0246

Nonlinearity for Design

Jamie Brassett

Central Saint Martins College of Arts & Design, London, United Kingdom

And ecstacy is the way out! Harmony! Perhaps, but heart-rending. The way out? It suffices that I look for it: I fall back again, inert, pitiful: the way out from project, from the will for a way out! For project is the prison from which I wish to escape (project, discursive experience): I formed the project to escape from project! (Bataille, 1988, p. 59).

Preamble

The most notable feature of the last ten years of going to Milan to visit design companies, studios, manufacturers and the Salone di Mobili, has been the lack of change in outlook on the part of the Milanese Design community (not necessarily all Italians, we should remember). The focus of any discussion centred around what has made Milanese design so special and always seemed to be focussed on the past. We revisited the 1960s and 1980s mainly—the Pop and the Postmodern, the bright colours and sensual shapes attesting to the stereotype of Milanese Design as energetic and desirous. The 1990s revisiting of a Scandinavian Modernist æsthetic particularly in furniture and kitchen appliance design seemed only to reinforce such a stereotype: "we can engage with this styling," they seemed to say, "but it will always have our signature elegance and sophistication, that demands display and passion rather than objective appreciation." Only Studio Mendini seemed to have no truck with the vagaries of fashion. Asked in Spring 2002 whether the studio's playful style—so reminiscient of Design's Postmodern turn of the 1980s as well as Pop's 1960s exuberance—was still relevant in a world experiencing suicide terrorist attacks in many of the world's cities (this visit was the Spring following the iconic Twin Tower attacks in New York City on 11th Spetember 2001, of course), our guide told us that Signore Mendini believed that now, as much as ever, was it necessary to have some joy in people's lives. And that is all.[1] This is design as frippery, as an escape from the everyday, from the dirtiness of culture, of society and of politics. This is design which ignores the everyday experiences and concerns of people. This is design which has turned in on itself. This is not good enough.

These visits to Milan always left me with the impression that I had been shown laurels, brown with age, dusty and crumbling, removed for my pleasure from their resting places beneath stylish, fun seats, before being replaced for another year. (There is a notable exception to this story: Isao Hosoe's unique philosophical

perceptions and continuing conceptual and practical passion has always made for a remarkable encounter; even if his studio does operate on the traditional Milanese model.) Last year (Spring 2005), however, my impressions changed. For the first time in my decade's experience, most of the concerns (of studios and manufacturers alike) were for the *future*. But it was a future they described in dystopian ways; and the cause of this dystopia they encapsulated in a single word: *China*.[2] So I reflected: on local and global relationships between manufacturing and design; on the differences between hierarchical structures and fluid networks and their points of interaction. And I wondered whether there was any way of re-expressing Design and its practice in such a way that the sorts of fears I witnessed in Milan are circumvented. This is what I came up with….

Cities in Hierarchies and Meshworks

Much of the specialness of Milanese design over the past 50 years must be due to the fact that talented designers have occupied a territory which includes a wide range of skilled craftspeople as well as strong manufacturing facilities. The rooting of an Industrial base here in the years leading from the end of the 19th Century up to the Second World War, as well as the richness of an artistic and artisan culture dating back to the Middle Ages, must all play a part in the production of this territory. (The reasons why landlocked Milan became the post-War centre of design, rather than the maritime metropolises of Venice or Genoa, may become clear when we encounter some history of urbanization below.) Current Milanese fear of China, in the terms that I mentioned above, can only come from the recognition that there is in the making, the same connection between design and manufacturing in China—albeit on a vastly larger scale—as has been evident in Milan. Given that this is not going to change—the Chinese and Indian economic boom is not going to slow down and reverse, just because the Europeans want it to do so—what tools can be used by those of us involved in design and design education in Europe to understand the possibilities for design and the creative industries in their recent-traditional haunts? This isn't proposed from a *fear* of current Chinese and Indian practices; but rather as a way of engaging with the new possibilities that these pracitces offer. In order to do this, I want first to look at some of Manuel De Landa's arguments in his *A Thousand Years of Nonlinear History* (1997).

This book has many points: at once, it seeks to introduce into an analysis of history (and historiography) ways of understanding material cultures that are found in studies of nonlinear dynamics—ways of understanding that come, most notably for him, from geology, economics, biology, virology and linguistics; it wonders, also, how to explain the rise of European culture after 1000 CE, when the Islamic and Chinese cultures of the previous millenium had been much more advanced—intellectually, economically and technologically—and these cultures were taking these advances into this new millenium; and, it seeks to proffer a way of doing philosophy—open, fluid, itself exhibiting narrative and conceptual dynamics that could be called nonlinear.

