

**Enhancing Systems Design Practice Through Creative Synergy
Summary Report from the Design Group, Fuschl Conversation 1996**

by

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Introduction

This report summarizes the efforts and conclusions of the Design Group at the Fuschl Conversation 1996. The week-long Fuschl Conversations were co-founded by Professor Bela Banathy and Professor Gerhard Chroust and, given financial support from the IFSR, have taken place bi-annually since 1982. The ongoing theme of the Fuschl Conversations has been: 'How can we use the insights gained from systems science for the improvement of the human condition?'

The Fuschl Conversations serve to bring together academics and practitioners in an environment in which they can work creatively and productively on the 'big issues' facing human-kind. This paper summarises the experiences of one such group of systems thinkers.

Firstly, the paper introduces the design conversation process around which the meetings are based. Following a review of the formation of the Design Group and its efforts to find a focus for the Conversation, a summary is given of the Group members' accounts of their use in practice of systems thinking. Detailed discussion is then made of the exercises which the Group believed had the potential for further development and which might be used to promote what it means to think holistically and why it is important to do so. Finally, the paper concludes with an evaluation of whether the Group had become a 'learning community' and the Group's critical reflections on the design conversation process.

Design Conversation

The Fuschl Conversations are based upon the notion of *design conversation*. According to Banathy (1996), "Design conversation combines two modes of dialogue and thus becomes the most appropriate mode of social discourse in design inquiry." (p. 39). The

two modes of discourse encompassed by design inquiry are generative dialogue, which serves to generate shared group consciousness based upon the exploration of points of difference, and strategic dialogue, which is more task oriented. Banathy opines, "The program of the International Systems Institute demonstrates the power of conversation as a means to: (1) tap into the collective intelligence of groups, (2) create communities with shared meaning and a shared view of the world, (3) generate collective wisdom and capacity to engage in purposeful design." (p. 41). Consequently, it may be argued that the aim of the Fuschl Conversations is to create sustainable learning communities within the systems field.

Preparation for the Conversation

An essential part of the Conversations is that participants engage in a set of activities in preparation for the event. The first step is the naming of a set of themes for the event and it is expected that each group will address one theme. Following the identification of a Preparation Coordinator for each group of participants, there is a three stage preparatory process:

a) Development of individual think papers

The think paper serves to:

tell of the writer's interest and previous work on the topic

review some topic relevant knowledge sources (i.e. circulation of relevant papers on the subject)

b) Coordination

Preparation Coordinators synthesize the think papers and develop a first draft of the topic theme which are circulated to members of the group who are asked to return their comments to the Preparation Coordinator. Based on the comments, the Preparation Coordinator formulates a second draft which is sent to the group members.

c) Development of a knowledge base

Participants are required to explore topic relevant knowledge base and to bring to the conversation a rich set of ideas and a set of triggering questions that they wish to explore.

In preparation for the Fuschl 1996 Conversation five themes were set and the associated groups successfully completed the preparatory stages prior to the event. The teams were concerned with:

- Systems Design
- Systems and Design Education
- Education in the 21st Century
- Societal Evolution
- Information Systems for Design Support

The Conversation: Getting Going

The Design Group formed, at the Conversation, from the original Systems Design Group and the Systems and Design Education Group. As the members of the Group came from a rich variety of backgrounds it was realized that some time would be needed to develop common ground. It was decided that a good way to start the dialogue would be for members of the Group to share the questions that they hoped to gain answers to as a result of their participation in the Conversation. A diverse range of questions were raised ranging from 'What makes a systemic research method, systemic?' to 'How do we engender wisdom through the family in the young?'. As the questions did not provide any obvious common ground for a direct way forward, the Group decided to return to the ongoing theme of the Conversations, the improvement of the human condition, and to share visions of an Ideal Society. Members of the Group collectively generated descriptions of some elements of their Ideal Society. For example, an Ideal Society is one in which:

- emphasis is on technology which empowers and which serves humans and not vice versa
- the motivation and opportunity to learn is maximized for all based on the removal of barriers to learning and education and promotion of life long learning
- there is room for excursions of behaviour, allowing for initiative and creativity as well as providing a safety valve for deviancy.

