

# A is for Anthropocene: An A–Z of Design Ecology

Paul A. Rodgers + Craig Bremner

## A is for Anthropocene

The current geological age, the Anthropocene, is widely viewed as having begun about 200 years ago with the industrial revolution and the consequent impact of human activity on the ecosphere. The World Wildlife Fund's 2010 *Living Planet Report* paints a truly horrendous picture of our current situation that shows our demand on natural resources has doubled since 1966.<sup>1</sup> At the same time, the worldwide economy has grown massively; Gross World Product (GWP) reached 69,000 trillion dollars in 2008 from only 6,600 trillion dollars in 1950. Thus, in less than 60 years, GWP has increased more than tenfold. This relentless pursuit of financial gain has obvious limits – a truly atrocious ecological crisis. Design in the 21st century faces two massive challenges: the realization of future visions with finite resources and the realignment of a fairer global economic system.

## B is for Business

The cultures of design and business are different, although not irreconcilable. Design often celebrates the success of the “star” designer and the importance of creativity. Business, too, values these concepts; but in business, what really matters is profit. Surprisingly, however, the etymology of the word “business” does not equate to capitalism. Business has its roots in the late 14th-century word *bisignes*, referring to “care, anxiety, occupation,” and it is the claim to be busy that has perversely become a dominant virtue within capitalism (as well as in design). “Sorry, I’m busy” has become the religious mantra of the worker, but also of the designer and the cultural producer.

## C is for Crises

Design (practice, education, research) must acknowledge that it has contributed to the creation of a world that nobody really wants. An ecological crisis wherein we continue to deplete and degrade our natural capital on a massive scale has resulted in one-third of our agricultural land disappearing over the past 40 years, which will inevitably lead to food supply crises and an anticipated doubling of food prices by 2030.<sup>2</sup> A social crisis, which sees nearly 2.5 billion people on our planet living in abject poverty. And a spiritual crisis where, according to World Health Organization statistics, three times as many people die from suicide as die from homicide or in wars.<sup>3</sup> The reality, of course, is that without crises design is a waste of time!

## D is for Death

“The death of the designer is upon us and has been for some time,” proclaimed Adam Richardson in 1993.<sup>4</sup> Fast-forward 25 years and the debates concerning design and its crisis in education, research, ethics, relevance, and value appear to parallel those discussed in Richardson’s paper where he asked: “What are the impacts of design’s products in societal and cultural contexts, and are these impacts important?” The likes of Victor Papanek and the Italian Counter-Design movements of the 1960s sounded similar warnings, which have since largely been ignored.<sup>5</sup> But news of design’s death might be a little premature. Perhaps, as John Thackara suggests, design is in the process of being reborn where designers focus their attention not on objects, buildings, and things but rather acknowledge their role as being key facilitators of social change.<sup>6</sup>

## E is for Education

In an era where the costs of tuition and students’ resulting debts have spiraled out of control, some have questioned whether a university degree in design is still worthwhile.<sup>7</sup> While some critics claim that today’s designers are poorly trained to meet the demands of the contemporary world, a number of design schools have responded by turning their focus to pressing social, cultural, economic, and environmental issues; working collaboratively and differently across disciplinary, conceptual, methodological, and geographical boundaries and often achieving real impact.

## F is for Form

The Munich Design Charter of 1990 aimed to animate discussions on the fundamental role to be played by design in the future Europe.<sup>8</sup> The signatories sought a more balanced and ecological model of development for Europe’s industrial and social systems that acknowledged that the systems we live in have both physical limits (beyond

which lie environmental disaster) and political limits (beyond which lie dysfunctional forms of social coexistence and dictatorship). They believed design was in danger of becoming dedicated to producing strategies of socio-economic legitimation and instead wished to see design's role as one that would put forward new and profound ways of creating a more advanced ecological balance between human beings and the artificial environment they inhabit. Over 25 years later, the Munich Design Charter's relevance is clear as we once again wrestle with huge social, political, and cultural problems while needing to shape new visions for a more peaceful, inclusive, and fairer world.