De Landa introduces, fairly early on in his text, the notion of "nonlinear combinatorics" (De Landa, 1997, p. 16)—processes whereby elements from historically previous moments infiltrate, combine with and mutate current events.[3] So history becomes not a series of idealized stages—promoting, negating and reifying each other in some sort of progress (or regress)—but a fluid mass with congealings at certain times; with

dissolvings which release, and allow for the re-absorption of, different elements. De Landa's notion of "nonlinear combinatorics" resembles (as he himself acknowledges) the concretizations of the processes of deterritorialization (and territorialization and reterritorialization) at different moments of its (deterritorialization's) activity, that are described in the philosophical works of Deleuze and Guattari. I spend many pages elsewhere discussing these concepts of Deleuze and Guattari, though it's worth mentioning here that these terms operate both actually and metaphorically—as do De Landa's, and mine. For example, if something is described as territorializing, it is both making a territory for its ownership, and acting in the manner in which something that makes a territory would. Similarly, deterritorialization is the undoing of the forces, and contents, of this territorialization; and reterritorialization is a folding back of these deterritorialized flows into the surities of territorialzation.[4] For our purposes now, however, we can see that these "nonlinear combinatorics" operate conceptually and concretely, metaphorically and actually: the very term operating as the meaning it describes.

Furhtermore, for De Landa historical processes not only resemble those of other material sciences—the sedimentation of certain types of minerals, or the flows of genetic information—but they also operate according to exactly the same schema. If there was a blueprint which showed how historical processes worked, and one which showed how geological processes worked—an "abstract machine" to borrow another of Deleuze and Guattari's terms, as De Landa does—then these blueprints would be identical. Histories, events, concepts, minerals, flesh and linguistic forms are all—to mix in some other philosophical terms—*expressing*, they are all different instantiations of the Will (to Power, or to Existence); they all involve and evolve, implicate and explicate,[5] their material through their activities. My engagement with design practice will demand that it operates in the same way as De Landa describes cities; that design and its practice follows the same "abstract machine" as cities, their population flows, their energy distributions; that design is an expression of energies and matter under certain conditions and constraints, along lines similar to other such expressions.[6] For this reason, then, we will now look more closely at the way De Landa discusses the flows, agglomorations, sedimentations and dissolutions that describe European cities of the second millenium CE.

We can see, De Landa explains, the increase in European urbanization around 1100 CE as a crystellization of various intensive flows—matter: in terms of rock moving and accreting, of people migrating and sedimenting; and energy: in terms of the movement of biomass and its intensification in various forms (see De Landa, 1997, pp. 28-31). At some point around this time, the turbulent mass of all these flows of energy and matter have sped up to the point at which their turbulence tips over into the self-arganization of urban consolidation. The European city between the end of the 11th and the middle of the 12th Centuries starts to engage with these very flows, directing them into and out of itself; accreting more and more stuff. De Landa explains that there is a massive matter-energy transformation going on at this time. Agricultural intensification allows for an increase in energy to be directed into the human popluations of these urban agglomorations. Solar energy collected as plant sugars is cultivated and directed toward humans (for immediate consumption or storage); and this same solar energy converted into plant sugars can be further stored in/as animals, for human consumption (pigs are great for this, as they can also convert human waste into useful stored energy). These flows exist alongside those of skills (of artisans being drawn into the urban centres) as well as of ideas. As these

flows increase in intensity and diversity, great structures are instantiated by these urban centres to organize all the different elements that have led to their birth in ways that will continue their sustenance—we will return to this below. (We could even see the city as an exo-skeleton of its human inhabitants:[7] the critical mass of humans at a certain space could be the catalyst of urban self-organization that we have seen, and so the city can be viewed as part of the process of human mineralization.) This, then, is the basic outline of the abstract machine of the city that we are going to work with: a matter-energy conversion machine.

This abstract machine has two opposing articulations: the central point in a hierarchy, and the nodal point in a meshwork. We should not forget, however, that in most cases "real" cities express variations of intermixing of these two articulations (an idea we will return to below). Nevertheless there are occasions where cities strive for either of these poles as an ideal. On the one hand then, we have cities of the first type, as the central point in a hierarchy, which seeks to control, from the top down, the flows of matter and energy with which it is engaging. Milan, Paris, Prague, Madrid are examples of this paradigm. All the matter and energy, the goods, the skills and the services, are channelled towards the city at the head of this hierarchy; and in 'return' different taxes, tolls, tariffs are instantiated to restrict the flows of these in order to extract as much energy as possible (see De Landa 1997: 49-50). Unless this model appears too parasitical, the city offers stability for the whole system through clear rules for conduct (social, personal and commerce), evidenced through ethical, religious, artistic, linguistic and economic means. De Landa writes: "Much as small towns offered the surrounding countryside a variety of commercial, administrative, and religious services, the towns themselves looked to the more diversified larger cities for services that were unavailable locally. This created pyramids of towns organized around hierarchical levels of complexity" (De Landa, 1997, p. 38). The self-organization of the turbulant mass of the city now takes into its sphere of influence a whole array of smaller towns and villages for goods and services, as well as agricultural land, quarries and woodland for raw materials and energy reserves. Further, as De Landa quotes from Hollenburg and Lees's *The Making of Urban Europe, 1000-1950* (1985): "On one level, the Central Place System serves a homogeneous people well settled in its historical lands. The national capital distills and formalizes the common folk culture and reinjects the civilized product back into local life…" (De Landa, 1997, p. 40). With this aspect of a city, we can see a certain rooting, a setting down of foundations and a sucking in of surrounding material and energy for its own sustenance. And, of course, with this process comes the setting of rigid systems of behaviour and thought to be distilled throughout the system of which it is the head, in order to ensure the continuation of this process. The production of an empire, centred upon a strong capital city is one consequence of this hierarchical control system. Yet when this is tied to a top-down command system emanating from a city which articulates the Central Point Hierarchy perfectly, the whole systme has a tendency towards ossification. Witness the fate of the Chinese empire in the early centuries of the last millennium. At a time when its technological prowess, military might and cultural expertise could have led it to be the dominant world power it turned inwards. In 1405 Chinese ships were five times the size of the best European equivalents (De Landa, 1997, p. 52)); in 1418 the chinese muslim mariner Admiral Zheng He is thought to have found America (Luard 2005). Then in the middle of the century it moved its capital from the maritime metropolis of Nanjing at the mouth of the Yanghtse to landlocked Beijing, and stays looking inward for the next 400 years or so. It can be of no surprise to us that an empire operating according to this blueprint stagnates.

