

Changing The Game: Sustainability Without Compromise

Darrell Mann

Director, Systematic Innovation

Phone: +44 (1275) 337500 Fax: +44 (1275) 337509

E-mail: Darrell.Mann@systematic-innovation.com

ABSTRACT

The paper explores some of the key issues surrounding the large-scale failure of 'sustainability' in its broadest sense to influence the ways in which business models are designed and implemented. It suggests that the subject will never play a significant role in business scenarios built on traditional compromise-based philosophies; successful sustainability, demands disruptive, contradiction-challenging, 'win-win' modes of thinking. The paper describes a number of such disruptive thinking strategies and their application in a number of case study examples taken from a range of different business sectors.

INTRODUCTION

Traditional business logic assumes a whack-a-mole perspective that says it is not possible to improve one aspect of a system without making something else worse. In terms of 'sustainability', this perspective often creates the problem (supported by a deal of corroborating evidence from the market) that although customers will often say they want more sustainable products and services, the vast majority are rarely if ever prepared to compromise anything else to get them. Given a choice between performance, price, convenience, or any other product parameter, and sustainability, the large majority of customers will place the latter at the bottom of their shopping list. To a significant proportion of customers, 'sustainability' is probably not even on the radar screen. The follow-on consequence of this, is that 'sustainability' is off the radar screen of many business strategists and leaders. It appears clear, in such a climate, that traditional trade-off thinking is not going to result in any kind of sustainability revolution.

The paper argues that achieving a wide-ranging, self-supporting, self-replicating 'sustainability virus' will require a shift in the way business thinks about doing what it does. Specifically, the traditional 'either-or' trade-off and compromise mindset has to change. 'Sustainability **or** cost' for example will never deliver sustainability in today's free market economy.

The paper discusses a unique systematic business concept innovation process that not only encourages organisations to switch from the traditional 'either-or' to a win-win 'and' thinking mode, but also provides effective strategies for achieving exactly those win-win solutions. The underlying theory is built from over a 2000 person years of research distilling the best compromise-eliminating solutions achieved by innovators across all fields of experience.

Although the original research was not originally conducted with ‘sustainability’ as a focus, recent updates – described briefly in the paper – have demonstrated that exactly the same inventive business strategies as have been uncovered in other situations are equally relevant in a competitive business strategy for sustainability setting. The net finding of the work is that someone, somewhere has already solved something like your competitive-business-and-sustainability problem.

The paper presents a number of case study examples of business concept innovations capable of delivering ‘low cost **and** sustainability’, ‘aesthetic appeal **and** sustainability’ and ‘profit **and** sustainability’ across a range of product and service sectors from fast-moving consumer goods to banking to automobile design.

Two Means of Achieving a Positive Sustainability Virus

Systematic innovation research has uncovered some of the underlying dynamics governing the manner in which systems – whether they are technical, business, artistic, political or social – evolve. There are two key elements to these dynamics; one involving destination, the other involving method of travel.

In terms of destination, the research has built on the findings of value engineering [1], to show that the over-riding dynamic of evolution is towards an end-point – called ‘ideal final result’ – in which a system delivers the desired function or benefit (the two terms are used interchangeably in this context) without cost or harm. In travelling towards this end-point, systems are measured in terms of increasing ‘ideality’. Ideality is defined as:-

$$\text{Ideality} = \frac{\text{(Perceived) Benefits}}{\text{(Cost + Harm)}}$$

In terms of method of travel, it has been shown that as systems begin to hit limits that ultimately prevent them from reaching the ultimate – ideal final result – evolutionary end point, it is the identification and resolution of contradictions that permits progress beyond such limits to take place.