### **G is for Global**

According to Marshall McLuhan, print gave us the single city and electronic media the global village, and today the crisis of the city is couched in terms of the global city. And just as the global financial platform is the derivative, so too the global city is a derivative so generic that it can only be imported. Rem Koolhaas proposed that the omission of three elements from the history of architecture had insulated us from the fact that all architecture is unwittingly producing a single global junkspace. Similarly, Peter Sloterdijk advanced the idea we are living in a planetary atmosphere that is essentially a global interior that we have already air-conditioned.<sup>9</sup> By contrast to the notion that the advent of digital technologies has created a global city, it appears the digital has no respect for the global or the village: no distinction of night-day, inside-outside, work-leisure, private-public, normal-abnormal. The digital, with its cloud of images and words, is projecting future states while preserving failing conditions in the present. Our willingness to disregard the global village also meant we missed McLuhan's warning: "The global village absolutely ensures maximal disagreement on all points...The tribal-global village is far more divisive—full of fighting—than any nationalism ever was...The village is not the place to find ideal peace and harmony. Exact opposite...I don't approve of the global village."<sup>10</sup> The global may have erased the local but even if it had not, as McLuhan predicted, the local is not the answer.

### **H is for Human**

In the late 1950s, American industrial designer Henry Dreyfuss gave birth to Joe and Josephine in his books *Designing for People* and *The Measure of Man*.<sup>11</sup> Joe and Josephine helped establish human factors and ergonomics as part of the science of design and position humans (or users) at the center of design. Soon their offspring were cast in numerous roles from driving cars to operating spacecraft. Around the time of their inception, Marshall McLuhan proclaimed that objects were invisible and only relationships between objects were visible. If we follow McLuhan's aphoristic logic, Joe and Josephine were never the measure of man. Their conception only ever really illustrated an invisible world – a world in which relationships are made increasingly uncomfortable by design.

### **I is for Interpassivity**

The world is full of interactive products, services, and experiences. Our fingers endlessly press, swipe, and stretch digital screens and buttons that remind us how busy we are, where the local pizza parlor is, and how many calories we have burned today. But most of these interactions are one-sided. Slavoj Žižek has coined the term "interpassivity" to describe this pseudo-interaction.<sup>12</sup> In Žižek's view, interactive objects largely cannibalize our enjoyment of life and this so-called interactivity is better described as interpassivity. Truly innovative interactive design requires a consequential and meaningful exchange that stimulates, provokes, or questions its users. If the designed object, space or experience does not, then it is merely entertainment that exploits magical novelty to achieve false consciousness.<sup>13</sup>

### **J is for Jealousy**

Jealousy has long been associated with design. An ancient Greek tale tells of a jealous potter so keen to guard his competitive advantage that he never reveals his techniques.<sup>14</sup> This may explain why so little is known of the techniques of the masters of Renaissance and baroque painting – an almost universal secrecy maintained by workshop tradition. But jealousy is not always bad. Among the ancient Greeks, the concept of jealousy was overwhelmingly positive, more closely approximating zeal than jealousy as understood today, while in modern Greek, there is a verb "to make oneself jealous," expressing esteem, admiration, or praise. These conceptions extend to an abstract noun describing a creative act or work of art which is worthy of jealousy, the object of emulation, envy, or ambition. So, perhaps, the measure of good design is the degree of envy it raises in a competitor.

### **K is for (not) Knowing**

In 2002, then US Secretary of Defense Donald Rumsfeld made his now-famous statement: “Reports that say that something hasn’t happened are always interesting to me because, as we know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say, we know there are some things we do not know. But there are also unknown unknowns – the ones we don't know we don't know.” Slavoj Žižek extrapolated from Rumsfeld’s three categories a fourth: the unknown known, that which we intentionally refuse to acknowledge that we know.<sup>15</sup> What do these mean for design? First, there are the known knowns where the discipline safeguards the design of imitative objects that consumers find in department stores, and now more frequently online. Second, there are the known unknowns where the discipline knows where it needs to go (e.g., designing a better world) but the perceived millstone of responsibility ensures design will never go there. Third, there are the unknown unknowns where the disciplines have unknowingly coated design with unknowable layers, like sustainability and ethics and responsibility. Last is the unknown known. This is the unassailable modern project (whose product we know is the totally artificial world) plus the prosaic project for the better world (that we know is only better for those who already have everything). But we don’t *want* to know that the culture, discipline, and practice of design is engaged in creating inequality, weapons of war, and surveillance networks.