To reiterate: for cities in the Central Point system flows were restricted and governed in order to increase the energic (for example, capital, power) pay-off for the city in question. De Landa explains further that "hierarchy building consists of two distinct operations, a homogenization performed by a sorting process, followed by a condensation through coding into legal, religious or other formal regulations" (De Landa, 1997, p. 118). Reterritorializations always operate in this way.[8]

On the other hand, against this principle of homogenization and hierarchization, De Landa places one of heterogenization and nonlinearity. According De Landa's other city principle, then, a city can be described as a nodal point within a meshwork. The city which is a nodal point in a meshwork will not be a sacred place, giving meaning to a hierarchy of territories which serve it; it will not be a *telos,* providing a point towards which all other locales aim, and the point from which all order, all orders come. It will be a point within a flow, a facilitator for these flows, and a place which allows collisions between ideas, peoples, cultures, goods, and so on.

To take a vector away from De Landa, for a moment, we can see other expressions of similar nonlinearity in the stories of Kurt Vonnegut. He explains his 'project' as follows:

Once I understood what was making America such a dangerous, unhappy nation of people who had nothing to do with real life, I resolved to shun storytelling. I would write about life. Every person would be exactly as important as any other. All facts would be given equal weightiness. Nothing would be left out. Let others bring order to chaos. I would bring chaos to order, instead, which I think I have done (Vonnegut, 1992, p. 210).[9]

Against a storytelling which prioritizes some people over others, wherein these characters provide the focal point for constructing meaning of a narrative which *always has a single point*, Vonnegut offers chaos; or, in our terms, nonlinearity. The storytelling he proposes comes to work against storytelling as such. He has found a storytelling to do away with storytelling. Vonnegut's stories are formed from a multiplicity of points; and these points always point away, they are vectoral, indicating a direction that can be taken with a certain intensity. Each "story" thus has a multiplicity of directions, and any gesture towards "wholeness" can only come from an understanding of his work as a swarm, not an œuvre. All facts are equal, all characters are equal; any specialness comes only from particular, peculiar interactions of these points. He explains "I had come to the conclusion that there was nothing sacred about myself or about any human being, that we were all machines, doomed to collide and collide and collide. For want of anything better to do, we became fans of collisions" (Vonnegut, 1992, pp. 219-20).[10] Cities as nodal points in a meshwork work to that same operating instructions—it should be of no surprise to us, remembering De Landa's notion of "nonlinear combinatorics" and Deleuze and Guattari's "abstract machine", to find a work of literature materializing from the same blueprint as European urbanization and geological processes. Chaotic, nonlinear, meshworking cities allow for the flows of matter and energy, of goods and people, skills and ideas to pour and mingle in order that a variety of distant milieus can be tapped; these flows collide, and these collisions become the point. That is, points which deflect on other voyages; and in this way, we can say that it is the flows that pass through points, rather than the points which connect flows.

Maritime metropolises are perfect examples of the cities we're describing as nodal points in a meshwork: Canton, Talinn, Lübeck, Cordoba, all of these dip into the flows of goods, people and ideas; sometimes creaming off the energy from these flows, other times redirecting them to places with which it seems fruitful to engage. (The hard-to-territorialize sea has always proved the best medium for connecting flows (a medium which is mirrored in contemporary informational space); unless you are a Mongol Nomadic War Machine and you can liquefy the land.) It is in this way that the energetic wealth of the nodal city comes as a (welcome) by-product of these flows, rather than as the teleological *raison d'être* of these flows. This is also how Deleuze and Guattari describe the workings of capitalism, that it deterritorializes (in order to allow the free and creative flow of stuff) and reterritorializes (in order to be able to organize these flows in ways that can afford it the most profit). It would seem, then, that for the forces of capitalism, the meshwork principle allows many possibilities for extorting profit from flows of capital (as goods, thoughts, people, matter and energy), as long as certain hierarchies and systems can be relied upon to police these somewhat anarchic flows. It is with this in mind that we should not forget that many of the most successful cities at different moments within the history of Capitalsm, show characteristics of *both* of these principles of hierarchy and meshworking: Venice in the 14th Century, Antwerp in the 15th Century, London from 18th to 19th Centuries, New York and Tokyo in the 20th Century.