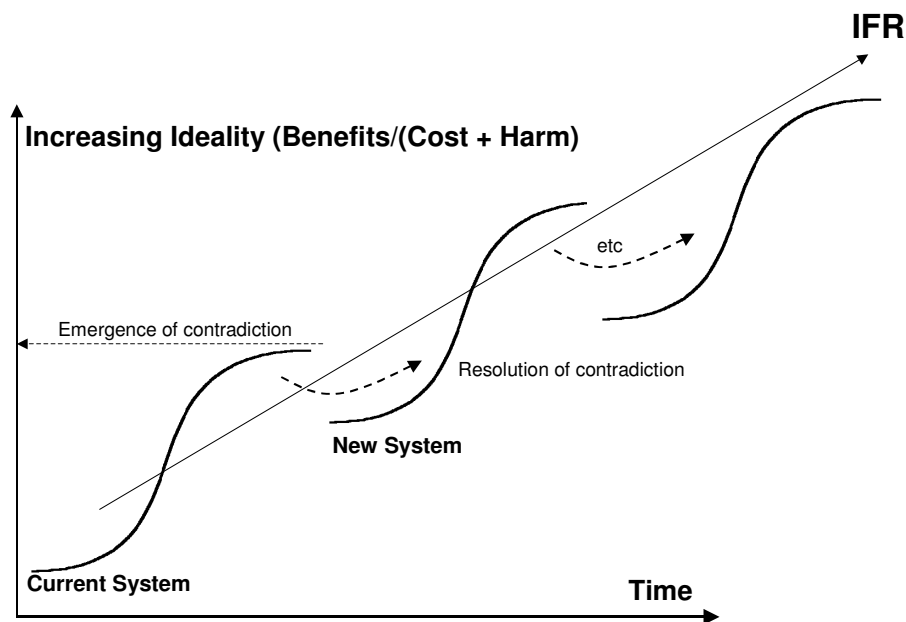


Figure 1: Destination and Method of Travel in System Evolution

Given these two simple (as opposed to simplistic) philosophical elements as start points, it seems clear that there are two means through which 'sustainability' (generally speaking, 'harm' in the ideality equation) can be achieved. The first involves focus on the 'perceived' aspect of the ideality equation – customers will be attracted to sustainability if and when they perceive it is important. Put in simple terms, customers will buy sustainability when they perceive that it is a 'cool' thing to do.

The second route to a more sustainable future involves the resolution of contradictions between the different parts of the ideality equation. Only a small proportion of dedicated consumers are prepared to buy products or services that deliver less 'harm' if at the same time it gives them less benefit or greater cost. The bulk of consumers will be attracted to 'sustainability' only if it does not require them to simultaneously accept inferior functionality or higher price. Somewhere, therefore, the contradictions between benefit and harm and cost and harm need to be resolved.

The next two sections of the paper examine these two – 'cool' and 'contradiction-eliminating' – strategies in the context of proven, successful business models and those predicted by the systematic innovation research findings.

'Cool to be Sustainable'

As has been described earlier, the fundamental dynamics of evolution are driven by the successive identification and elimination of contradictions. As an initial thought on the subject of making sustainability 'cool', it appears, as in several other areas (from a range as broad as religion to smoking, preventative medicine to selling creativity methods) that the limiting contradiction preventing all from achieving the status of self-sustaining 'viruses' is that the already 'converted' know the necessary facts and means, but are almost the antithesis of who the market wants to hear about them from. In other words, a TRIZ person should be the last person preaching the benefits of TRIZ; a 'green' (to use a term that is already viewed as derogatory in the eyes of many) is similarly the very last person the unconverted want telling them how important it is to be green. Almost by definition, a 'green' will not convince the rest of the world to be green. Until this thorny, paradoxical, contradiction is resolved, it is very unlikely that sustainability will ever become cool.

So what about those things that have successfully achieved 'virus' status – things like Harry Potter, Coca-Cola, McDonalds? If one of the key problem solving strategies of systematic innovation is to abstract ideas and concepts from those who have faced similar situations and found successful solution models, then what can be learned from those successes and then be applied to the matter of sustainability?

