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The Synergy-City;

Planning for a high density, super-symbiotic society

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ABSTRACT
Despite a growing concern about climate change, losses in bio-diversity, etc., the developing world continues to build cities inspired by the same profligate lifestyle that was a main cause of the problem. A solution however, seems to be beyond the scope of individual citizens, designers or planners. Even politicians appear unwilling or unable to confront the issues in a serious way. One reason for this is that the discourse of 'sustainability' is sometimes confused, self-contradictory, and unappealing to voters and consumers. The article explores this problem, suggesting that a more effective discourse would probably need to inspire us into leading a more 'natural' lifestyle that is, therefore, more synergistic on every level. It argues that the natural world is a self-organising, inclusive and holistic system that reduces its own entropy by embracing and optimising difference. In emulating such a system the article advocates a planning discourse that encourages greater reciprocal opportunity and perceived mutual advantage for all 'eco-aware' citizens. This would mean that, instead of discussing reduced consumption, we try to envision synergistic urban living styles that are desirable, attainable, maintainable, and reproducible (Wood, 2004). In addressing these issues the article refers to a current research project that is exploring the need for more inclusive synergies within meta-design. This pilot project found that it would be hard to develop 'eco-cities' without generating a strong consensus that includes the business community, consumers, politicians, educators, bankers, and developers. It asks whether planners might have to become more visible, entrepreneurial, and trans-disciplinary. This would probably lead to closer collaboration between a wider range of enlightened professionals at a much higher level.

Introduction

The article suggests that Lovelock's vision of 'Gaia' (Lovelock, 1979) and Buckminster Fuller's notion of a 'synergy of synergies' (Fuller, 1975) can be used to inspire a 'meta-planning' discourse that identifies a 'win-win-win-win' outcome (Wood, 2005:2). It advocates the use of 'design' in a more positive, but frankly manipulative way, rather than seeking to introduce synergies via planning laws, and other legislative sanctions. Here, imaginative solutions are less available to us than facts and figures. Whilst the figures may clearly show that rising populations and falling levels of non-renewable resources are leading us towards a crisis, they will not show us how to plan for a sustainable urban infrastructure. It therefore calls for a new form of 'meta-design' that can bring many levels of synergy to the modern life-style. Here, in contrast with 'design', 'meta-design' refers to a planning process that is less predictive, and more a process of 'seeding' consensual change (Ascott, 1994, in Giaccardi, 2005). The article also asks whether such an approach might be preferable to the discourse of 'sustainability'. It refers to recent and ongoing research (see http://attainable-utopias.org/DS21) that is funded by the UK's Engineering

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and Physical Sciences Research Council and the Arts and Humanities Research Council. In seeking to make environmentally positive design more effective, this project invites a more entrepreneurial, holistic, multi-layered, multi-disciplinary, and inclusive approach. Ideally, a holistic and synergistic framework of thought is needed. However, the language we use to appeal for a more ecological style of living tends to make it sounds negative or unrealistic when we use the conventional vernacular of a 'growth economy' to say it. (C.f. Hawken, Lovins, & Lovins, 1999).

The article suggests that we learn to imagine alternative futures in a far more long-term and detailed way. This is because relations between the above factors are highly complex and non-linear. In making this possible it may therefore be necessary for planners to assume a far more active, entrepreneurial, cross-disciplinary, and collaborative role (c.f. Wood, & Nieuwenhuijze, 2006). Just as human health is equivalent to a state of equilibrium among many complex factors, so a healthy city reconciles and balances many factors such as those at the semantic, metabolic, political, physical, aesthetic, and spiritual levels. Today, more than half of the world's population lives in cities. Arguably, a well-planned city is an integrated system that enhances local climatic conditions and encourages its inhabitants to nurture better ones. If so, citizens would become increasingly attuned to their locality, rewarded with high quality food, good social enfranchisement, health and recreation. The designers and planners who create our eco-cities of the future will therefore need to be able to work with more coherent, complex and multi-layered systems. These systems must support a diversity of aesthetic, religious, social and cultural values and beliefs. They must, in turn, be compatible with a range of ecologically benign energy resources, food production methods, and patterns of work. Perhaps a more comprehensive approach to this problem would help us all to forestall climate change, armed struggle, pandemic disease and pestilence, short of draconian legislation. Part of this process will entail the promotion of planned and designed environments that invite their occupants to cultivate higher levels of social, political, ideological, and biological diversity.