What, then, is the value of this story translated into design? Some of it, I think, we have already encountered in the example of Milan. At first we have Milan as a cultural *centre*, drawing practitioners from far and wide to practice within its boundaries. Creative taxes, tariffs and tolls, impositions of language (æsthetic and linguistic) and style are put in place to restrict the flows of matter and energy from the surrounding area in order to increase the power of the centre. What De Landa calls sorting and condensation occurs to reinforce the hierarchy. Allied to this, there is the studio system modelled on that of the Renaissance. The Master Designer is his own central point of a rigid hierarchy, surrounded by workers operating according to his artistic whims, with the most junior members little more than bonded serfs, working for miniscule financial recompense and for the love of their master in the hope that his glory can reflect in such a way as to enhance the furtherence of their careers. As well as this sorting process, homogeneity is accomplished through a condensation of these sorting processes into laws: most notably, formal regulations for the practice of design. This is the story of Milan; the name of a place where design happens and the name of a way of doing design.

In this respect, Andrea Branzi's *Learning from Milan. Design and the second Modernity* (1988) is an interesting document—though we should remember that his original title makes no mention of Milan: *Pomeriggi alla media industria: Design e Seconda Modernità*, it is, as he says in the beginning of the Introduction, about "Afternoons at the factory". In it's third chapter (the second after the Introduction), 'The Hybrid Metropolis' (pp. 20-24) he also makes a connection between design and the city (or, the "metropolis" as he prefers, especially insofar as this term references the Fritz Lang film, turning the city into a machine which operates along Fordist lines). He writes,

As a general system of construction of the designed universe (and as a territory for the intensive circulation of merchandise), [the metropolis] holds in its capacious bowels all the individual projects, whether homogeneous,

discontinuous, or dissociated from each other and from the metropolis itself. But the metropolis also has a more symbolic role, a general metaphorical function that makes it easier for us to grasp all the different arguments employed in design, along with all the strategies of construction (Branzi, 1988, p. 20).

Branzi then proffers three different types of theoretical model for understanding cities in the 20th Century: the mechanical (i.e. modernist and avant-garde); the homogeneous (i.e. post-war re-interpretation of modernist rationalism); and hybrid (the postmodern and postindustrial). His ideal hybrid cities include Hong Kong, New York, São Paulo, Mexico City and a range of Canadian provincial capitals; or the best definintion of the concept, Beirut (Branzi, 1988, p. 22-4)—most of which are maritime metropolises in senses that we have already encountered. His hybrid city however exhibits clear (classical?) postmodern traits: it alters traditional perspectives and hierarchies (though doesn't reject them), it favours play, intuition and culture over rationality, logic and politics. Of course, when Branzi imagines the issues for design that the turn of the 21st Century will bring and he moves from his ideal city to the type of design it offers, the issues he identifies bear little resemblance to those that we may be familiar with. The dawning of his "Second Modernity"—"refined, sensory, protected, intelligent, and compromised, a modernity that has lost the war for its universality but won the battle to permanently fence off a territory of the imagination, to become an enduring part of reality" (Branzi, 1988, p. 79)—says more about the 1980s and their preoccupation with all things postmodern than the 2000s. Nevertheless, as we have seen history to be a "nonlinear combinatorics," we will obviously find some resonances with current occupations. These "occupations," then, we have already encountered in trips to Milan: and have seen them crumble on colliding with contemporary realities. The "fencing off" of imaginative territories, for example, in the face of universality seems not only inadequate but damaging to that territory. Fencing-off, turning inwards, unhooking any links with the outside seems to be an action that dooms the territory fenced to entropic stagnation.

The quasi-Renaissasnce studio model we have been discussing under the name "Milan," we must note, holds true of other types of creative practice in other places. In architectural practices the world over, we can see examples of creative practices operating along feudal lines, with practice Lords, tithed Barons and serfs; and the artistic factories of Warhol and Hirst, at different times and places, offer a more 20th Century Fordist model of artistic production. The consequences of a certain rigidity in these feudal/factory systems of running a design studio must mirror those of the cities whose defining principles they follow. We noticed above that the Chinese state in the middle of the 15th Century turned inwards at a time when it could have gone on to rule the millenium, and that this introversion went hand-in-hand with ossification and stagnation. What is to stop design—and here I must state *all* design, not just that found in/as Milan—following the same fate if it operates according to a similar blueprint? When there is a lack of heterogeneous meshworking in a city, a studio or whatever, the system tends towards imperialistic stagnation. Or, at the moment when the central point of a hierarchy is lost, the rest of the system gradually rigidifies until it is static and dead. In terms of the design system/studio, it either stagnantly churns out work with a definite identity (Mendini); or it has nothing more going for it than museum status (Castiglioni). It becomes, to return to Branzi's phrase, fenced-off.

