Y3K: Beyond Systems Design as we know it?

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Abstract
Contemporary systems activity is divisible into that stressing the feasible and practical, and the more ideal-aware, focussed on mid-longer term futures, which typically involves on-going community or social systems design. The paper highlights the key differences in approach, and the scepticism/frustration that proponents in each field tend to feel for the other. With background set the paper examines the possible contribution that systems thinking could make for a much longer term future, with Y3K as a metaphor for this. This analysis, which derives from work undertaken at Asilomar 1995 and Fuschl conversations in 2000 and 2002 finds that contemporary social system design , which is driven by western culture and is action-oriented, needs adaptation before it could contribute to greater future global harmony. A truly comprehensive systems design process must accommodate a wide range of possible parameters in terms of culture and appreciation of time. An emerging paradigm as basis for thinking and engaging in social systems design work of the future is offered, which also has relevance to general systems practice.

Key Words*:*
contemporary social systems design, comprehensive social systems design, Y3K

1. Introduction

1.1 At the beginning of the 21st Century a very diverse range of activity within the general field of systems thinking and practice can be identified, with systems applications evident in many different professional fields. Despite the diversity, the activity can be categorised into two broad domains. The first, called here domain A, is concerned with the "here and now" and uses systems ideas to make change which will ameliorate or improve a situation within a short term. In many cases this activity has a management focus. Effort within the second domain, called here domain B, is much more ambitious. It is aimed at using systems ideas to help to design better futures, at the individual, community, large social system and global system levels. The events of September 11th 2001 make it even more imperative that such effort within the social systems design community is strengthened. However, this is a great challenge for the systems community overall, as the difference in philosophy between practitioners in domains A and B are very marked. Those in A are often highly sceptical of the value of the work of those in B; those within B can be very frustrated of the attitude of those in A. And yet prospects for the World future could improve greatly if communication between practitioners in domain A and B can be enhanced, thus the opportunity to present this paper is appreciated.

1.2 The IFSR-sponsored biennial international conversations in Fuschl, Austria are opportunities for social system designers to discuss future systems thinking and practice, and at Fuschl 2000 and Fuschl 2002 one group used Y3K as metaphor for its focus on a much more desirable future. The trigger was "What would we as systems designers wish to see for humankind for the Year 3000? ". The choice of Y3K for the vision was deliberate as it is far enough away to be removed from our current biases and is not predictable on the basis of our current knowledge and technology. With a systems design approach we have a chance to create a vision of what we want and then begin a design process towards that vision. For reports on these conversations see [Brahms et al. (2000)] and [Dyer et al. (2002)]. In particular, Fuschl 2002 revealed that contemporary system design as currently espoused and practised will be inadequate to improve harmony on a multi-cultural global scale, in that it is based on western ideals and philosophy, and considerable adaptation will be required.

1.3 The aim of this paper is to highlight the changes that the underpinning philosophy of contemporary systems design needs to undergo in order to meet a goal of increasing community, national and global harmony in the longer term future, i.e. for a metaphorical Y3K scenario. This will require us to view contemporary systems design as a special case of a "meta-design" field. In effect this will amount to offering a new paradigm for engaging in systems work of the future which we could then more properly argue was *comprehensive* systems design. In developing the argument, the paper will:

- compare and contrast exemplars of contemporary systems practice (domain A), with contemporary social systems design (domain B).
- provide a critique of domain B and its limitations to cope with the multi-cultural design case.
- offer some key elements for an emerging new paradigm for social systems design.

2. Exemplar Contemporary Systems Practice

2.1 In order for readers to appreciate a critique of domain B, it will be helpful first to compare and contrast this activity with that in domain A. Examplar activity in domain A will be used as a starting point. We can characterise the activity by highlighting its practical intention and its normal presentation as a tool for managing complexity. There is search for a perspective and a boundary, which after analysis gets fixed in time and space. Anything outside of this is perceived as the environment over which little control can be exercised. There is some tendency to limit inputs and seek views from only those identified as key *players or stakeholders*; where group work takes place it is usually limited in inclusivity by sampling e.g. through nominal groups. The analysis stage of domain A can be very thorough, with a host of concepts and techniques drawn from other disciplines to help. Systems maps, influence diagrams, flow charts, and rich pictures abound. However after this systemic analysis, methodology tends to become less systemic by conceptualising a *feasible and desirable* system as the basis of change action. However, the eventual result is often seen to be successful in that if the process has been well crafted, the improvement to the human activity system can be relatively immediate and observable; it may also be transferable. It is this observability and transferability which has led to the popularity of archetypical domain A methodology e.g. see [Checkland (1981)(1990)], and to growth in the application of systems thinking and practice which is to be greatly welcomed. Despite these advantages, the change action is likely to have happened through the intervention of a consultant systems thinker who may be needed again. There is not usually an attempt to empower the members of the human activity system. The second problem is that, so far, domain A methodology has much less to offer on unfocussed large scale issues or *messes,* as these are too complex to be presented as tractable. This has led to some practitioners within domain A to declare that systems thinking has nothing to offer to the design of the future.