The descriptions generated a debate which culminated in the consensus that an Ideal Society is one in which people act responsibly because they care about the consequences of their actions for others and the environment. At this stage it was recognised by the Group that the only way an Ideal Society might be achieved would be if more people were able to appreciate and employ systems thinking. Consequently, it was decided that it would be useful for the Group members to share their experiences of the real-world applications of systems practice which had made a positive difference to the quality of life of those involved or had nurtured in others the ability to think holistically.

Sharing of Practice

Each member of the Group was invited to give a twenty minute presentation on an example of systems practice or an exercise which promotes systems practice.

Mountain Survival: Gordon Dyer described the Mountain survival exercise, a simulation game used as an ice-breaker at UK Open University systems summer schools. The aim of the exercise is to get participants to act as a human activity system and to appreciate the importance of working co-operatively.

Developing the Developers of Pre-professionals: Ken Udas introduced a case-study from the Miami University involving 'partner liaison' in which professors from the School of

Education involved with pre-professional training work within the community. The case-study was seen to be an example of authentic communication and community involvement in a multi-stakeholder system.

Becoming a Human Activity System: Arne Collen described an experiential exercise which is played by students as part of a human science research seminar. The exercise begins with each person being given a short piece of rope. The students then come together in a circle with each holding one end of the rope in their right hand. They take their free hand and grab another rope. They are told that they are now a human activity system in a 'mess' with an aim -they are to open the system so that they can form a continuous line in form of circle; they are not allowed to let go of any rope. The aim of the exercise is to get the students to recognise that their actions have implications for their colleagues.

Systems Design with Nursery Teachers: Cecilia Tagliaferri described a 6 day course which she had facilitated to enable nursery school teachers to experience being part of a human activity system. The explicit aim of the course was to activate the design ability of the group to define and achieve a shared dream (self organisation ability). The implicit aim of the course was to introduce systems thinking as an effective way to deal with human complexity.

Systems Design of a Community Centre: Amanda Gregory recounted how systems methods had been used to enable members of a residents association in association with city planners determine and prioritise the functions of a community centre. The stakeholders had used a variety of systems based methods (including, rich pictures, decision mapping, and nominal group technique) in such a way that the residents had been able to participate in the design process on an equal basis with architects and city planners.

Development of Enterprises: Donald McNeil described how he has worked with the development of new companies and their projects from initial "idea" to practical "realization". Such a process is conceived in an initiation phase and proceeds to engage stakeholders, acquire resources, recruit talented people, organize the project, etc., and ultimately unfolds through a spiral of iterated phases.

Building the Whole from a Partial Picture: Werner Vogelaar described an exercise for introducing groups to communication and information flows, which he saw as a vital feature of systems design. The exercise involves participants working in a group on the reconstruction of a photograph which has been cut into pieces.

In the light of the sharing of experiences of systems practice, the Group decided that they particularly wanted to focus on the issue of how to promote the ability to think holistically in others as it was realised that this crucially affects people's ability to act responsibly to others and to the environment. It was the general consensus in the Group that the exercise entitled 'Building the whole from a partial picture' warranted further

discussion as this had the potential for further development as evidenced by the many 'what if' questions that were posed by Group members as this exercise was being presented.

An Exercise in Systemic Thinking

The six stage exercise involves the reconstruction by a group of participants of a photographic picture:

Stage 1

A picture is cut into three pieces by the facilitator of the exercise.

Stage 2

Each of the smaller pieces of the picture are seen by two participants though neither knows who else has seen the same piece as them. The participants are allowed to look at their piece of the picture for 1 minute only and then the pieces of the picture are removed. (NB. If there are more than six people, then six are allowed to see a part of the picture and the other participants do not see any of the picture but instead have to listen to, and rely on the discussion which follows.)

Stage 3

The group is told that the aim of the exercise is for them to reconstruct the whole picture in their heads. In order to achieve this the group is instructed to discuss and exchange information for 30 minutes.

Stage 4

Each participant draws the whole picture as they perceive it from the discussion.

Stage 5

The participants reveal their drawings to their fellow group members and the facilitator reveals the picture as a whole to the group.