But there's another way of relating these ideas to design, a way already mapped-out by Christopher Alexander in the mid-1960s in an essay titled 'A City is not a Tree.' He identifies two different ways of viewing the structure of cities: as a tree and as a semilattice.[11] He first gives a whole host of examples of cities as trees, Le Corbusier's design of Chandigarth, Abercrombie and Forshaw's plans for Greater London, Kenzo Tange's plan for Tokyo. The most notable of his examples, however, is the military camp: "It is not possible to have a structure which is a clearer tree. The symbol is apt, for, of course, the organization of the army was designed precisely in order to create discipline and rigidity" (Alexander, 1965). In each of these examples the individual units (housing, shopping, entertainment and so on) exist in a relation whereby they are either contained within each other or they are disjointed: there are no elements (or groups of elements forming a set) which overlap. He complains that in these planned cities, none of the realities of city life, realities which are overlapping, which ooze into and out of each other, are allowed for (we may add that this is exactly the point of the Modernist agenda: life should be rationally organized in rigid hierarchical systems). "Whenever we have a tree structure," he adds, "it means that within this structure no piece of any unit is ever connected to other units, except through the medium of that unit as a whole" (Alexander, 1965). Against these planned, "artificial" cities he opposes "natural" ones. There are, of course, resonances with some of the ideas we have come across in De Landa, especially when we fold his discourses back into the work of Deleuze and Guattari from which much of their theoretical impetus comes. Deleuze and Guattari discuss the relative merits (and demerits) of structures that are arborial and striated, against those that are rhizomatic and smooth. Become rhizomatic and smooth, their work suggests; rather than being arborial and striated.[12] Alexander's tree-like cities would be striated, rigid, rooted firmly, and—importantly in relating to De Landa's urbanizations—hierarchical. The "natural" cities Alexander eulogizes seem to be more rambling, less hierarchical, they are heterogeneous and smooth; in themselves, they are meshworks of overlapping elements—with nodal points patrolling the cusps of these overlaps—themselves having accreted around certain activities and behaviours which flow through, across, under and over them. It is the designer's job, of course, to decide which abstract machine with which to engage. Alexander writes:

Now, why is it that so many designers have conceived cities as trees when the natural structure is in every case a semilattice? Have they done so deliberately, in the belief that a tree structure will serve the people of the city better? Or have they done it because they cannot help it, because they are trapped by a mental habit, perhaps even trapped by the way the mind works…? (Alexander, 1965)

And maybe it is the way some architects practice? As central points in a hierarchy of creative flows, cultivating surrounding talent, ideas and expertise in such a way as to ensure these flows always pour upwards, it is hardly surprising that Alexander sees this practice mirrored in its output.[13] Alexander's solution is simple: promote the overlapping of all the elements (units, sets) constitutive of the city. Alexander's overlap, Vonnegut's collisions, De Landa's meshworking, seem to offer ways out of the fenced-off pool of stagnating design.[14] It is time, then, to imagine what the nonlinear possibilities for design are.

Final Remarks—Future Possiblities

The days of the celebrity solo designer are over. Complex systems are shaped by all the people who use them, and in this new era of collaborative innovation, designers are having to evolve from being the individual authors of objects or buildings, to being the facilitators of change among large groups of people (Thackara, 2005, p. 7).

John Thackara writes—in the passage from his *In the Bubble. Designing in a complex world* (2005) used as the epigram just above—that the time of the superstar designer is over. Designers—and their activities as evidenced through their practices—must cease trying to put themselves at the head of some creative hierarchy and redistribute creative practice among a much wider meshwork. A designer, a design studio, the practice of design is not a tree. Georges Bataille—philosopher, lapsed monk, pornographer—has engaged with similar issues. In a way that would be recognizable to both Spinoza and Vonnegut, Bataille's engagement with "inner experience" leaves him eulogizing ecstacy, as we can see in the epigram at the beginning of this paper:

And ecstacy is the way out! Harmony! Perhaps, but heart-rending. The way out? It suffices that I look for it: I fall back again, inert, pitiful: the way out from project, from the will for a way out! For project is the prison from which I wish to escape (project, discursive experience): I formed the project to escape from project! (Bataille, 1988, p. 59).

Ecstasy—ex-stasis, the moving out of rest, the escape from stagnation, the dissolution of rule-based systems,[15] the end of project (as a teleological process)—is what Bataille uses to express his urge away from a point of idealized spirituality (interiority, especially as it is articulated by phenomenologists). Similarly, Vonnegut's characters and stories point outwards and in so doing they all collide with each other. This is the point. Colliding promotes friction the residue of which is an overlapping and meshworking. And in these collisions, in the friction they generate, the need for any superstar status is lost. This is the point too.