3. Exemplar Contemporary Social Systems Design

3.1 Not all systems thinkers assume that we are so powerless, and we use the work of Bela Banathy as the exemplar of this social system design effort. The beginning of this dates to 1982 when a small group of systems scholars met at Fuschl with an aim of "creating an evolutionary vision of the future and to counsel human activity systems on how to implement it" [Intersystems Publications (1982)]. The driver was that world remained a place of great injustice, human exploitation, with evident despoliation of the Planet, and if systems thinking was all that it was claimed to be - and it was making some progress in a number of areas e.g. domain A - what could systems thinking and systems action offer generally for the betterment of humankind? The closing thought from the report of the first Fuschl event gives a flavour of the reality check and the aspiration:

> "You may ask - ask we have asked ourselves - what can a small group like ours do? We do not have - and never will have - the illusion of grandeur. We know very well that our voice is a small voice but it will be persistent and spoken in many languages as the years go by. We

> are guided by an evolutionary vision of the global unity of mankind and the full development of human potential everywhere and we dedicate ourselves to work on the agenda we developed in the course of our meeting. We are inspired by the shared dream of a better world for all.
> When our children and grandchildren ask us - as they do - "What kind of world shall we inherit from you? ", at least we can tell them that we will do everything in our power to leave them a more liveable and peaceful world with more humanness and love in it, and more opportunities for the realization of their potential and for the enrichment of their inner quality of life" [Intersystems Pubs. (1982)]

3.2 After Fuschl, Banathy studied societal evolutionary theory, and wrote his first major contribution, the concept of an evolutionary guidance system [Banathy (1989)]. This suggested a concept of some ten dimensions that a designing community might wish to keep in balance as they charted their own future, e.g. to ensure than their community did not become over-dependent on science and technology at the expense of other domains of human inspiration and endeavour. He subsequently developed the concept of what he called "social systems design" [Banathy (1991) (1996) (2000)]. This can apply to a community at any level - the individual, family, small social unit, and large community - developing and updating a vision of what *they actually require* and then designing consciously towards the emerging vision. The propositions that underlie systems design are summarised below:

- it is a basic right of individuals, groups and communities to be involved in making decisions that effect them.
- they can reclaim and exercise this right and forge their destiny only if they develop competence that empowers them to take part directly and authentically in the design of the systems and communities in which they live and work
- it is unethical to design social systems for someone else. In social systems, people who live in the system are the experts
- the role of the design professional is to develop resource and create arrangements and opportunities by which a designing community can learn how to engage with the design of their system
- a designing community is comprised of people who serve the system, who are served by it, and who are affected by it. They collectively are the designers, and users of the design: they own the design. They are the user designers.
- designers of social systems are trustees for future generations. They must constantly ask: how will the system we design affect the unborn?
- collective design capability empowers us to practice authentic, truly participative democracy. It enables us to guide the activities that enrich the quality of our lives, add value to the systems in which we live, and organise our lives in the service of the common good.

Banathy recognised that these propositions are very challenging, that the systems design approach would require the development of a new culture. He has called the building of the design culture - *the Prime Directive* [Banathy (1996)]. This could involve a very long time frame - depending on the context ,family to large social system, from several to many years.

3.3 Over the last 15 years the research area and application of social systems design has been progressed through the International Systems Institute (ISI) [see the ISI web-site at http://www.isiconversations.org] and through a mechanism of *conversation*. Conversation in this context is defined as a collectively guided disciplined inquiry or exploration of an issue of social or societal significance. For a summary of the latest work in the field of conversation and action research, including that into new systems of human learning and development, which would enable individuals and groups to act as competent members of a designing community, see [Banathy and Jenlink, eds. (In Press)].