Stage 6

The exchange of information (Stage 3) enables participants to develop a perception of the picture is evaluated using the six dimensions of detailed, general, goal, hear, speak and summary.

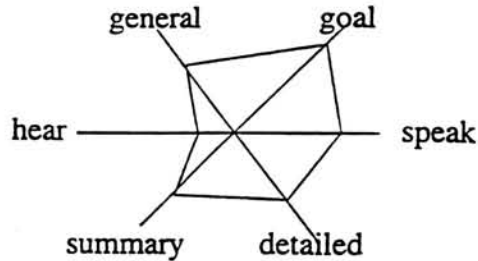


Fig. 1 The Evaluation Hexagon

Individuals do their own evaluation and produce a hexagon of the 6 points on the 6 axes (see Fig. 1) on their individual performance and the facilitator constructs a map for the group as a whole.

Based on the above description of the exercise, the Group reflected on the systems principles that were intrinsic to the exercise and the lessons that might be learnt from it. Firstly, it was recognised that the exercise serves to illustrate the dangers of extrapolation from a partial knowledge base and failure to make assumptions explicit. Secondly, the exercise serves to illustrate the need for communication and co-operation between system participants when engaging in problem-solving. Recognition of this should serve to nurture in participants an awareness of the need to respect the contribution that all participants can make. Indeed, allowing only some of the participants to see parts of the picture was perceived to reflect many real situations where so-called experts are allowed to see confidential research reports but those involved in the actual situation are denied access to the information.

Based on the elicitation of the lessons to be learnt from the exercise it was recognised that it might have many possible variants each demonstrating an aspect of systems thinking. The team went on to consider eight variations of the exercise and the lesson(s) that they embody.

Exploring Partialities

Variant 1

A whole picture might be partitioned thematically, i.e., as if it were a composite of overlaid partial pictures. An example of this would be to supply one overlay which showed only the people in a room, another which showed only the furniture in the room, a third which showed only the pictures on the walls of the room, etc.

Variant 1 reflects what happens when a multi-disciplinary team comes together to work on a problem of common concern. The thematic partitioning would represent the different interests according to their professional training of the problem-solvers.

Variant 2

A whole picture might be partitioned so that its reconstruction included not only pieces cut apart and distinct overlays but also overlapping pictures which included bits of collateral or contingent images.

Variant 2 would serve to represent the fact that problem solvers very often have areas of common concern/interest and that in practice problem solvers have to engage in a process of negotiation and investigation to reveal these common areas.

Variant 3

A single three dimensional scene could be represented from different perspectives including external views from various sides, from below, from above, and from inside. The differences in perspective would potentially be as different as the view we would have of a hurricane from within its gale, from within its eye, and as a whole from the vantage point of a satellite in orbit.

Variant 3 addresses the notion that the way in which we see a situation depends upon where we are located with regard to it and what our interests and priorities are. For example while, from a distance, I would be concerned about an earthquake in Japan I would not be as concerned or as affected as if I were actually living in Japan at that time.

Variant 4

One whole picture could be shown to each of several participants and they could try to reconstruct it from memory. This would lead to a greater appreciation of individual differences in perceptions of same picture and attention to various different features.

Variant 4 serves to illustrate how, whilst we may share common experiences with others, our experiences are quite unique. Consequently, it is only through discussing our experiences with others that we start to appreciate others' priorities, values, etc.

Variant 5

A two dimensional cross-section of a familiar three dimensional scene or object can be produced so as to appear very strange and ambiguous. This draws attention to how we are misled by under-dimensioned or highly abstracted representations.

Variant 5 shows how something very simple and familiar can be made complex and in such cases how we need to search our memories for familiar aspects of the scene that we can seek to understand.

Variant 6

The importance of timing, phase, rhythm, and harmony in forming complete pictures of dynamic perceptions can be examined, perhaps using artificially separated parts of a musical composition.

Variant 6 represents an illustration that is non-visual and has a temporal element in it (rhythm, etc.).

Variant 7

The effects of contexts and croppings can be explored by offering a picture for interpretation, then showing how interpretations change when it is shown together with its immediate context, then showing it and its immediate context in a larger context, etc.