How can design operate like this? Just above we saw design practice operating according to the principles of the city as a central point in a hierarchy: tree-like and rigid. We need to see if any current practice works as node in a meshwork, promoting overlapping and collisions. In order to do this let us work backwards, let us first examine what we do not want. We would need a design studio that did not identify itself too rigidly, did not structure itself according to a hierarchy of power and creative status with a Master at its head delivering design diktat. The flows of experience and expertise, of youthful vigour and passion, and the relevance of these to different situations, would be nurtured in ways to affect the most friction. Such nonlinear collision making will take precedence over longevity. Such a practice would need to recognize that it is a waystation within a wide network of ideas, practices and cultures; hook into a world of deterritorialized flows, rather than reterritorialize onto structures of domination and power. Or, in the less philosophically convoluted terms of Christopher Alexander, the real world is not structured like a tree, so don't impose such a principle onto it. Further to this, a nonlinear design practice would have to allow into its folds different practitioners and different thinkers; to clump together different nodes within its fields at different moments, dissolving these clumps as necessary. Creativity will be expressed (involved and implicated, evolved and explicated) through the

friction of different collisions; and so keeping (open) the lines of relationships between heterogeneous elements, is crucial. The multiple overlappings and convoluted foldings of such a practice cannot help but be nonlinear.

Some design practices will find this easier to achieve than others. In packaging design, for example—where superstar status of the designers is not an issue, and the relationship between a designed outcome and its user is much more important—such a nonlinearity of practice should involve only a few tweaks. Designers here, on the whole, do not distance themselves from the consumers of their designs; there is an overlapping of experience and a folding back and forth of practice involved in the expression of their practice. In the design of furniture, however, it is another matter; as furniture designers often have a desire to the type of superstardom usually associated with artists. What would a furniture design project be like if it focussed only on the needs, wishes and experiences of users, rather than on the whims of the celebrity designer at the behest of a client? What if furniture was not a tree? Maybe it wouldn't be that different. But what if furniture, for example, grew from the frictions between people and people, between people and places, people, places and objects, between people, places, objects and rituals…? Such designers, like Kurt Vonnegut, would not be telling stories of main characters and privileged events, and imposing these on a remote public. The role of designers within such a chaos would be as facilitators of such friction.

In the same vein, designing need not just relate to that for which it is currently reknowned. In the chaotic soup of interconnected stuff—which includes elements wherein the design and manufacture of products is performed as well in India and China today and tomorrow, as it has been in Milan for the past 50 years—designers now working in Europe will be required more to ensure that creativity of attitude is introduced to clients at a point further up their (clients') hierarchies. The colliding into such high-points in clients' systems will require these systems themselves to engage with creative processes in a much more involved (and evolved and convolved) way; making these clients a little more nonlinear in their apporach. This is just one way in which the facilitation of "change among…people," as mentioned by Thackara above, is dealt with by the nonlinear designer/design company/studio—albeit in a slightly different way to that he has in mind. The more *political* aspect of Thackera's exhortation, insofar as it is to be concretized through the types of analyses I've been mapping here, I have engaged with in other work.[16] Nevertheless, any approach which led to a distribution of control throughout all elements of a system would seem to be more liberatory than one which always demanded imposition of control from the top down. In terms of design—abstracting it purely for the moment from the whole set of inter-related practices from which it should not really be divorced—this would involve engaging in much more material and concrete ways with those of use who are end-users. This will also demand that designers do not fence themselves off, do not carry on regarding themselves as separate from people, by designating "them" as "users". Thus designers should remember that they are part of a set which overlaps with, collides with, or dynamically meshworks with the rest of us. Designs—and any sort of cultural produce—like carapaces, like pearls, like cities, are the creative residue of the friction between a multiplicity of flows; the same should be true of designers and the studios that facilitate their practice.

Acknowledgements

Notes

[1] More recently, John Thackara has wondered whether "[s]ensitivity to context, to relationships, and to consequences are key aspects of the transition from mindless development to *design mindfulness*" (Thackara, 2005, p. 7; Thackara's emphasis). I have often thought that the Milanese design tradition, based, as it seems, on the acceptance by those working in the studios of the directives laid down by the Master(s), spoke more of the Renaissance than it did of the 21st Century. The consequences of this dictatorial approach to design process—where the only sense of mindfulness is to the whims of the Studio Name, will be encountered in more detail later.

[2] We shouldn't forget, even if the Milanese engagements I had witnessed seemed to, that this shift in design and manufacturing power also includes India. We should also remember that such fears are not only exhibited by Europeans. The U.S.-focussed website Core77 published an article by Elaine Ann in 2004 called 'The Top 10 Myths & Truths about Design in China' with the opening lines: "Are you worried as a designer in the U.S. that design jobs will migrate to China? Are you concerned about the increasingly competitive pricing on design jobs and its resultant outsourcing? Are you concerned about the quality of design work over there?"

[3] A proper nonlinear combinatorics must also engage with flows from the future, informing current events; for this we may need to engage with some Quantum Theory, and more fully with the literary work of Kurt Vonnegut.