We Need a More Comprehensive Approach

Because all of these issues are compresent, co-creative and co-dependent, a 'joined-up' approach is vital. For example, attempts to eradicate poverty simply by writing off international debts could be counterproductive unless we can also avert serious land-loss and/or meteorological disaster. These issues pose a particular challenge for urban planners in the developing world, where high levels of congestion and urban poverty (around 50%) go hand-in-hand. On the other hand, planning for high-density living is also an opportunity for making energy savings by 'synergising' our lifestyles. One of the major challenges lies in mobilising a network of appropriate agencies within a short time. The developed world has enjoyed an unprecedented level of prosperity that was made possible by automation and a growth-oriented economic system. Unfortunately, this apparent stability is only sustained by economic growth, and growth has only been sustained by cheap fossil fuels. By normalising this approach, corporations, mainstream economists, and politicians have sustained the illusion that economic growth, consumption, and profit are as important as Nature itself. Unfortunately, without the growth economy we would have an entirely different world order that, for political reasons, may seem ideologically alien. This breeds confusion and alienation. Where Brundtland (1987) sought to unify industry and society under a clear and simple quest for 'sustainable development', today we have more than 70 different definitions for 'sustainability' (Holmberg & Sandbrook, 1992; Pearce et al., 1989, cited in Davey, Wootton, Boyko, & Cooper, 2005). As some of these terms are confused, misleading, or even self-contradictory, it is unlikely that we will see a strong enough resurgence of interest around 'sustainability' to transform behaviour and expectation. Perhaps it is for this reason that politicians are able to sidestep the most blatant environmental issues.

In the 21st century, increasing levels of consumption are made possible by a widening

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radius of access to the major currencies. This is no longer just a geo-spatial issue. In the last decade or so, instant, online shopping has been marketed to portray a lifestyle free from cares and costs. Unfortunately, the eCommerce and 'instant credit' revolution is removing the boundaries that hitherto kept transactions within the locality. In a stridently individualistic, anthropocentric, consumer-centred ideology, digital currency systems were capitalism's way to break down the final frontiers of place and time. Ultimately, eCommerce promises the customer anything, anytime, anywhere. We have developed debt-oriented banking systems to bring about an uninterrupted flow of transactions that exceed genuine user demand, or availability of resources. Thanks to a hidden army of engineers, trendsetters, market researchers, fashion models, and advertising designers the richest nations live on credit. Digital banking makes it just as easy to order a 'free delivery' American pizza as it does to get a Thai curry. 'One-click' shopping enables you to choose between a long weekend at a 'Slow City' in Italy, or a birthday excursion to Disney World. Whether you buy a gas-guzzling Hummer SUV, or the 'greener' Toyota Prius, the transaction process is just as easy. This is what Bill Gates proudly dubbed 'capitalism without friction' (1999). Unfortunately, the economic dynamics this represents has made it impossible for even the smartest, most ecologically aware design companies, architectural practices, or planning offices to find a way to 'green' the planet. An important factor in developing ecological cities will be the ability to establish the optimum conditions for personal growth and development, neighbourliness and a respect for difference. Rights should balance responsibilities.

Despite a slow but steady growth in the public awareness of environmentalism over the last three or four decades the severity of our ecological plight has yet to force a necessary level of change in public service, business, and everyday life. This is because, within the logic of consumption, the 'consumer is King'. At present, consumption appears to offer individual rights without obvious responsibility. All of us, even as infants, sense that it is our moral duty to acquaint ourselves with the world of brands, prices, styles, value-for-money, celebrity endorsement, and how and where to enjoy spending our money. It is what has fuelled the slowly emerging apathy and eventual resistance to eco-design. This is de-moralising for designers who strive to improve the energy efficiency of a building or vehicle. Often, the energy or other savings in one product are more than cancelled out by the pressure on all of us to consume more, and to travel further, and more frequently, as a matter of routine. Not surprisingly, consumer-centred, representative democracy has conspicuously failed to wean us away from a way of life that threatens us with extinction. It is because the system of production has become such a powerful and convenient substitute for political consensus that the main moral imperative of the late twentieth consumer is to work, spend and receive. In this sense, the act of choice is what defines one's generic role as a citizen-consumer. Similarly, electors are not expected to imagine how they, or we, would really like to live. In this context, the idea of 'dreaming' merely refers to the process of daring to imagine situations that currently seem implausible or impossible. However, this strongly anti-sceptical approach may seem superficial or strange because we live in a post-Cartesian, post-Galilean and post-Baconian era in which solipsistic arguments support crass styles of pragmatism. An example of this has been the misguided pursuit of GDP as a good way to create well-being. This will no longer work to our collective advantage. We need to devise a new discourse of 'balance', rather than 'control'.