3.4 In summary, the key differences in domain B to domain A is that:

- work features finding images of ideals and inspiration for evolutionary guidance which act as a "magnet" for designing the future of the community.
- the designing community develop their own evolutionary system, which are the actions they take to move towards the ideal.
- a boundary is not a pre-condition for starting a design inquiry; if a boundary is drawn it is seen as permeable and varies in time and space.
- conversation and dialogue are central to the process which stresses inclusivity and widening participation to all those affected by any design.
- the conversation process and the designing process are continuous
- effort can begin with *small fires* and then expand.

These differences, particularly in the *roles of the designers*, and the open-ended nature of domain B may explain why domain A practitioners might be sceptical; they may also regard it as idealistic. But domain B practitioners will argue that they are not idealistic, but that they are ideal-*aware.* Moreover, given the state of the World they might regard domain A as representing *Nero fiddling while Rome burns*. Those of us who are in domain B would very much like those in domain A to join us in using social systems design ideas for future creation.

4. Contemporary Systems Design in Context of Y3K Future

4.1 Y3K

4.1.1 The label Y3K serves as metaphor for a more desirable global future. In considering what would we as systems designers wish to see for humankind, this kind of timescale is far enough away for us to create a vision of what we *really* want the world to be like in the Year 3000. When the 2000 Fuschl Y3K team tackled this question it raised fundamental issues of what it meant to be human; for example, would living in a glass bowl community on Mars in 2300 be a desirable "human experience", see [Brahms et al. (2000)]. It may well be possible technologically by then. It may also be possible by that timescale to live forever, through artificial body part exchange; but should we, or will we, want to? Also with a Y3K horizon it releases us to think about, the gross inequalities of wealth, power and opportunities that still exist between nations and peoples; the continuing wars and terrorism; a global spread of horrific diseases; drug related crime etc, and to transcend the assumption that everything is too difficult and that nothing can be done. Something ought to be done if succeeding generations and we take responsibility to continue to design the future and not just let the future happen. Yet too, our work must be framed within a guiding principle of system design that "it is unethical" to design a system for someone else. At best we can provide an outline, a set of markers, to help current and future generations to follow. However markers are important as they provide a direction towards which we want to move, and not away from. We might be able to begin to move **now** towards what we might see as the right direction.

4.1.2 The 2002 Fuschl Y3K team's first consideration of possible systems thinking for Y3K led to reflection that this could be, or should be, beyond design as we know it [Dyer et al. (2002)]. The theoretical ideal of a world system leads to a paradox. Should humankind finally achieve one unified system, systems thinking may no longer be required. Such oneness and complete openness implies that we are beyond our current concepts of systems and design. The argument can be offset by recognising the need for systems maintenance or by widening the boundary if design outside the Earth should ever be needed. But further complexities and considerations may conceivably need to feature in a very long term future conversation processes: to move beyond an anthropocentric view to take into account the position of future possible man-made (robotic) life-forms, or other natural life forms. We would also wish to encourage system designers to develop an evolutionary consciousness.

4.1.3 With the background complete it is now time to critique domain B. The critique is not on the basis that it is too open-ended, as this is inevitable, but that like domain A its underpinning concepts are rooted in Western, industrial philosophies that are not universally transferable across other

cultures, especially where attitudes towards time vary. Without considerable adaptation it will not be useable for systems design towards Y3K. We now examine the issues of co-designing with Nature, then cultural, and time issues.

4.2 Co-Designing With Nature

4.2.1 Co-designing with Nature is implied but does not explicitly feature in Banathy's work. Concern for the planet and its wildlife is a focus of many pressure groups, and sometimes the subject of papers to systems conferences. Scientific developments have proceeded with little reference to the impact of the natural world and had produced a number of very undesirable consequences. This stemmed from a view that argued that if we can control nature then we can liberate mankind, and scientific developments had allowed this to happen. The *scientific revolution* had sponsored an attitude that the Earth was machine-like and could be exploited without any concern. However, living systems have natural immune system responses developed over a long evolutionary period to ensure survival, and interference with any of them through inappropriate intervention may upset the balance of the planet. The wholesale destruction of the Amazonian forests is very worrying. The bark and leaves of the trees and associated plant eco-system may be the source of potential medicines for man, as close genetic neighbours, apes and monkeys, have survived in the forest without the benefit of science. The destruction means that the potential of these forests may be lost. Acknowledging our interdependence with the natural world is crucial, [Macy (1991)].