[4] A key example of this process, for Deleuze and Guattari, is exhibited by Capitalism. It deterritorialzes flows of capital in order to make their increased flow more productive of surplus value, and yet at the same time reterritorializes these flows back onto territorial notions of Nation State, the Police, or The Subject in order that these deterritorial flows of coapital do not undo the very structures which they serve. See especially Deleuze and Guattari (1984) Chapter Three, Savages, Barbarians, Civilized Men pp. 139-271.

[5] These are words that Deleuze uses in his discussion of Expressionism in the work of Spinoza: "To explicate is to evolve, to involve is to implicate. Yet the two terms are not opposites: they simply mark two aspects of expression. […] Expression in general involves and implicates when it expresses, while also explicating and evolving it" (Deleuze, 1990, p. 16). And: "Expression thus bears within it a double movement: one either takes what is expressed as involved, implicit, wound up, in its expression, & so retains only the couple 'expresser-expression'; or one unfolds, explicates, unwinds expression so as to restore what is expressed (leaving the couple 'expresser-expressed')" (Deleuze, 1990, p. 333). This notion of expression is latent in De Landa's work.

[6] I have engaged with some of these issues in a paper called 'entropy (fashion) and emergence (fashioning)' (2005); and I will do so more in my forthcoming book *CyberDesire*. But we should note here, that the philosopher of science Isabelle Stengers (1997, pp. 110-8) discusses the relation between the model and the thing modelled as one of emergence (note the similarities with the discussion of metaphors and blueprints above). Furthermore, Gregory Bateson (2000, pp. 153-5) in discussing interdisciplinarity between scientific disciplines and the ways that linguists may discuss nouns as leaves, engages with similar issues of modelling and analogy.

[7] Félix Guattari discusses similar processes in his Cartographies schizoanalytiques (1989). In one of the later sections 'L'énonciation architecturale' he writes: "Depuis quelques millénaires et peut-être à l'imitation des crustacés ou des termites, les êtres humains ont pris l'habitude de s'entourer de carapaces do toutes sortes. Les édifices, les vêtements, les automobiles, les images et messages qu'ils ne cessent do sécréter leur collent à peau, adhèrent à la chair de leur existance, au moins autant que les os de leur squelette" (Guattari, 1989, p. 291). Furthermore, Christopher Alexander writes: "Each unit in each tree…is the fixed, unchanging residue of some system in the living city (just as a house is the residue of the interactions between the members of a family, their emotions and their belongings; and a freeway is the residue of movement and commercial exchange)" (Alexander, 1965; my emphasis).

[8] Deleuze and Guattari write: "Filiation is administrative and hierarchical, but alliance is political and economic, and expresses power insofar as it is not fused with the hierarchy and cannot be deduced from it, and the economy insofar as it is not identical with administration. Filiation

and alliance are like two forms of primitive capital: fixed capital or filiative stock, and circulating capital or mobile blocks of debts" (Deleuze & Guattari, 1984, p. 146). The instantiation of blood lines at the behest of administrative and hierarchical forces, and the formation of alliances in order to strengthen the flows which lead to such a hierarchy's power, are processes which we can see operating within the sorting and condensation of De Landa.

[9] I think it's worth putting the whole passage from which this snippet of a quotation comes; not only does it provide an insight into the massively nonlinear work of Kurt Vonnegut, but it can serve as a model for a nonlinear design practice too.

"I had no respect whatsoever for the creative works of either the painter or the novelist. I thought Karabekian with his meaningless pictures had entered into a conspiracy with millionaires to make poor people feel stupid. I thought Beatrice Keedsler had joined hands with other old-fashioned storytellers to make people believe that life had leading characters, minor characters, siginificant details, insignificant details, that it had lessons to be learned, tests to be passed, and a beginning, a middle, and an end.

"As I approached my fiftieth birthday, I had become more and more enraged and baffled by the idiot decisions made by my countrymen. And then I had come suddenly to pity them, for I understood how innocent and natural it was for them to behave so abominably, and with such abominable results: They were doing their best to live like people invented in story books. This was the reason Americans shot each other so often: It was a convenient literary device for ending short stories and books.

"Why were so many Americans treated by their government as though their lives were as disposable as paper facial tissues? Because that was the way authors customarily treated bit-part players in their made-up tales.

"And so on.

"Once I uderstood what was making America such a dangerous, unhappy nation of people who had nothing to do with real life, I resolved to shun storytelling. I would write about life. Every person would be exactly as important as any other. All facts would be given equal weightiness. Nothing would be left out. Let others bring order to chaos. I would bring chaos to order, instead, which I think I have done.

"If all writers would do that, then perhaps citizens not in the literary trades will understand that there is no order in the world around us, that we must adapt ourselves to the requirements of chaos instead.

"It is hard to adapt to chaos, but it can be done. I am living proof of that: It can be done" (Vonnegut, 1992, pp. 209-10).

[10] This passage continues: "Sometimes I wrote well about collisions, which meant I was a writing machine in good repair. Sometimes I wrote badly, which meant I was a writing machine in bad repair. I no more harbored sacredness than did a Pontiac, a mousetrap, or a South Bend Lathe." I am also interested in Vonnegut's depiction of himself here as a "writing machine"; this has resonances with the philosophical works of Deleuze and Guattari that I investigate in other places.