The Need to Monitor Equilibrium within the System

To my knowledge, there are few tools that allow us to monitor whole conditions of balance at an ecological level. One exception is the notion of an 'Ecological Footprint' (Wackernagel and Rees, 1994). This is a wonderfully simple way to estimate the stable environmental 'land cost' of sustaining a citizen, or community. It is based on the ratio between the useable land areas available, globally, and the size of the total population on Earth. The Earth currently has just 1.8 global hectares (4.45 acres) of productive land available per person. However, by 2001, we were using 2.2 global hectares (5.44 acres) per person to

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sustain current lifestyles, i.e. 130% of what we needed in 1961. Up to a certain size of footprint the global population will sustain itself without harming the ecosystem. Unfortunately, the world is already living at what is called the 'overshoot' zone, in which we are using up resources that will compromise our ability to survive in the future. We now, therefore, risk depleting and damaging the ecosystem, perhaps irreparably. While the ecological footprints of the rich nations have increased by over three times their size since 1900, in the same period, population growth has effectively reduced our ecological resources/person by a similar amount. In 1995 my own city, London, was been estimated to have an ecological footprint of 125 times its own size. In 2000 a larger survey showed that this has increased to 293 times its size – roughly twice the size of the whole of the UK.

Although the arithmetic of a current 'ecological footprint' may be simple, the anticipatory forces that govern it are more complex. The USA presently needs an ecological footprint of around 4.7 times its own land area to survive at its current living style. Yet, whilst there are other, smaller countries that live well beyond this rate, the USA is a special case, because the 'American dream' is constantly being reinforced and exported around the world. It is a 'meme' that is carried via political rhetoric, products, and other entertainment and life-style' products, goods, services, and ephemera. All over the world people see and hear distinctively American images that are associated with conspicuous consumption and profligate waste. They seem to prove that it is glamorous and possible, if not desirable, to live in this way. They may be artefactual rather than real, but they are influential and indelible. Although this is only one example it illustrates that the task is complex because it comprises a mixture of social, economic, cultural, ideological, religious, and philosophical components that work together in subtle ways. Ideally, in order to balance their effects, city planners and designers will have to accommodate an equivalent richness of understanding within a broad raft of strategies and methodologies.

Over the next decade or two, as oil prices soar, societal transformation will prove increasingly costly and painful (Douthwaite, 2003). Human beings do not like step change. In a so-called 'free society' we prefer to evolve our social habitat by copying and interpreting what we see and admire. Obviously, this is a way to pass on both 'bad', and 'good' habits. The spirit of New York is memetic because it has inspired the setting for a century of film genres depicting greed, crime, vice, passion and prohibition. The charm of its setting is therefore sustained by images of pleasure and danger, within which capacious wealth lives cheek-by-jowl with destitution and hardship. These, and many other myths and half-truths are embellished in a million lurid novels, plays, and films in which we can feel the searing heat belching up from gratings in the sidewalk, or experience the sheer noise and weight of the cars, trucks, yellow cabs and police cars that hurtle relentlessly through its wide streets, on a '24-7' basis. Even if we know that this image is exaggerated by a torrent of TV crime thrillers we will find it hard to ignore. This 'hyper real' aspect of the city remains more 'real' than the post-9-11 New York of civil courtesy, and a growing awareness of environmental issues. However, the stereotypical image is hard to erase, and we are still likely to emulate its spirit because we seem to find it fascinating and attractive. But perhaps we would find it even more attractive if it does not offer the best template for ecological well-being.

