current President of the Rhode Island School of Design.

2. From 'The Plenitude' back flap.

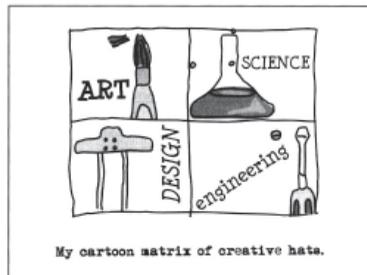
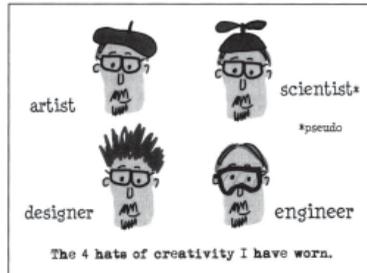


Figure 1, 2. (Gold, 2007; p.6)

keeps a simple writing style throughout the book. However, the fact that he uses a simple and clear language does not imply that his reasoning is simplistic. He definitely knows how complex the issues that he discusses are, and he presents them thoughtfully.

The main part of the book consists of three sections. It commences with the author's outlining of - seemingly contradictory but in his view, complementary - perspectives of the archetypal artist, scientist, designer and engineer: four professions that collectively have created about 95 percent of what he coins the 'Plenitude'. To add further intrigue, Gold states that at various times these four professions represent 'the four creative hats he had worn' in the course of his career. Drawing on his wide experiences, Gold summarizes the lessons to be taken from the creative professions of, and for, art, science, design, and engineering: how to live in and with the Plenitude, the dense ecology of man-made things or "the stuff of the junk tribe" (p.3) that creates the need for more of itself. Gold reflects that he has spent his life making more stuff for the Plenitude, acknowledging that the Plenitude grows not only because it creates a desire for more of itself but also because it is extraordinary and pleasurable to create. Thus, the book brings together both sides of consumerism, 'creation' and 'consumption', and the author notes that pleasure and desire can be found in both.

Following this scene-setting, Gold focuses on 'seven patterns of innovation' together with some common methodologies that he found useful in the creative professions. He also examines why these patterns are so attractive and what their problems are. Finally, he looks at the bigger picture: the nature, physics, moral stance, and the future and consequences of the Plenitude. After characterizing the Plenitude and discussing why people are so eager to make stuff, he identifies five problems that the Plenitude causes. He then debates on seven approaches that have been proposed to solve these problems.

THE FOUR CREATIVE HATS

In this section Gold discusses the four 'creative hats' of science, art, design

and engineering. The most important point for Gold is, however, that all four professions contribute to the Plenitude - even though some members of the individual professions might believe that they are doing just the opposite. Whilst discussing how they increase the amount of stuff that piles up in our world, Gold also defines a two-by-two matrix of the four professions for defining the relationships between them. He describes the behaviours of people who live in each quadrant and probes the differences between them. This leads to a very interesting view of how people drive forward innovative thinking.

Gold also touches upon some of the so-called judgments that the four professions have for each other. It is worth pondering some of his quotes from the book, since they suggest simple but insightful descriptions about the four professions.

While there is no good way to define science (or any of the hats really) we can say, in general, that when someone wears this hat [science] they seek to understand the basic laws of nature and to express those laws as mathematical equations. This implies many things. It implies, above all, that the wearer of the science hat believes in a nature that exists and in a nature that has laws." [p.9] People wearing the hat of science, according to Gold "create rooms full of very cool test equipment. ... There is much cleverness and invention in these beautifully engineered tools; they alone qualify the scientists for a hat in the Plenitude. It is, after all, the equations that flow from the scientist's bench that give the engineers their head-starts, their big hints, allowing them to make goods that fill our shopping centers (pp.10-11).

Gold talks about the subcategories of art as being three hats that an artist could wear. The first hat is the beret, which he associates with the fine arts. The second hat is the baseball cap, which he associates with popular art. Finally, the third hat is the straw hat, which he uses to represent folk art. Accordingly, a more legitimate way of representing the three hats of art is to say that they form a triangle and that any given artist or work can be placed somewhere in that triangle.

Based on his own experience, Gold views artists and scientists much more akin than designers and scientists. Both artists and scientists, he suggests, talk about nature. They both think of

themselves as unique; speak of personal vision, and of having and working from visions, which are more powerful than mere ideas. When the discussion moves on to designers, some genuinely eye-opening comments are offered: "For an artist user-testing is a joke. For a designer it's fundamental" (p.22). Patrons of artists have to believe in what the artist may create. As Gold puts it, an artist paints a painting, stares at it, and says "isn't it beautiful, it expresses my inner vision perfectly" (p.22). However, users and customers of designers' outputs take a different viewpoint. "The designer paints a painting, stares at it, then turns it around to the audience and asks 'Do you like it? No? Then I'll change it.'" (p.22). Undoubtedly, "the designer speaks a language quite different than that of an artist. ... Design that doesn't communicate with the user, or satisfy the user's needs, is considered poor design" (p.22).