### **L is for Like**

“The Becoming Topological of Culture” is an initiative investigating the transformations taking place on the surfaces of society and culture, asking how the digital is deforming and transforming rather than rupturing and disconnecting society and culture.<sup>16</sup> Since the becoming topological culture is driven by social networks deforming public life into “friendships” and commercial networks transforming public space into pay-for-use entertainment, this concerns design because its topos (place) is the interface of these networks. That is, the retreat from the public dimensions of life and space into the artifice of the web has been underwritten by the design of ways to network. These networks have then swept up vast amounts of digital information (mainly images and their tags) into clouds that are seeded by one key button: like. Hitting the like button for someone or something deforms the space-life cloud and new connections rain down creating new topologies of new likes. The identification that humanity has entered a new geological era—the Anthropocene—which is tilting the planet toward a cataclysmic future, is sorely disconnected from like and its thumbs-up icon.

### **M is for Mongrel**

Design, just like Fine Art before it, has undergone something of a major transformation in recent years, refocusing its lens to privilege ideas over aesthetics. As such, today, design can be anything. Bruno Latour famously claimed that “design has been expanding ferociously from the design of objects that we use on a daily basis to cities, landscapes, nations, cultures, bodies, genes, political systems, the way we produce food, to the way we travel, build cars, and clone sheep.”<sup>17</sup> If you study how design is celebrated nowadays by the likes of the UK’s Design Council, you will see that its “winners” range widely from drugs that enhance sexual performance to business software. Stuart MacDonald describes this new creative landscape as a “post-modern soup” in which cultural, economic, social, and educational issues are swimming and where “mongrel” institutions will flourish.<sup>18</sup> But if design can be anything, then it can also be nothing and this perhaps is the biggest challenge that design now faces.

### **N is for Natural**

In the Anthropocene, we are reluctantly coming to realize that our artificiality is now our most natural state. In this era of self-production there is no depth to being, only surface or how we appear. This is the terrain of design – what Boris Groys calls the “obligation to self-design” where “design is practiced as a production of differences.”<sup>19</sup> Appearance can be redesigned infinitely and this is the perfect scenario for the continuous flow of capital. Having filled up our living spaces with the project of mass-production, the perfect landscape for the protraction of mass-consumption is the body skating across the surface of the mercantile-spectacular. In the project of change (couched as progress in liberal democracies) there used to be a measurable temporal gap between what was changed and new, and what would eventually become natural. But the accelerated culture in which we live means that all change (and by default all artificiality) is now immediately natural. In this hyper-modern condition, design is almost entirely engaged in a project producing indiscernible differences – it is changing the planet.

### **O is for Oxymoron**

Klaus Krippendorff’s 2007 essay “Design Research, an Oxymoron?” argues that research as it is practiced today cannot serve as a model for generating knowledge about design or to improve design.<sup>20</sup> He states that relying on

research in its current conservative state will condemn design to mere elaborations of the past. He lists a number of contradictions between what scientific researchers claim they do and what design researchers do such as: science is concerned with what exists, whereas design is concerned with what ought to be; scientific research conserves the status quo, whereas design research breaks with determinisms of the past; and science celebrates generalizations, abstract theories, and general laws, whereas design suggests courses of action that must ultimately work in the future. But while design research may linguistically be an oxymoron, practically speaking design research is making significant contributions to numerous global issues all over the world.<sup>21</sup> Design researchers, in collaboration with other disciplinary expertise in business, engineering, computing, and healthcare, update and exploit a variety of conceptual, methodological, technological, and theoretical approaches whilst generating new knowledge about design and many other areas. These projects do not produce mere elaborations of the past, they generate truly creative and transformative interventions that help to shape our lives in more responsible, sustainable, and meaningful ways.

### **P is for Past**

Perhaps design needs an alternative history. Not a counter-cultural version of a history of design, but another way to present what most designers seek to avoid: the past. Design is enacted in the permanent present, with the seductive allure of the future. The most familiar is the simple past where imitation (not ideas) fuels the project of production and consumption. There is the present perfect where digital flows made it possible to reconnect idea to manufacture turning everyone into prosumers. There is the past perfect, which describes the history of design framed by one investment – faith in technological progress. There is the simple future where the digital production of nothing crafts new producers and ideas are reduced to derivatives. There is the future perfect, still framed by one investment but this time digitally networked progress. And finally, there is the problem of the future in the past, the history/theory of design. Here we get to the core of design's carelessness with its past because design has no choice but to return to its original problem – the contest between being and becoming.