New York is special because of its status, but it is not unique. Cities may always have been places where opportunity and reward attract injustice and discrimination. In the famous urban myth of the same name, Dick Whittington is surprised to learn that the London of which he dreamed was a fantasy. However, as we know, this frightening realisation was insufficient to persuade him to return to the countryside. His story endures because human beings enjoy narratives in which the pilgrim survives enormous dangers in order to find fame and fortune. The moral of his tale is that cities survive by attracting workers who are opportunistic and ambitious. This is why the myth is self-perpetuating. Today, twenty cities now have a population of more than 10 million and more than half the people on the

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planet are city dwellers. Urban planning has therefore become one of the most crucial challenges. In poor urban communities people spend an average of 30 percent more on food than in rural areas, but they consume fewer calories. This is not just because of low incomes and high fuel cost. In many of these areas between 10 and 30 percent of food produce is lost or spoiled because of the need to send it over long distances, especially as the roads and vehicles are usually poorly maintained. The obvious way to address this issue is to grow more food in the cities themselves. This happens already to quite a large extent. At present 200 million urban farmers supply food to about 700 million city dwellers – one-quarter of the world's urban population. However, urban farming can create particular issues of health, especially where contamination problems and overcrowding can cause the loss or spoilage of food. Without the right kind of insightful innovations in planning and design, the failure to sustain the natural reserves that ensure safe, local, and affordable food could precipitate disaster. New methods of food production and other services may therefore need to be developed quickly and imaginatively if we are to reduce the energy overheads and ecological problems associated with remote, intensive, monocultural methods of farming. But even if we could find the appropriate approach, how would we implement it in a time of increasing competition for dwindling resources? This situation calls for nothing less than a de-centralised system of consensual governance and a new discourse that is able to explain how things work in a holistic and relational way.

'Sustainability' offers a 'lose-win' situation

In seeking a high order of synergy, the idea of 'symbiosis' (i.e. 'win-win') is useful because it is a familiar and appealing idea. One way to explain this is by visualising any given situation as capable of supporting additional winners and fewer losers. A 'win-win' situation can be thought of as two players in a symbiotic relationship. However, this may seem to be in our best interests, it may be difficult to persuade communities to change their behaviour unless they can see clear advantages that accord with their own world-view. This was why Adam Smith's original ethical argument in favour of 'self-help' (Smith, 1776) was appealing. In suggesting that self-centred diligence would lead to a shared benefit for the community, it offered all citizens a 'win-win' (i.e. doubly attractive) situation. Unfortunately, this has evolved into a contagious ethics of consumption in which individual self-gratification is expected to energise the economy, and, thus, to reward everyone. As we have seen, this has proved to be environmentally disastrous. Even worse, where Smith claimed a 'win-win' opportunity, the logic of 'sustainability' appears to offer a 'lose-win' scenario in which citizens must curb their desires in deference to future generations of consumers.

Here, we may be attracted to an eco-mimetic model in which, say, when several tasks are undertaken in parallel there is a possibility that one may help the other without disadvantaging itself. It is customary to identify individual gains and losses when mapping the outcomes of collaboration. We may, for example, adopt categories of advantage in the following way:

1) **Mutually damaging**
   (— / —)
   (Disadvantaging each another in pursuing exclusive advantage)

2) **Parasitic**
   (— / +)
   (High dependency on the fitness of one, rather than on both partners)

3) **Symbiotic**
   (+ / +)
   (Mutually supportive collaboration)

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4) Super-symbiotic
>(+ / +)
(Symbiosis that also enhances context, or that acts 'for' additional beneficiaries who share the same eco-system yet may be unknown or beyond comprehension)

Unfortunately, faced with this kind of choice, humans frequently disregard the negative consequences of their immediate actions by seeing it as a choice between a strong, immediate, personal gain versus a small (i.e. when distributed) collective, long-term loss (Hardin, 1972).

Figure 1 - The 'win-win' scenario mapped as a single relationship

The idea of two individuals who share a mutually beneficial relationship is familiar, but what happens when we bring in additional players to introduce synergies beyond the existing relationship? Surprisingly, our research has shown that the possible advantage increases dramatically. With four players (i.e. 'Win-Win-Win-Win') is six times more advantageous than two players (i.e. 'Win-Win'). A four-fold model is optimal because it combines a graspable (tetrahedral) topology that reveals optimum advantage to all four players. Where a 'win-win' situation can be represented as two entities linked by a single relation, a 'win-win-win-win' situation represents the presence of six relations (see figure 2). Hence by merely doubling the number of 'players' it is possible to achieve a six-fold increase in the number of mutual relations that are potentially synergistic. By mapping it as a whole system we are better able to look for opportunities that may otherwise be overlooked.