First a couple of examples: one closely linked to traditional 'sustainability' territory, the other at first glance apparently not. Both are featured examples in 'Beyond Disruption' [2] a book that takes contradiction challenging in the advertising industry as its primary thesis.

The first example relates to the 'Dubble' chocolate bar in the UK. Dubble is a joint venture between celebrity charity Comic Relief and a co-operative of 35,000 Ghanaian cocoa farmers aimed at creating an ethical trade product. The problem faced by the venture at launch was how to get the sustained campaign of awareness necessary to get the chocolate bar stocked in a wide range of shops and bought by consumers, when there was only a very limited available promotion budget. The strategy involved attaching free chocolate bars to popular boys' and girls' magazines and using them plus a co-ordinating web site to become 'Dubble Agents' and going to ask for the chocolate bar in any shops they saw wasn't stocking it. The campaign succeeded on several fronts – it combined a pleasurable eating experience with

ethical trade, it tapped into an excellent untapped resource – children’s’ love of doing things they’re not traditionally supposed to do – and combined them to form a self-spreading, self-sustaining system.

The second relates to Absolut vodka. In certain circles, rightly or wrongly, vodka is already clearly identified with ‘cool’. Absolut’s problem was how to discriminate themselves from the countless other ‘cool’ vodka manufacturers in the world. Their answer – initiated through the now famous ‘Absolut Warhol’ advertising campaign – was to tap in to a non-traditional (read; ‘disruptive’) sector of the ‘cool’ community. Several provocations were used to identify the required disruptive steps. These included ‘who do cool people think are cool?’ ‘Who wouldn’t cool people think were cool until they were specifically asked to think about them?’ ‘By what mechanisms would these cool people pass on their influence to others?’ Some of the answers Absolut came up with beyond the Andy Warhol launch advert were Douglas Coupland, Dominick Dunne, Donna Karan, Tracy Chevalier and Mary McGarry Morris. In the case of the novelists, the disruptive advertising strategy involved them authoring short stories featuring an Absolut bottle or something that looked like it.

The generic point from both of these examples is the importance of setting up self-re-enforcing systems; setting up an evolutionary flow that builds and maintains its own momentum (Figure 2).

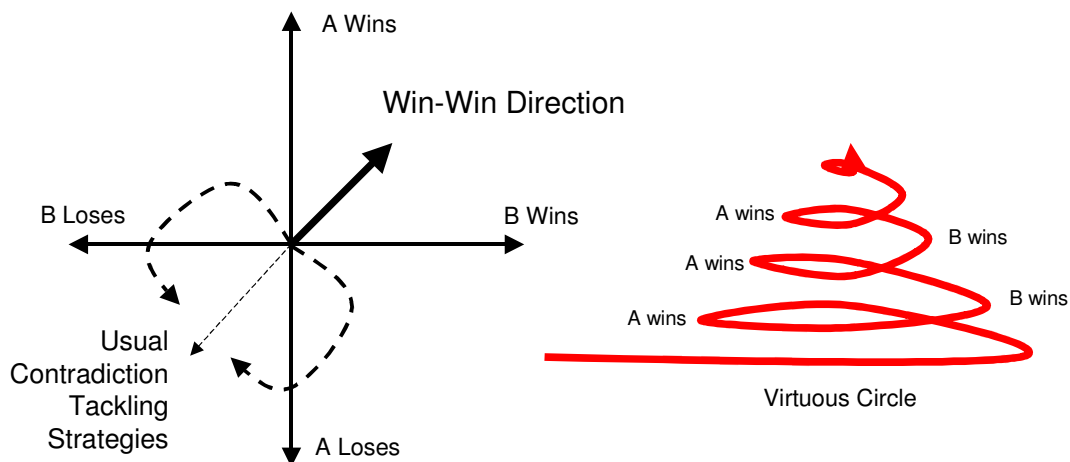


Figure 2: Self-Re-enforcing Virtuous Circles

For more information on how systematic innovation techniques can be used to create the disruptions that initiate these kinds of win-win systems, see [3].