### **Q is for Queer**

As an adjective, the word queer has a colorful and graphic pattern of use. As a verb, it has been less dynamic: “to queer” has not only meant to unsettle or upset something or someone but is also used to investigate the foundations of something (in this meaning, to queer is more method than moniker). What does this have to do with design? As both adjective and verb, queer is a good way to describe the Anthropocene, whose impact (fanned by the industrial revolution) is producing a future characterized by both the stagnation of the political imagination and a boom in scientific visualization. The Anthropocene is queer because in geological terms it is upon us and we don't have any real idea of what will result from the profligate burning of finite reserves of fossil fuel. It is producing some pretty queer politics – periodic promises to reduce carbon emissions that every political party at every election seems very willing to break. Meanwhile science has been trying to queer the Anthropocene – to find its future in its origins. It runs into trouble here because in geological terms a methodological track record doesn't exist, turning science into dogma with believers and skeptics. It is at this point that design intelligence (and not intelligent design) might be useful, because from its origins in the industrial revolution it has been making do with method in order to project the possible, and it is futures that we can live in that are needed.

### **R is for Research**

For the majority of design schools throughout the world, research is big business. In many national contexts, a design school's research rankings are vital currency, critical to attracting high-caliber and fee-paying students. Establishing those rankings requires an increased emphasis on research and publication; this may be good business for academics but how does society benefit? This question lies at the heart of many research bodies' criteria for funding, which now routinely look for a high return on investment (RoI) on research projects. Somewhat different from curiosity-driven, exploratory, uncertainty-acknowledging research, some believe this should now be called “RoI-search.”<sup>22</sup>

### **S is for Sustainability**

There is general misconception about which end of the cow produces the methane contributing to global warming. The answer is the front end (cows belch methane), and it appears that this is important to know if you are serious about sustainability. But this seemingly innocuous question is very revealing about the way sustainability is framed. The real “end” we should be questioning is which end of the global animal known as liberal-capitalism produces unsustainability? Clearly, it is the “big end,” but the sustainability agenda seems to

be aimed at the little end, and this agenda does not appear to have had much impact on the unsustainable practices of the liberal-capital flow of waste fueled by its ability to endlessly invent money in the form of debt. The sustainability agenda demonstrates that consumers can be persuaded to politely burp sustainability, while capitalism belches unsustainability.

### **T is for Tired**

Franco Berardi, aka "Bifo," founder of the renowned Radio Alice in Bologna and an important figure of the Italian Autonomia Movement, points out that tiredness has always been a bugbear to the dream of modernism, the endless thirst for economic growth and profit, and the denial of organic limits.<sup>23</sup> We now have a world that is seriously unprepared to deal with the mounting crises we face because we have based our ways of life on the identification of energy, have an overriding obsession with accumulation, property, and greed, and strive for continual expansion and social well-being. But if we were to contemplate a creative consciousness of tiredness, as Berardi proposes, the current crises may mark the beginning of a massive abandonment of competition, consumerism, and dependence on work and help address the contemporary malaise.

### **U is for Urban**

As the demographers charted the growth of the world's population and capital underwrote its exit from the countryside, a lot of effort and intellect has been focused on the crisis of the urbanizing planet. The result is we probably now know more about the future of the city than its present. However, the migration from rural to urban is leaving the countryside in an intractable position. The path to the Anthropocene began when villages, towns, and cities were shaped from an agricultural landscape. As such, the relationship between the rural landscape and townscape is clearly defined by the historic boundaries between agriculture and urban culture creating rural islands of populations. The population remaining on these rural islands is experiencing massive change driven by a range of factors including climate change and variability, multi-governmental policies, the degradation of arable land, shifts in consumer demand for produce, increased global competition, and technological innovation. Not only is arable land degraded, it is now being consumed by surrounding forests or deserts because no-one cultivates it anymore. The concept of regional development, once imagined to be unlimited, is now on a collision course with new kinds of limits—limits to biodiversity and limits to the flows of energy and water—in contrast to increasingly unlimited digital flows (mostly forms of genetic experimentation and entertainment), leaving rural communities to compete globally for population and productivity.