In our culture the artist is mere revered than the designer (...) But it is the designer who has had the much greater influence within the Plenitude. When design is revered it is usually the design and not the designer that is honoured, for unlike the artist, the designer is often anonymous and can be switched out at the whim of his employer. (p.23).

Gold then explains how the hat of engineering is closely related to the hat of design.

Both work from need and desire. Both are concerned primarily with the user and the world – the "real world," as they like to say. Unfortunately, in most companies design is pitted against engineering, a battle that tends to reduce the effectiveness of both. I think this is caused by a misunderstanding by both engineers and management, who see the hat of design as the hat of art. They think that designers work from inner vision and not problem solving. (p.25).

SEVEN PATTERNS OF INNOVATION

In the second section of the book, Gold argues that all professions share only a limited set of methodologies or patterns for the creation of new stuff. He characterizes seven innovation patterns and lists their attractive points and drawbacks. These patterns are:

- Necessity is The Mother of Invention: Find a problem and solve it.

- It's a Thing of Genius: I had a vision and just had to do it.
- The Big Kahuna: Scientific deduction of stuff from first principles.
- The Future Exists: We just have to intersect it at the perfect moment.
- Colonization: Find the unowned; package it; sell it back.
- Stuff Desires to Be Better Stuff: Humans are how stuff makes more stuff.
- Change the Definition: Language and metaphor create the world/are the world.

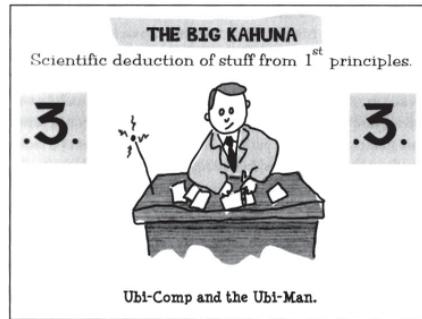
The list represents approaches to innovation and creativity that differ from other sources on the subject, although they are rather vague in their characterization. Nevertheless, Gold considers them useful, particularly in moments when it is difficult to understand new products and why they have successfully become part of the Plenitude. It is worthwhile looking at a few examples from the innovation patterns.

The Big Kahuna

The Big Kahuna refers to big ideas, from inclusive theories to everything. Gold gives 'ubiquitous computing', the research program that he worked on at Xerox PARC, as an example for the Big Kahuna. This idea was first formulated by Dr. Mark Weiser. It refers to a future in which networked computation will be tacitly, universally, and invisibly embedded in the everyday objects of the world. Gold believes that this vision will eventually take place (it is already becoming so). However, what the Big Kahuna could not offer, he stresses, is the details of how the idea is turned to a reality. For example, will it be in the form(s) of the ubi-desk, the ubi-chair, the ubi-paper, the ubi-shirt, the ubi-pen, or even the ubi-man? In a way, the Big Kahuna offers an alternative set of universal laws from which one creates and invents, an invention that presupposes more invention.

The Future Exists

The Future Exists focuses on what is manifested and spoken about in engineering and research departments all over the world. Gold suggests that the job of the designer or engineer is



to simply intersect foreseen futures

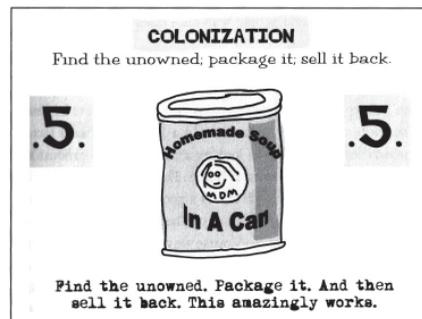
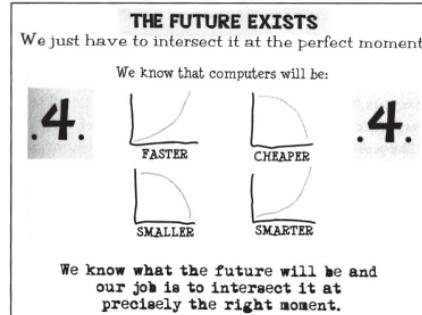


Figure 3. (Gold, 2007; p. 39)

Figure 4. (Gold, 2007; p. 41)

Figure 5. (Gold, 2007; p. 43)

at exactly the right moment – that the future itself is a given, but is simply not yet realized. With his words,

... engineers know that in the future computers will be faster, smaller, and smarter. It is known that there will be more transistors per millimetre of chip, which is sometimes known as Moore's Law. There is little debate on these things; the only debate is precisely when they will occur and what technology they will use (p.42).

Another argument put forward by The Future Exists is that technologies of the future usually exist today, except they are extremely expensive. For example, if you want to design desktop software for the future, you can buy a supercomputer today to do your invention work on. Five years from now, the power of the supercomputer will be on everybody's desk and no bigger than a pencil sharpener. However, the

problem with this pattern is that 'the future does not actually exist yet'.