4.3 Cultural Impact on Conversation Process

4.3.1 A key concept within conversation is that participants agree and then follow a set of rules that guide their action. Banathy introduced a framework for a generic set of rules for ISI conversations [Banathy (1994)]. These rules included the ideals of: collective responsibility for guaranteeing that the selected theme would be adhered to; that leadership would be shared; and the initial focus would be on establishing common ground. They also emphasised equal opportunity for participation, honouring diversity, and being open to emerging/new ideas. However several overseas participants at that Asilomar, including the author and Yoshi Horiuchi, were concerned with any assumption that such a set of rules could apply in other cultures. Multi-national Asilomar conversations groups with both east and west memberships discussed this issue in 1994 and 1995, on the second occasion concentrating on designing a conversation to take place in Japan, with Japanese as the first language and in a Japanese cultural setting [Dyer et al.(1997)].

4.3.2 We re-examined the implicit rules governing ISI conversation process and then ranked them into two sets, the order of the sets relating to an ascending order of difficulty of applying them in Japan:

Set 1

1. Display tolerance, patience and consideration to others.
2. Honour and respect each other.
3. Listen to others, attempt to understand the point of view being expressed, reflect and respond.
4. Not to dominate.
5. Not to offend.
6 Avoid losing control of one's feelings.
7. All ideas are viewed as contributions to the group for consideration, accepting that not all ideas are used.

Set 2

8. Free exchange of ideas; public ownership of ideas.
9. Equal opportunity to participate.
10. Stand for what one believes in.
11. Equal opportunity of action and decisions; but take responsibilities for actions and decisions.

The first set of "rules" are seen as being equally applicable in Japan and the West. Set 2 on the other hand - more cherished in the West - would not be acceptable in Japan or elsewhere in the Far East. The group involved felt that Set 1 rules probably applied for conversations in a very wide range of cultures and offered these rules, for consideration and evaluation as a core set for multicultural Conversations.

4.3.3 The 1994 and 1995 Asilomar conversations highlighted the great impact that language and culture would have on conversation process in social system design, if the ideals of application at a global level could ever be approached. The need for double translation, first the technical and then the semantic, meant that as then presented the ISI conversation rules and process were very much a special case of a complex field of conversation.

4.4 Industrial and non-industrial cultures

4.4.1 But conversation process is but one cultural factor which serves to make contemporary systems design a special case of a meta-systems design field. Contemporary systems design, hereinafter CSD, was developed primarily for use within a framework of modern industrial society, which is not a universal framework for all kinds of task fulfilment or for approaching problems. An industrial society presumes global standardized time and other units of reference relating to efficiency, costs and performance, and continuing aspiration for growth, improvement and betterment. But there are many cultures, and many aspects of life even in developed countries that do not ascribe to such industrial criteria. Diversification of culture is not limited to only East-West, but between modern, science-oriented, large-scale industrial society versus traditional, rural, small-scale society including families.

4.4.2 Also we recognise CSD as western and industrial, in the sense that it is active (versus receptive), and dynamic. It is also imposing - it assumes "doing" rather than "being" or "becoming." In contrast, in eastern thinking, it is possible to have an "alternative to design" that is characterized by: (1) accommodating changes - rather than making changes happen; (2) *following the flow* and taking natural advantage of it - rather than by standing against the wind, i.e. challenging and creating by overcoming Nature. Thus a truly comprehensive social systems design needs to cope with diversified concepts of design/meta-design, even non-design, outside of the CSD domain.

4.5 Measured Time and Cultural Time

4.5.1 As we consider the passage of time towards Y3K and extending the design boundary, this will eventually bring us head-on with the major differences of culture and fundamental philosophies of the various major Earth population groups that underpin their concepts of time and progress. Domain B work would need to accommodate a major trans-cultural dimension. A fundamental issue arises in that, while in the occidental tradition the notion of intervention through purposeful design is highly desirable, this is not always necessarily the case in the oriental tradition. The time concept in the western scientific tradition is a forward straight arrow, which implies the possibility of planning and progress along that line. In far eastern culture, as in the calendar, time may be seen as circular, a view probably based historically on the annual rice growing cycle, leading to a philosophy of what happens comes round again if one waits for it. There are many other non-western views about time, for example, an indigenous native South American view of time, that historical time is the only type of time that an observer can know and metaphorically, is in front of the observer, whereas, the future which cannot be known, is behind the observer. These ideas contrast markedly to that offered by Benjamin Franklin “Time is money”. We need to differentiate between time as a measurement, with its universal standard, and the *experience of time* that has played a major part in determining the differing philosophy and values of societies.