[11] "The semilattice axiom goes like this: A collection of sets forms a semilattice if and only if, when two overlapping sets belong to the collection, the set of elements common to both also belong to the ccollection…. The tree axiom states: A collection of sets forms a tree if and only if, for any two sets that belong to the collection either one is wholly contained in the other, or else they are disjoint" (Alexander, 1965: his italics).

[12] There are, of course, many aspects of dissonance between the type of analysis I'm providing and that of Alexander. For example, his very use of the term "natural" to describe his preferred city-structure will grate on the nerves of those of us with postrstructuralist educations in which innate powers (humanity, authorship as well as nature) are brought into question. And his elucidation of the concepts, he connects, of anarchy-dissociation-schizophrenia do not easily map onto the analyses of the same concepts in the workof De Landa, Deleuze and Guattari.

[13] I'll throw in a comment which I discuss at length in other places: maybe such tree-structures and hierarchical empires are the produce of bad architects and designers who, like all artists, have only themselves as focus, the subject and the meaning of their work.

[14] Similarly, once more, Guattari writes in Cartographies schizoanalytiques (1989): "Ré-inventer l'architecture ne saurait plus signifier relancer un style, une école, une théorie à vocation hégémonique, mais recomposer, dans les conditions d'aujourd'hui, l'énonciation architecturale et, en un sens, le métier d'architecte" (Guattari, 1989, p. 292; his emphasis).

[15] Bataille's "discursivity" plays a role not dissimilar to the Apollonian in Nietzsche's *The Birth of Tragedy* (1956), insofar as it rationally stultifies creative urges.

[16] In 'Space, Postmodernism and Cartographies' (Brassett, 1994) I ended my critique of postmodernism's account of space with a call to construct (quoting from Guattari, 1989b) "politically coherent collective praxes" (Brassett, 1994, pp. 18-20), circumventing both postmodernism's relativism and modernism's constriction. In terms of the present essay, I would explicate further these praxes as chaotic, colliding and overlapping. In 'entropy (fashion) and emergence (fashioning)' (Brassett, 2005) I refer to some of Sadie Plant's discussions of nonlinear dynamics in terms of their political import.

References

Alexander, C. (1965). A City is not a Tree. Retrieved 24th January 2006, from

http://www.rudi.net/bookshelf/classics/city/alexander/alexander1.shtml and

http://www.rudi.net/bookshelf/classics/city/alexander/alexander2.shtml

Ann, E. (2004). The Top 10 Myths & Truths about Design in China. Retreived 1st February 2006 from

http://www.core77.com/reactor/08.04_china.asp

Bataille, G. (1988). *Inner Experience* (L. A. Boldt, Trans.). Albany: State University of New York Press. (Original work published 1954)

Bateson, G. (2000). *Steps Towards an Ecology of Mind.* Chicago & London: University of Chicago Press. (Original work published 1972)

BBC News. (2005). China map lays claim to Americas. Retrieved 31st January 2006, from http://news.bbc.co.uk/2/hi/asia-pacific/4609074.stm

Branzi, A. (1988). Learning from Milan. Design and the second Modernity. Cambridge, Mass.: MIT Press.

Brassett, J. (2005). entropy (fashion) and emergence (fashioning). In C. Evans and C. Breward (Eds.), *Fashion and Modernity.* (pp.197-209). Oxford: Berg.

————(1994). Space, Postmodernism and Cartographies. In S. Earnshaw (Ed.), *Postmodern Surroundings* (pp.7-22). Amsterdam & Atlanta: Rodopi Press.

De Landa, M. (1997). *A Thousand Years of Nonlinear History.* New York: Zone Books.

Deleuze, G. (1990). *Expressionism in Philosophy: Spinoza* (M. Joughin, Trans.). New York: Zone Books. (Original work published 1968)

Guattari, F. (1989a). *Cartographies schizoanalytiques.* Paris: Editions Galilée.

————(1989b). *Les trois écologies.* Paris: Editions Galilée.

Luard, T. (2005). China hails legacy of great adventurer. Retrieved 31st January 2006, from http://news.bbc.co.uk/2/hi/asia-pacific/4593717.stm

Nietzsche, F. (1956). *The Birth of Tragedy and The Genealogy of Morals* (F. Golffing, Trans.). Garden City: Doubleday & Co. Inc. (Original works published 1872 and 1887 respectively)

Stengers, I. (1997). Cosmopolitiques. Tome 6. La vie et l'artifice: visages de l'émergence. Paris: Editions La Découverte.

Stone, D. (1989). Science and Scientific Method. In *The Ulm Hochschule für Gestaltung: Ideology and Mehtodology* (chap.4, pp. 26-35). MA Thesis, Royal College of Art, London, UK.

Thackara, J. (2005). *In the Bubble. Designing in a Complex World.* Cambridge, Mass. USA & London: MIT Press.

Vonnegut, K. (1992). *Breakfast of Champions.* London: Vintage Books. (Original work published 1973)