Colonization

The fifth pattern of innovation is *Colonization*, which Gold claims to be the hardest pattern to come to terms with. He explains how to innovate using Colonization: "First, you look around the world and you find things that are unowned, or barely owned, or lightly owned. Surprisingly, even in the Plenitude, in the Spectacle, this is possible. Second, you bring these unowned things into the corporation and into the maws of design and engineering groups. There you improve it, rationalize it, package it, gussy it up, make it smooth and consistent. Third, amazingly, you sell it back to the same people who once used it, for free, while it was unowned" (pp. 43-4).

The Campbell's Home Cookin' Soup is a reasonable example that fits to this situation. It is a soup that can be found at any USA supermarket. It is made in a large automated factory, somewhere that we would consider as the polar opposite of a home. Gold tells the story of Campbell's soup, in which somebody at the company was looking for a new product and noted that people make soup at home. They saw that people liked homemade soup and that they had positive feelings towards it as a product.

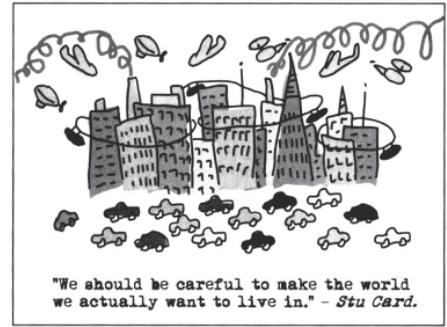
Hmm, what if we could sell them homemade soup? They wouldn't have to go to the trouble of making it, and of course we would make some money. We could mass-produce it so that people who never would make homemade soup can have some. We will make the Plenitude, richer, more complex, more human, homier (p. 44).

Of course, Campbell's Home Cookin' Soup is not a homemade soup – but that does not imply that it is a bad soup. Nevertheless, Gold believes that something of essence is lost with Colonization. In the soup example, what makes real homemade soup wonderful is the variation and the effort that is expended; it fills the kitchen with wonderful smells; and you can actually still make it for free. Gold's criticism comes with a footnote, "... we must ask how can we make sure that as much is added as is taken away in this process" (p. 45).



Figure 6. (Gold, 2007; p. 62)

Figure 7. (Gold, 2007; p. 110)



THE PLENITUDE

After presenting the professions and the methods that create the plenitude, in the last section, Gold meditates on the Plenitude itself and its moral contradictions. According to Gold, our desire to create new stuff, stuff that has never existed before, is at the core of our Western culture, and is contrary to other cultures. Copying ideas from existing stuff can even result in legal punishment. Therefore, he claims, "it is only through creativity and innovation that we survive" (p.55). In fact, this is the core of the industries and what he calls progress: where 'new' does not only mean 'different' but also, fundamentally, 'better'.

He then talks about some key concepts deeply intertwined with the Plenitude. 'Efficiency' is one example, referring to the making of more stuff in less time. 'Mass production' is another example, central to the creation and dispersion of the Plenitude; whereas 'customization' simply masks the 'mass' aspect and allows for diversity in products. 'Corporation' is one other example, feeding off the Plenitude whilst at the same time serving up more stuff to contribute to it.

At this point, Gold imagines his readers divided into two fractions: one is loving the Plenitude, whilst the other is hating it. Indeed, he admits that he is divided too. According to Gold, one of the problems with designed stuff is that it piles up, it bunches up under beds and on living room shelves: eventually, this may even ruin our liveable world. While Gold would like to address the Plenitude from a moral point of view, he does not feel qualified to do so. Instead,

he addresses some of the problems of the Plenitude on a more concrete and practical level.

Gold lays down five compelling reasons to seriously consider why the Plenitude is *not* a good thing: i) it causes an ugliness that damages; ii) it blurs the distinction between the real and the virtual to a point where we cannot act intelligently; iii) it seems to keep one half of the world in dire poverty; iv) it looks as if it is on the verge of destroying the planet; and finally, v) if the Plenitude itself does not destroy the planet, it will re-engineer nature into a product that will. Then, he discusses seven possible solutions as propositions to solve these issues, many of them offering sustainable solutions including 'the Unplenitude', 'reject the Plenitude' and 'quality over quantity'. Gold closes the book with a moral fragment, actually a quote from his friend Stuart Card, and which he often cited at the end of his talks: "We should be careful to make the world we actually want to live in" (p.110).

As a final remark, *The Plenitude* is a worthy read for anyone who has interest in art, science, design, engineering, innovation, the creation and morality of our material culture, or the management of any of these professions, processes and outcomes. The book is in fact intended for everyone - a bold but very reasonable claim - as according to Gold, we are all contributors to the Plenitude and thus ought to reflect on what we are doing.

Bahar ŞENER,

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Ankara*