4.5.2 Interestingly, this issue *has already emerged* in the new research field of cross-cultural computing, which is related to how a technology developed by an English speaking western culture can become accessible worldwide. A researcher in this field, Hall, when recently interviewed, [Cook

(2002)], comments on his work observing the effect of a computing system intended to control immigration into Nepal. Landing cards were collected from arrivals at the airport, taken to the computer in Kathmandu and input to the system. The answer as the whether or not someone should be allowed into the country was produced – a few days after they arrived - by when then the new arrivals had long since dispersed. Hall has no intention to disparage the Nepalese people – the local technicians who ran the computer appreciated the irony. But he argues that systems transplanted from the west do not necessarily take account of local resource or cultural attitudes towards time and forward planning. "We in the west are used to timing our life exactly. We keep diaries, make appointments". This very planning style of behaviour is embedded into computer systems. He also comments that other cultures are much more reactive – they wait for things to occur. "In the Hindu calendar, for example, the calculation of dates begins only a few months before the New Year. Foreign embassies trying to arrange visits find it very difficult".

4.5.3 Issues surrounding the so-called *internationalisation* of products and (hardware) systems, see [IWIPS 2002 website] and IWIPS 2001 Proceedings [Day and Dunckley (Eds)], are now the subject of international conferences, where discussion topics relate to adaptation and software solutions for cross-cultural problems with existing technologies, and more general theories relating to globalization and localization of products. This points to the need for practitioners in domain A to be equally concerned with cross-cultural aspects in their methodologies. It also suggests that this western-based type of systems activity could also be "special-case" within a meta-field.

5. Towards Meta-Systems Design for Y3K

5.1 We can capture the previous discussion in Figure 1. CSD is shown on a plane with a fixed value of time and culture (western, industrial, it is active and interventionist). A key question is what lies on the plane outside of the CSD boundary. For now this is labelled "beyond design" but we can make some reflections on this.

5.2 Homeopathic Design

5.2.1 At Fuschl 2002, Debora Hammond coined the phrase *homeopathic* design. Where intervention is considered it will be important to retain the self-correcting, self-healing and survival mechanisms which are present in natural systems – and then to make sure that this enhances these natural immune system-like properties, and does not destroy them. To overlap this we should always consider the possible need to synchronise design efforts ***with*** nature. We may have the power to influence nature through bioengineering, but when we do this we must be fully alert to the risk of facing consequences of not understanding the complexity we may be disturbing.

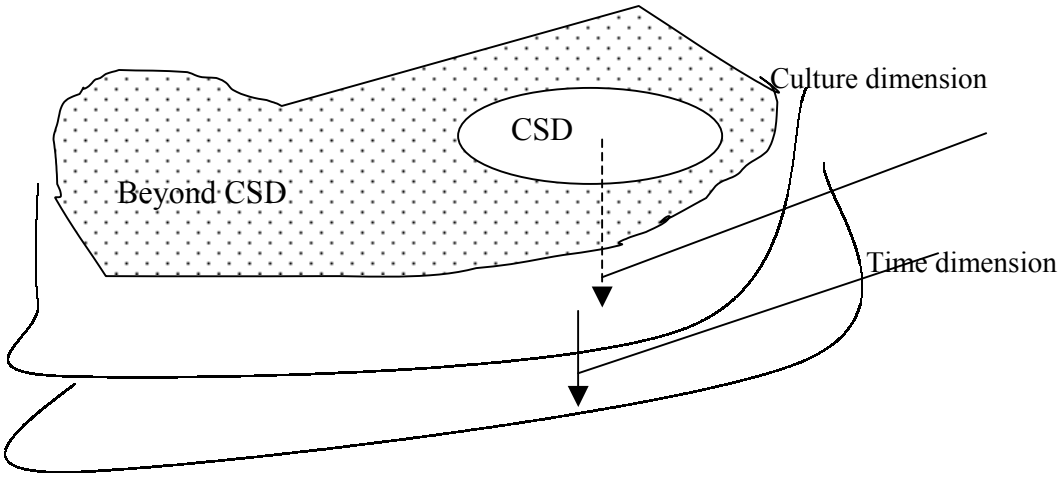

Figure 1. Two-dimensional model of CSD contrasted to the multi-dimensional needs of truly comprehensive systems design