The theme of ‘self-x’ systems, where x is any desirable function, is discussed further in Reference [4] and in the next section on contradiction resolution.

Win-Win Contradiction Elimination

In addition to identifying contradiction resolution as a fundamental driver of evolution, systematic innovation research has, through an ongoing analysis of the global patent, technical and business knowledge-base, codified the strategies of inventive success. To date, after analysis of over a million cases, the list of known strategies totals just 40. In other words, different industries and disciplines do an awful lot of re-inventing the wheel in the mistaken belief that their problems are ‘unique’. The 40 strategies are relevant to any type of application, albeit they will be used more or less frequently dependent on the type of

contradiction being faced. As far as sustainability-relevant issues is concerned, the most likely strategies to help deliver a win-win solution, based on known successful solutions are known to be those illustrated in Figure 3.

Strategy Number	Strategy Title	Generic Interpretations
22	'Blessing in Disguise'	<ul style="list-style-type: none"> * Use harmful factors (particularly, harmful effects of the environment or surroundings) to achieve a positive effect * Eliminate the primary harmful action by adding it to another harmful action to resolve the problem
35	'Parameter Changes'	<ul style="list-style-type: none"> * Change an object's physical state * Change the concentration or consistency * Change the degree of flexibility
2	'Separation/Taking Out'	<ul style="list-style-type: none"> * Separate an interfering part or property from an object, or single out the only the necessary part (or property) of an object
1	'Segmentation'	<ul style="list-style-type: none"> * Divide an object into independent parts * Make an object easy to disassemble * Change the degree of fragmentation or segmentation
25	'Self-Service'	<ul style="list-style-type: none"> * Make an object serve itself by performing auxiliary helpful functions * Use waste (or lost) resources, energy, or substances

Figure 3: Inventive Strategies Most Likely Resolve Sustainability Contradictions
(in descending order of frequency of use)

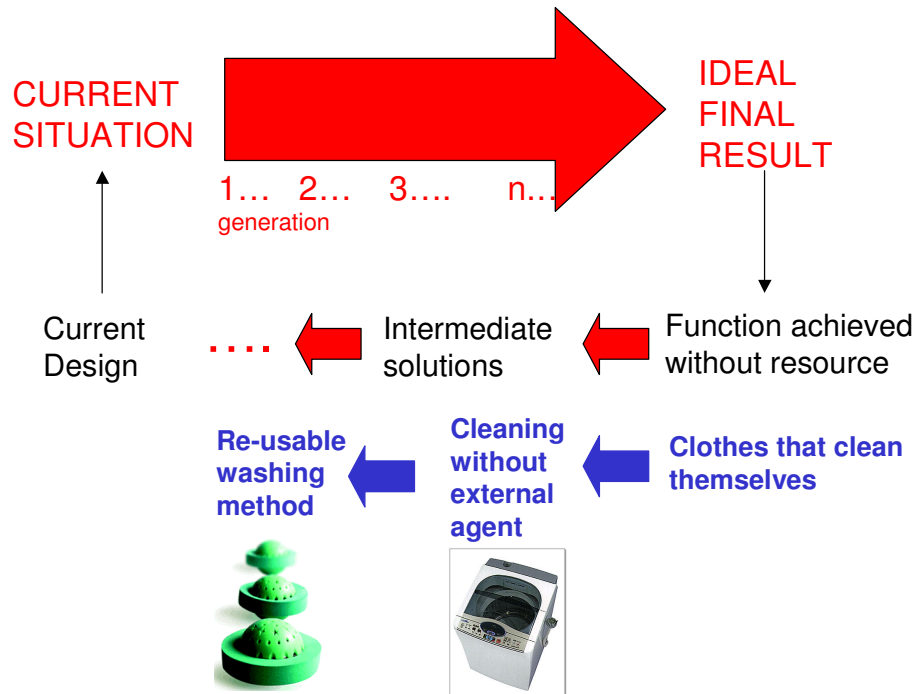
The list emerges from a combined examination of the Contradiction Matrix found in classical TRIZ [1] plus the business-specific Matrix recently published in [5].