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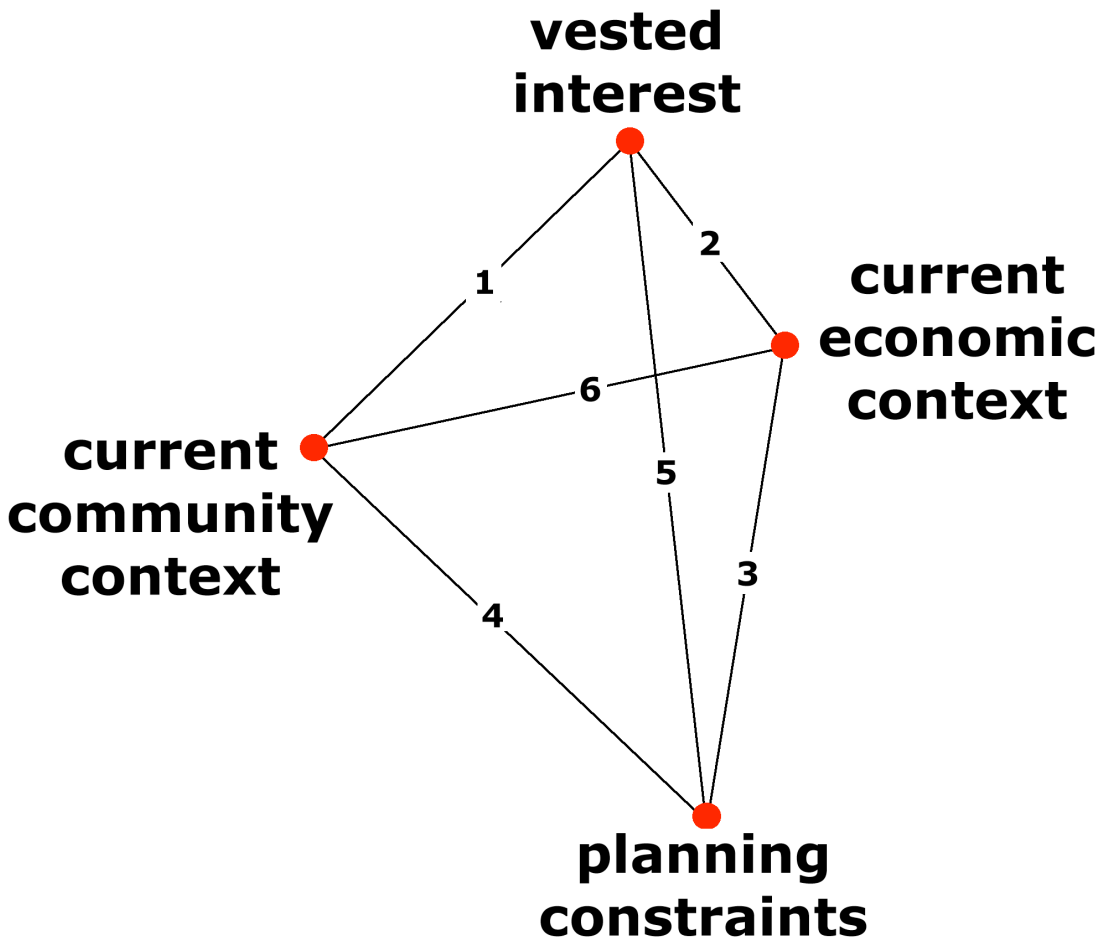

Figure 2 - A potential 'win-win-win-win' scenario mapped as a tetrahedron

Looking for 'Ecologies of Scale'

Ross Ashby is famous within cybernetics circles for his 'law of requisite variety' (Ashby, 1956). His maxim states that 'only internal variety can successfully control its own variety' (*my interpretation*). This implies that externally imposed 'improvements' may fail to achieve a designer's purpose if s/he is not part of, or sufficiently in touch with the internal complexities of the system itself. Here, by 'requisite features' we mean the minimum number of elements that are essential to the system's survival. It is important to ensure that a good balance of interests is represented. Hence it is prudent to include aspects of the social, ethical, economic, natural, aesthetics, etc. It is difficult to think beyond linear concepts in which we can apply a simple ratio, or a small number of key parameters. An example of linear thinking is the notion of 'economies of scale'. This has proved helpful in securing 'fuel savings' or, for example, reducing the 'power-weight ratio' of an engine. Instead, we should look for 'ecologies of scale' in which all the relevant co-dependencies within the 'whole' system can be re-balanced to ensure a more effective equilibrium that can be shared with its environment (c.f. Lovelock, 1979). Synergies may be more, or less welcome, depending on how we interpret their effect on our survival. One type of unwelcome synergy is called a 'vicious circle'. This is a bad (i.e. subjectively speaking), fairly closed system that perpetuates itself by positive feedback. In theory, it can be mapped and re-balanced to find unforeseen opportunities. Hence a stable market just