5.3 Culture and Time Dimensions

5.3.1 The model needs to take account of an alternative to design, i.e. accommodating changes. Many aspects of culture that flow from rural, traditional, or ethnic forms of life experience affect attitudes towards design. The CSD proposition of participative democracy is based on the assumptions that people have opinions and are able to express them. We have already seen the problem with this in the conversation process. Under CSD it is assumed that those who want to be involved in the design effort are provided with the opportunity to do so. Those who do not wish to be involved are outside of the system. This is seen as a free choice and is acceptable within the stance of the CSD designers. However, this leaves the paradox from a meta-system perspective, the views of those outside the system are not being taken into account. Put simply, how can there be a completely participative system if some choose not to participate? There is also the case of other life forms that at the moment are left out of consideration.

5.3.2 As described above it is important to distinguish between time as a measurement, and the experience of time that has played a major part in determining the different philosophy and values of different societies. Assuming that design can proceed, every definition in a design process would have to be subject to reconsideration regularly, at every stage of the design process including implementation.

5.4 CSD as Special Case of the Meta-Systems Design Field

5.4.1 As argued above, CSD is identified a special case of a meta-design field. It has to encompass at least three new dimensions before it can be considered to be *comprehensive* and cope with major system or the global case, i.e. homeopathic design, cultural aspects and time. Other dimensions may yet emerge. This points to an emerging new paradigm with at least three new elements. At Fuschl 2002 Yoshi Horiuchi suggested that the difference between CSD and the vision of truly comprehensive systems design, is similar to the contrast between Newtonian and Einsteinian physics. Both Newtonian physics and CSD are useful in many situations, but they are based on a set of assumptions that break down as the boundary of application is extended to cover all cases.

5.4.2 What is needed, is for us to accept a wide canvas and responsibilities for human activities, and to develop further "meta-design" concepts for various cultural contexts. Culture here implying various opposites such as: industrial - non-industrial, urban - rural, East - West, Christian - non-Christian. This observation applies particularly to the dimensions of any evolutionary guidance system that any given culture will find appropriate. While these ideas have been generated in the context of reflection on a distant future they can, and should, start to feature in consideration of systems thinking, systems concepts, and system design from now on.

6. Conclusion

6.1 Contribution by the systems community towards creating better futures for mankind has become even more important since the events of 11th September 2001. The initial comparison of systems community effort with (1) improving human activity systems, and with (2) social systems design serves as a vehicle to improve the communication between the two groups of practitioners, and to encourage more systems community effort in social systems design. This was also useful to introduce a critique of contemporary social systems design to show what adaptation and transformation systems thinking will have to undergo in future if it is to be able to prove useful in very large design contexts where multi-perspectives will be present. Consideration of possible systems thinking for Y3K led to reflection that this could be, or should be, beyond design as we know it. As we extend the boundary of consideration we meet paradoxes, relating to system thinking and oneness,

and participation for non-participants. While CSD is sometimes described as comprehensive, as practised it is fixed to a particular set of assumptions relating to culture and time, whereas we are actually faced with a wide range of possible parameters in culture and time. CSD is active (versus receptive), dynamic and imposing, and was developed for western industrial society, which is not a universal framework for all kinds of problem solving or task-fulfilment. We need systems thinking to accommodate a broader framework of human activities, and develop systems "meta-design" concepts for various cultural settings. This might involve such considerations as (1) accommodating change - rather than making change happen; (2) following the flow and take natural advantage of it; (3) accommodating different senses of time (e.g., cyclical as well as linear); and (4) working in a co-creative way with Nature.

6.2 CSD is thus redefined as a special case of a meta-design field. It has to encompass at least three new dimensions before it can be begin to be *comprehensive* and begin to cope with major social system or the global case of metaphorical Y3K. These dimensions are*:* homeopathic design (enhancing the natural "immune systems" of social systems and synchronizing efforts with nature); cultural aspects, including conversation process; and, time. Similar accommodation must be made over the dimensions of any evolutionary guidance system that a given culture will find appropriate; the ten identified by Banathy for CSD will not apply to all cases. These ideas are offered to the systems community as the basis of an emerging new paradigm. They should start to feature in consideration of systems thinking, systems concepts, and system design from now on. The current research into the internationalisation of products and hardware systems, indicates that the contemporary systems practice of domain A can also be seen as a special case of a meta-systems field. Further exploration and development of the concept of the meta-field is seen as a very interesting area for conversation and research.

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