It is instructive to examine these strategies in a little more detail and look at examples where they have been used to solve a sustainability contradiction in either a business or combined business/technical sense. One of the dangers of doing this is that the human brain is much more inclined to remember the specific solution rather than the generic trigger that generated it. In systematic innovation terms, these generic solution triggers are the important part – as they represent a unifying structure that allows users to transfer 'good solutions' from one discipline to another, potentially very different one. With this health warning in mind, then, here are some past and future examples:

Self-Service

The preceding advertising applications are both examples of the Self-Service Strategy in action. The Principle is also highly consistent with the evolutionary direction towards an ideal final result in which a function is delivered without cost or harm. In this sense, 'self-x' systems tend to be inherently sustainable and environmentally friendly. Take the example of washing powder – a product rightly criticised in many circles for the environmental concerns it creates. The first thing that 'ideality' centred thinking does when considering washing powder is that the benefit being delivered is 'cleaned clothes'. This simple connection between a product and the function of the product is already beginning to have a profound impact on the business models of many organisations – as may be observed via the increasing number of FMCG manufacturers who now consider themselves to be in the 'cleaned clothes' rather than washing powder business. Add to this re-definition, the parallel ideality desire for zero cost or harm, and the idea of 'self-cleaning' clothes (or clothe that don't get dirty) emerges as a valid evolutionary end-goal. Next, the ideality tool suggests, if it is not possible to deliver this ideal solution, step back from it to identify other possible solution concepts – Figure 4.

The ongoing emergence of ultrasound-based washing machine concepts is testament to the shifts in thinking that emerge from this kind of ‘cleaned clothes without external agent’ kind of



thinking.

Figure 4: Ideal Final Result Strategy Applied to Clothes Cleaning

From a more purely business design perspective, the Self-Service Strategy can also be seen in a growing number of organisation designs. A good example comes through examination of the production of high quality automobiles at the much-admired [7] Toyota. Considering the function of ‘Quality Control’, the Ideal Final Result strategy suggests that the ‘ideal’ organisation structure would deliver the function ‘without cost or harm’ – in other words, the function would be delivered, without the existence of a ‘Quality Control Department’. This is in fact what turns out to be the case at Toyota – quality is achieved by everybody and not a delegated few. The evidence from Toyota is that this is an inherently win-win solution in which quality improves AND costs are reduced.

Closer to its application as a problem solving trigger, ‘Self-Service’ – and the idea of using waste or harmful substances – is very commonly applied from a sustainability perspective. In a well-known Russian example, a factory that produced selenium as a waste product was in danger of shutting down due to the high costs of disposing of the selenium, when someone at the factory thought to ask the classic ‘self-service’/use of resources question ‘how can we turn this waste into a useful thing?’ The answer in this case was to place the selenium in a plant irrigation scheme, to be absorbed by plants that could then be sold to generate revenue as a health-promoting ‘selenium-rich’ food source.

Organisations in the West are typically very wasteful of the resources around them. This phenomenon emerges from the ready availability of resources. If a company has a problem, their tendency is to add something to the system to fix the problem. The resource efficient solution involves asking the parallel self-service provocation question ‘is there something already existing in my system that can help remove the problem?’ In systematic innovation terms, even the harmful things (competitors, for example) can be transformed into useful resources given the right frame of mind.