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before the introduction of a highly successful product can be regarded as a 'vicious circle' that has the potential to become a 'virtuous circle' (i.e. the product's wide propagation within the market). What is the difference between the market before, and the market after the sudden popularity of the product? In many cases the differences are very subtle and widely distributed. How might we monitor and use them in the planning process?

Several of our design synergy research team are experts in systemic medicine. One of them, Dr. Vadim Kvitash, has developed a holistic, non-linear mapping system that is particularly appropriate to our task. One aspect of Dr. Kvitash's work he has called 'Relonics' (c.f. Kvitash, & Gorbis, 2005) maps relations using simple 'node and line' (Eulerian) topologies. Dr. Kvitash's system seeks to investigate the interdependent relations that, together, regulate the organism's condition of balance or equilibrium. It can be used to map the relations between chemical constituents of the blood. An important feature of this work is that it utilises laboratory data that is readily available but that would be indiscernible using orthodox techniques. In another application, by mapping the symptoms and relations between far more of the symptoms than are normally correlated he can forecast whether or not a patient will die within 3 years of a heart attack. This diagnosis method has proved to be 95% accurate. (Kvitash, 2005) It works by mapping the salient components as nodes on a circle. Each node is linked to all the others in order to acknowledge all of the obvious 'channels' that may be monitored and adjusted to create a state of dynamic equilibrium. (see http://attainable-utopias.org/ds21/RelonicsTools) We believe this technique is suitable for use in the fields of management, design, and urban planning. It could, perhaps, help teams of entrepreneurial planners and designers to identify hitherto unnoticed opportunities, and to re-balance them with other discrete elements, within the context of the whole system.

Another participant in the ds21 project is the architect, Bill Dunster, who is renowned for launching a pioneering apartment building called 'BedZed' (Beddington Zero Energy) in Surrey, UK during 2003. Arguably, this type of initiative had been feasible at any time during the last few decades. Despite its high standards, this project used only technologies and methods that had been readily available for many years. Also, virtually all materials had been sourced from within a 35-mile radius. This kind of housing is in great demand, but Bill had found it extremely difficult to overcome all of the negative forces that tend to inhibit similar schemes from succeeding. Despite attracting widespread publicity, there have been surprisingly few projects that have emulated the enormous success and popularity of BedZed. The reasons for this are complex. Arguably, they can be mapped as a cluster of agencies, many of which are mutually reinforcing. This partly because many players believe that they make decisions should be contingent on the views they attribute to others within the cluster. As such, we have a 'vicious circle'. However, once built, BedZed demonstrated achievability. Our hope is that, by mapping and intervening at critical points, we would more readily be able to turn similar projects into a 'virtuous circle'. Using some techniques of Vadim Kvitash it is possible to make a map of relations that help to identify auspicious or inauspicious factors and to see how they influence the whole picture. A simple model, for example, is likely to include banks, developers, planning authorities, potential customers, etc.