### **V is for Virtues**

Design needs to be more virtuous. In a 1997 lecture, Gui Bonsiepe proposed six virtues for design in the next millennium (lightness, intellectuality, public domain, otherness, visuality, and interest in theory) based on Italo Calvino's *Six Memos for the Next Millennium*.<sup>24</sup> Calvino's definition of "lightness" concerns removing weight from the structure of stories and language, and Bonsiepe finds clear parallels in design, where lightness is a virtue to maintain especially when we reflect on material and energy flows and their environmental impacts. Intellectuality, Bonsiepe's second virtue of design, calls for a more critical stance in design culture. That is, design and writing about design should no longer be seen as sterile and mutually exclusive opposites; rather, intellectuality should reveal contradictions, and compare "what is" to "what could be." The third design virtue is concern for the public domain; that is, we should strive to maintain care for details in everything we do—from address labels to train timetables—that ultimately reflects the kind of society we want to live in. The fourth virtue of design is otherness, or better *concern* for otherness. Today design and design discourse largely reflect the interests of the dominant economies that are engaged in the process of shaping the world according to their hegemonic interests and visions. The virtue of otherness bypasses the weary distinction between developed and underdeveloped nations and instead accepts other design cultures and their values. The fifth virtue is visuality: privileging thinking in terms of images over thinking in terms of texts. Bonsiepe believes the move towards visualization would benefit many, including the way we practice and theorize subjects in the humanities, the physical and biological sciences, and the social sciences. The final virtue of design is interest in theory. Here, Bonsiepe claims that design theory must become part of our future educational programs for two reasons: first, every form of professional practice occurs within a theoretical framework; and second, professional practice that does not produce new knowledge has no future.

### **W is for Wacky**

The industrial revolution transformed the world through truly remarkable manufacturing, technological, and transportation developments. However, some of these can now be seen as plain wacky. We have stripped the earth of natural resources (coal, oil, and gas) and, since the 1960s, have had to produce more and more food to

feed a rapidly increasing global population. This has resulted in huge loss of natural habitat, pollution, overfishing, and an unprecedented decline in species throughout the world. Some of the wackier aspects of our current designed situation include our increasing reliance on water. Water is used to produce everyday items we consume such as meat, cotton, and mobile phones. It takes, for example, around 3,000 liters of water to produce a single burger. However, the really wacky fact is that it takes four liters of water to produce a one-liter plastic bottle to hold the water. Water wastefully used to produce bottles to hold water!<sup>25</sup>

### **X is for Xanax**

Xanax, designed to treat anxiety and panic attacks, is the most popular drug in the United States. In 2009 nearly 50 million prescriptions were written for Xanax and its generic equivalents in the US, representing 20% of all prescriptions. The most contentious effect of the Anthropocene—climate change—opens up the possibility of a new mass anxiety; this time an anxiety for history because the uncertainty of global warming hints at the finitude of humanity. Having discovered planetary limits, we are now facing the possibility we have discovered not just our limits but our end. So too, design finds itself in a new anxiety-producing state, its preferred state once achieved from the pursuit of the question “what-might-become” can now only be “what-might-not-become?”

### **Y is for Yahoo**

Before utopia became a genre of satire, Jonathan Swift wrote a satire of utopia – *Gulliver’s Travels*. In one episode Gulliver ends up preferring the company of horses to the beasts resembling humans called yahoos. Several centuries later, the story of how the web search engine known as Yahoo came into being seems to also revolve around a part of the world where the epithet “yahoo” is still used to describe company you don’t want to keep. The proverb says “we are judged by the company we keep” but now that company is creating the coming topological culture – the computational shaping of both voluntary and involuntary networks. By design, it is increasingly difficult to exercise choice over whose company you prefer. A couple of massive beasts of companies already know what and who you prefer and where you are acting out what they know about your preferences. This is not a utopia, nor necessarily a dystopia. As Vilem Flusser pointed out, we have always had designs on each other so machinic life might well be the ideal world for design. If so, the act of design becomes a satire of itself: while claiming rights over the possibilities of what-might-become it gives shape to what-will-not-become, unless Yahoo prefers it.

### **Z is for Zombie**

In the hunt for meaning for the word innovation and its sidekick creativity, game design is always the case study par excellence of governments, design councils, and design schools. As such every design school has retooled to launch graduates as game designers working from their bedrooms in the hope that their contribution to the design of games, usually at little cost to game magnates, will make them rich and famous. But working for next to nothing within the new wave of the creative industries as the next wave of innovative entrepreneurs of liberal capital is in fact a precarious existence. The whiz-kid dream, based on selling one’s skill for very little return, is making design a soulless corpse – which is the very definition of a zombie.