Blessing in Disguise

In many senses overlapping with the self-service strategy, is the 'turning lemons into lemonade' principle 'Blessing in Disguise'. The related provocation question when looking to apply the strategy is 'how can we turn this harmful thing into a useful thing?' The strategy is often used effectively after conducting a SWOT analysis and examining the identified Threats in terms of how they could be transformed into useful things. Typical examples:-

- The aforementioned turning competitors into resources is a strategy often used by organisations as diverse as Greenpeace and Virgin Atlantic (who successfully used British Airways competitive tactics to promote themselves as a public-friendly 'Robin Hood' styled maverick organisation).
- Making potentially polluting industries place flow intakes downstream of flow outlets on a river is a commonly applied requirement of river authorities. This requirement has forced companies to think about the way they use and pollute water, and as a consequence has seen the emergence of a number of novel (exportable) filtration and chemical processing solutions that earn revenues to companies in countries with less enlightened environmental policies.
- Electrical and computer services are still relatively unreliable in much of India. This has meant that the financial services sector has had to construct electronic systems capable of guaranteeing customers reliable, safe services despite the unreliability of the surrounding infrastructure. Couple this with the fact that in India the number of transactions conducted is considerably higher (in number as opposed to financial value) than in the West, and it has become clear that India now has a highly robust, highly exportable capability.

Parameter Changes

This is the most commonly applied of all the 40 known Inventive Strategies when taken as an average across all industry sectors. The most obvious interpretation and application of the strategy has been in transitioning physical communication systems with their virtual equivalents. Organisations have seen considerable win-win benefits in terms of both improved communication, and lower cost. The transition to sustainable business model has thus far been slow. Use of the Internet in the UK and elsewhere has already reached a critical mass to permit, for example, organic farmers to sell their wares over the Internet at a lower cost and probably lower total food-mile total than either their competitors or their current selling models.

A second area of application of the Parameter Changes strategy involves the 'increase the degree of flexibility' solution direction. An early instance of this direction being used to generate win-win solutions in a sustainability environment relates to the clothing industry. In recent times, the clothing industry assumes the traditional 'manufacture to forecast' business model. In a market as fickle as fashion, the consequence of this model is that a considerable proportion of goods produced go unsold (in some sectors, the wastage can be as much as 30% [8]). Clearly a shift to a more flexible production system – such as the mass customised one introduced by Levi in the US, in which jeans are made to a series of individual dimensions transmitted electronically from shop to factory – offers massive opportunities to reduce this waste to potentially zero, while at the same time customers receive a better product.

Segmentation/Taking Out

The other two most commonly applied sustainability-relevant inventive strategies are also closely related to one another. In several senses the preceding 'mass-customization' win-win example is one concerning segmentation (the apparent overlap between different parts of the

systematic innovation method turns out to be very beneficial in real usage). Other examples of segmentation and 'taking out' helping to achieve win-win solutions include:-

- many businesses fail to differentiate their 'sustainability' initiatives from their everyday activities and as a consequence tend to confuse the market (e.g. the 'recycled Dyson vacuum cleaner'). When Toyota wanted to launch a luxury car, they decided the best strategy was to re-brand it as Lexus. There is much scope here for segmented product and service offerings that enable those dedicated environmentally sensitive customers to make a differentiated statement by buying a specifically segmented brand.
- 'Just-in-time' inventory management is an example of the 'Taking Out' strategy in action. In sustainability terms, it offers much from the perspective of eliminating waste – not only of time but also product and raw materials.

All of the above examples, of course, display the Inventive Strategies in the 'wrong' context; their real value emerges when there is a problem and the systematic innovation method suggests a particular strategy as a solution direction. It is also clear from applications in other sectors that there is significant untapped potential to be exploited by also using the 35 other inventive strategies not discussed here.