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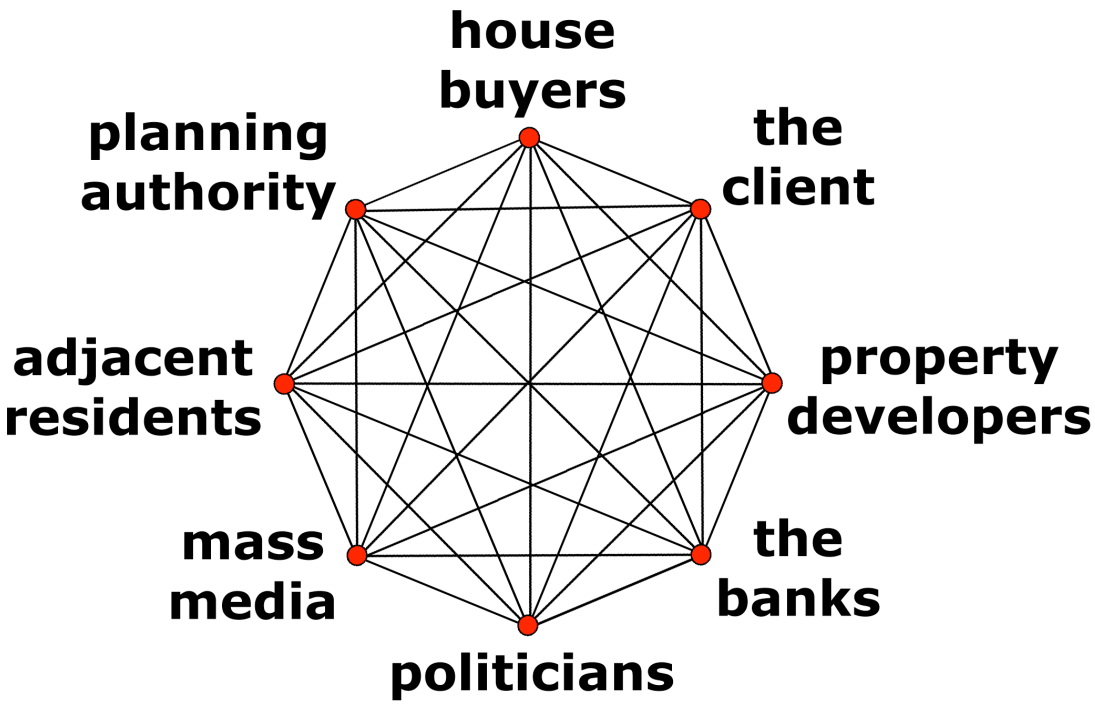

Figure 1. The 28 possible relationships in an 8-player system

Figure 1 shows all of the above 8 players (the dots on the diagram) linked together (by lines) in a maximum set of 28 links. If we are to represent all of the possible relations within the system, it would be wise to explore each link in turn, using a positively creative, opportunistic, and open-minded approach. This may mean that the 28 links can also be represented as 56 relational viewpoints. By using this map opportunistically and creatively it is possible to design points of critical intervention, and to devise new solutions to this kind of complex problem. Symbiosis can be seen as a context represented as many co-dependent relations. If we could encourage enough people to visualise the advantage of a fourth order synergy from any, or all perspectives – i.e. economic, personal, social, ecological, etc., we might invoke spontaneous pockets of synergy. The art of working at a holistic (metadesign) level will be to anticipate unexpected changes and to be ready to work opportunistically with small shifts in the status quo. Obviously, as the number of interdependent factors increases, the number of interconnecting relations rises in a steepening curve. In working with complexity at a level of mnemonic convenience for the human mind we, we may seek to adopt a tetrahedral topology (Fuller, 1975) as this may represent an optimum level (Wood, 2005:1). When we move beyond a four-fold model we tend to move away from an algorithmic approach and towards a heuristic one. This is the boundary at which we will need new methods of metadesigning.

At a less abstract level, this kind of meta-designing might be rather like gardening in large teams, in which good plans and designs must be expected to produce the unexpected. Meta-designers may therefore need to see their task as a long term and continuous process of consensual cultivation, nurturing, and incremental learning and adaptation to a self-inclusive Nature. Arguably, a holistic approach should be able to map, not only a full range of significant 'players', but also the relations among them. This will be required to work with the sufficient number of levels in order to deliver what would be an immensely complex, self-healing organism in which benign synergies can emerge from other synergies, and which, in effect operates as synergies-within-synergies. 'Synergy' is a

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possible outcome of effective Meta-design. The idea has become familiar to many in management but its definition is not very clear. Normally, it is seen as a situation in which the whole is greater than the sum of the parts, or more colloquially, 2+2>4. This arithmetical shorthand is misleading, however, and we may imagine how complex and emergent the 'system' becomes when it consists of human beings. Buckminster Fuller described it as "the behaviour of whole systems unpredicted by the behaviour of their parts taken separately" (Fuller, 1975).