---

<sup>1</sup> World Wildlife Fund, *Living Planet Report 2010: Biodiversity, Biocapacity and Development* (Geneva: WWF International, 2010).

<sup>2</sup> Stephen Emmott, *10 Billion* (London: Penguin, 2013).

<sup>3</sup> World Health Organization (WHO), *World Report on Violence and Health: Summary*, Geneva: WHO, 2002).

<sup>4</sup> Adam Richardson, “The Death of the Designer,” *Design Issues* 9, no. 2 (1993): 34–43.

<sup>5</sup> Victor Papanek, *Design for the Real World: Human Ecology and Social Change* (London: Thames & Hudson, 1985).

<sup>6</sup> John Thackara, *In the Bubble: Designing in a Complex World* (Cambridge: The MIT Press, MA, 2006).

<sup>7</sup> A. Davidson, “Is university still the answer? Yes, to a degree...,” *Design Council Opinion*, (August, 14 2014).

<sup>8</sup> Rams, D. et al., “The Munich Design Charter,” *Design Issues* 8, no. 1 (1991): 74–77.

<sup>9</sup> Philippe Rahm, “Trading Spaces: A Roundtable on Art and Architecture” *Artforum International* (October 1, 2012), 208.

<sup>10</sup> Marshall McLuhan in Gerald E. Stearn (ed.), *Hot & Cool: A Primer for the Understanding of and a Critical Symposium with Responses by Marshal McLuhan* (Middlesex: Penguin, 1968), 314–15.

<sup>11</sup> Henry Dreyfuss; *Designing for People* (New York: Simon & Schuster, 1955), ch2; Henry Dreyfuss, *The Measure of Man: Human Factors in Design* (New York: Whitney Library of Design, 1960).

<sup>12</sup> Slavoj Žižek, *The Plague of Fantasies* (London: Verso, 1997).

- 
- <sup>13</sup> D. West, "The Work of Art in the Age of Mechanical Interaction," in Paul Rodgers and Michael Smyth (eds), *Digital Blur: Creative Practice at the Boundaries of Architecture, Design and Art* (Oxford: Libri Publishers, 2010), 224–30.
- <sup>14</sup> R. Nelson, *The Jealousy of Ideas: Research Methods in the Creative Arts* (Australia: Ellikon, 2009).
- <sup>15</sup> Slavoj Žižek, "What Rumsfeld Doesn't Know That He Knows About Abu Ghraib," *In These Times* (May 21, 2004).
- <sup>16</sup> Celia Lury, Luciana Parisi, & Tiziana Terranova, "Introduction: The Becoming Topological of Culture," *Theory, Culture & Society* 29, no. 4/5 (2012): 3–35
- <sup>17</sup> Bruno Latour, "A Cautious Prometheus? A Few Steps Towards a Philosophy of Design (With Special Attention to Peter Sloterdijk)," Keynote Lecture for the Networks of Design Meeting of the Design History Society, Falmouth, Cornwall (September 3, 2008).
- <sup>18</sup> Stuart MacDonald, *Designs on Democracy: Architecture and Design in Scotland Post Devolution* (London: Zero Books, 2012).
- <sup>19</sup> Boris Groys, "The Obligation to Self-Design," *e-flux Journal* 00 (2008).
- <sup>20</sup> Klaus Krippendorff, "Design Research, an Oxymoron?" in Ralf Michel (ed.), *Design Research: Essays and Selected Projects* (Zurich: Birkhäuser Verlag, 2007), 67–80.
- <sup>21</sup> Paul Rodgers & J. Yee, *The Routledge Companion to Design Research* (UK: Routledge, 2015).
- <sup>22</sup> M. Alvesson, "Do We Have Something to Say? From Re-search to Roi-search and Back Again," *Organization* 20, no. 1 (2012): 79–90.
- <sup>23</sup> Franco Berardi, "Exhaustion and Senile Utopia of the Coming European Insurrection," *e-flux Journal* 21 (2010).
- <sup>24</sup> Gui Bonsiepe, "Some Virtues of Design," based on a lecture given at the "Design beyond Design" symposium at Jan van Eyck Akademie, Maastricht, The Netherlands (November 1997).
- <sup>25</sup> Emmott, *10 Billion*.