Business Implications

Systematic innovation methods are beginning to have a profound effect on the manner in which businesses operate and the solutions they offer to the market place. In keeping with some of the TSPD7 conference themes, it is worth briefly reviewing some of the other elements of the method and their likely impact:

Strategic Business Development

Systematic innovation methods contain a number of subtle but profound shifts in thinking. The idea that the dynamics of evolution involve the successive formation and elimination of contradictions is one; the evolution towards an ideal final result another. In respect of this second aspect, enlightened business developers are beginning to start their thinking from the ideal final result and working back instead of the traditional thinking mode that starts from today and moves forward. For many businesses, this is an uncomfortable experience (historically, they don't do it and as a consequence someone else (almost invariably a new-player) does it to the ultimate detriment of the incumbent). Similarly, prevailing business logic causes most businesses to strive towards a stable optimum. This is almost, in fact, a definition of 'good' management practice. What systematic innovation and nature suggests, conversely [9] is that the most successful long-term survival strategies demand exactly the opposite direction, and that equilibrium equals death.

Competitive Strategy

The incumbent organization in a market is traditionally the last one to want to innovate. Change equals risk and lost revenue in the eyes of most businesses. While this is undoubtedly true, as introduced above, change is also fundamental to long term survivability. In today's global market place, any company that chooses not to change risks the increasing danger that a new player will do it instead. Put simply, the new player has very little to lose. From a sustainability perspective, this would tend to suggest that the threats to big business in the area of win-win sustainable business will emerge from areas that are probably beyond their traditional radar screen.

Organisational Design

In the same way the ideal product is one that delivers its function but doesn't exist, the ideal organization is one that achieves the same end point. This too is an uncomfortable message for many organizations, and as a consequence, another advantage the (small) new player has over big business. From the new-player perspective, their key to success appears to increasingly rest in defining the disruptive win-win business model that the big player is unable or, more likely unwilling, to conceive.

Conclusions

The paper has suggested that there can be no 'sustainability revolution' in a business environment dominated by its traditional Socratic, either-or, trade-off focused mind set. A sustainability revolution needs a different mode of thinking. The paper has introduced such a thinking model and some of the 40 known Inventive Strategies for systematically achieving win-win solutions that form a part of it. It has shown how these strategies, coupled with a knowledge of system evolution towards an ideal in which functions are delivered without cost or harm, can be used to solve both technical and business design/strategy problems and opportunities.

Much of the research under-pinning the systematic win-win problem solving tools are to be found in the public domain [10]. A growing number of organizations from a broad range of industries are beginning to use the tools and related methods to generate real business successes. The methods survive on the basis of the benefits they deliver. Businesses too succeed on the basis of the benefits they deliver. Businesses fail because they hit fundamental limits. To perform beyond these limits requires a change in thinking; requires a different game to be played. Systematic innovation is all about finding the new game.

References

- 1) Mann, D.L., 'Hands-On Systematic Innovation', CREAX Press, April 2002.
- 2) Dru, J.M., 'Beyond Disruption: Changing the Rules in the Marketplace', John Wiley & Sons Inc., Adweek Series, New York 2002.
- 3) Mann, D.L., 'Disruptive Advertising: TRIZ and the Advert', TRIZ Journal, September 2002.
- 4) Mann, D.L., 'Ideality and Self-X', paper presented at European TRIZ Association TRIZ Future Conference, Bath, UK, November 2001.
- 5) Mann, D.L., 'Systematic Win-Win Problem Solving in a Business Environment', paper presented at TRIZCON2002, St Louis, MI, April 2002.
- 6) Mann, D.L., Jones, E., 'Sustainable Services & Systems Through Systematic Innovation Methods', paper presented at TSPD6, Amsterdam, October 2001.
- 7) Cusomano, M.A., Nobeoka, K., 'Thinking Beyond Lean', MIT International Motor Vehicle Program Publication, Free Press, London, 1998.
- 8) Mann, D.L., Domb, E., 'Using TRIZ To Overcome Mass Customization Contradictions', paper presented at First World Congress on Mass-Customization, HongKong, April 2001.
- 9) Pascale, R., Milleman, M., Gioja, L., 'Surfing the Edge of Chaos', Crown Business Press, New York, 2000.
- 10) www.triz-journal.com