If it proves possible to apply Dr. Kvitash's methods to urban planning, how might we identify useful parameters that would make eco-communities more adaptive, fine-grained, self-regulatory, and therefore less entropic? One solution might be to promote beneficial synergies. It is likely, therefore, that to achieve this we need to avoid single value performance indicators. Synergy is a term that can be used to describe the extraordinarily high level of organic co-existence, heterogeneity, stability (and thermo-dynamic efficiency) that is found in living creatures. It refers to the accord that exists, not only between individual parts of the whole, but also between those individual parts and their separate relations to the whole. One of the difficulties of defining 'synergy' is that – in its common usage - several very different levels of complexity and behaviour are included within the same category. Synergy therefore comes in many 'flavours', whether beneficial, or not. The chemist Michael Polanyi (1969) offers some useful insight into the internal hierarchy and behaviour of synergy. He speaks of a 'hierarchy of levels' that operate in within more or less inclusive boundaries. Each level works under principles that are irreducible to the principles that operate at the levels below. In other words, hierarchical systems may demonstrate a number of different, 'level-specific' characteristics. Importantly, the presence of synergy enables organisms to become adaptively self-aware. Hence, some physical examples are likely to be at the bottom, with higher scales running through chemical, biological, ecological, social, and spiritual elements nearer the top. It can even be applied to a new mode of temporality (Wood, 2003).

Different 'Orders' of Synergy

In order to reflect the many complex levels of advantage, I propose the following orders of synergy:

First Order Synergy
Synergies within an environment that, by comparison with ecological systems, are informationally inert, and in which the key parties or elements benefit from, and/or contribute to a common situation or shared condition unknowingly.

Second Order Synergy
Synergies in which some of the key parties or elements benefit from, and/or contribute to, the shared benefits of the situation by sharing information.

Third Order Synergy
Synergies sustained by information-sharing capabilities that include the regulation of self-identity by some of the parties or elements.

Fourth Order Synergy
Synergies sustained by information-sharing capabilities that include the collective regulation of self-identity.

The political of consensus is changing rapidly, with web-based 'pledge' schemes such as Pledgebank (http://www.pledgebank.com/) or the BBC's Action Network (http://www.bbc.co.uk/dna/actionnetwork/). These systems encourage personal initiatives that can generate contagious forms of optimism and positive action around the identification of opportunity and shared benefit. Some work has been done in developing

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the four-dimensional ethical framework for designers (Wood, 2005:1). Whilst this has been used in an education context, it now needs to be put into field trials. We also need to develop a business model that acknowledge and cultivates (ecological) variety on many levels. From where might we seek inspiration?

Drucker (1978) described a people called the Igorot, who lived in the mountainous regions of the Philippines. Over several centuries, and using only simple tools they maintained a complex and sophisticated irrigation system. The particular cyanobacteria in their ponds had nitrogen-fixing properties that were symbiotically adapted to the rice. This enabled their whole food system to be highly productive. Indeed, one hectare of land enabled them to grow almost enough food to maintain a family of five. Their social and cultural order also helped them to co-ordinate and to regulate their way of life. This is a vital point. Not surprisingly, their intensive work habits were highly co-operative. This may therefore sound a rather idealist concept for modern cities but, in theory, cities have more potential for synergy than a non-urban environment. There are no business reasons why laundries, bakeries, and restaurants should not 'mix and share' their food cultivation, building, heating systems, brand-identity, hospitality policies and customer relations. Indeed, this is where a design synergy approach must reconcile a great many 'purposes' simultaneously. In a synergistic economy visitors to the local might care to enjoy a 'work out' in an electricity-generating gymnasium, afterwards, they could have their clothes laundered while they relax in the solar-heated pool. By aligning enough orders of synergy we may eventually create what Fuller (1975) called a 'synergy of synergies'.

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Biography

John Wood is currently Reader in Design Futures at Goldsmiths University of London and co-founder of the 'Attainable Utopias' network. He was also the author of several Design degrees, including the MA in Design Futures programme at Goldsmiths. He has published over a hundred articles and papers on themes that address the issues of environmental damage, consumption and design. His book "The Virtual Embodied" was published (Routledge) in 1998, and his forthcoming book "Designing for Micro-Utopias" is due in 2006, to be published by Ashgate. In seeking to enrich the ethical discourse that designers adopt when working, Wood has developed a set of writing 'tools' to support creative practice. He runs a 'design & Language' research group, and is consultant to the 'WritingPAD' research project, a large UK-based HEFCE-funded project that explores the way that artists and designers write in an academic context. Between 1990 and 1994 he developed a SGML-based software authoring system for designers called 'IDEAbase'. Before writing several radical, holistic degree courses in Design, Wood was deputy head of Fine Art at Goldsmiths'. Now, strictly as a hobby, Wood occasionally plays keyboards with the rock band 'Deaf School', which has made five albums.

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