Variant 7 demonstrates how we can make certain assumptions about the way things are that may turn out to be incorrect when the scene is placed in its wider context.

Variant 8

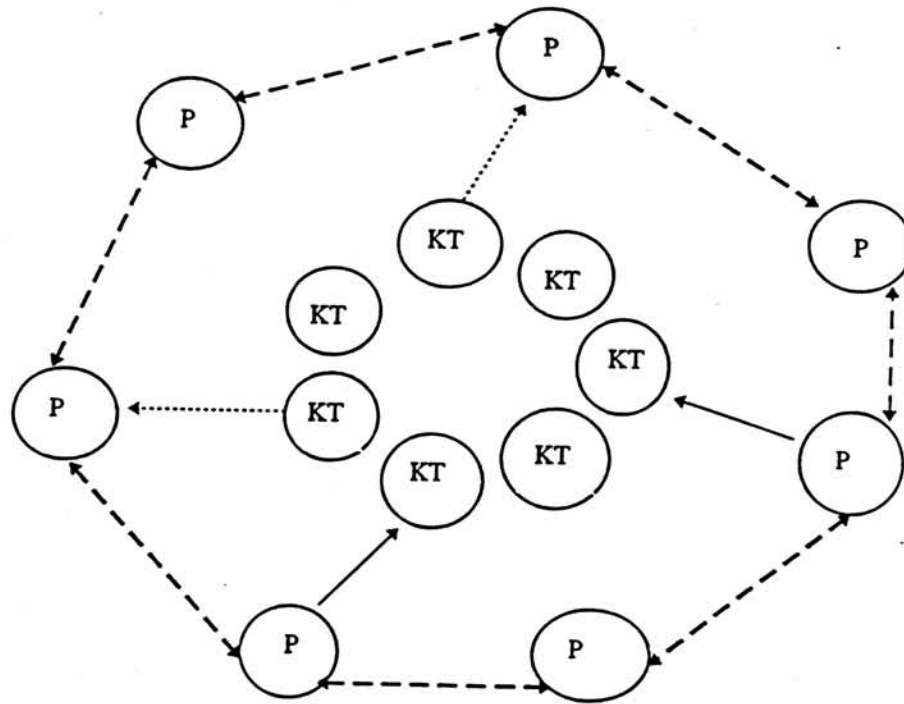
By using differentially magnified views of the same picture, we can see the effects of differences in resolution, focus, and aspect.

Variant 8 illustrates the need to look at things from a variety of angles and perspectives because things can look very different according to where you are positioned. Furthermore, it promotes the idea that one should try putting oneself in 'others shoes' before stating how things are.

Enhancement of Practice Through Conversation Synergy

By way of conclusion, the team identified three key areas that emerged from the discussion around the sharing of personal experiences of practice:

- participants were each able to identify aspects in each others' activities which they might employ in their own and, to that extent, the team became a learning community. The process that occurred can be illustrated by the figure below:



- ←-----→ Represents practice influencing practice
-→ Represents key themes influencing practice
- Represents practice generating new key themes

P represents practice

KT represents key theme

Fig. 2 The Interdependence of Key Themes and Practice

The inner core of circles represents the points that we initially identified as key to our vision of an ideal society, the outer ring shows the individual choices of practice to describe. The arrows depict examples of how ideas derive from one practice were seen to be transferable to others' activities

- The relating of the 'Building the whole from a partial picture' exercise produced a creative synergistic response within the group. The family of alternatives which emerged from discussion of this example was recognised by the group to have potential application in numerous areas of practice.
- Finally, it was noted that the discussion of systems practice revealed other features that were important to team members in our Ideal World. These were, for example, security, context, empathy. This made us feel that we had completed the first circle of

an iterative loop, we had set out on the first stage of the systems design methodology¹ by envisioning an ideal society but we had returned to refine that vision as we developed our models of education and practice. It was recognised by the group that this was an exercise in critical reflection and how it might result in improved future practice.

Critical Reflections on the Conversation Process

As the Conversation drew to a close, the Group started to reflect on the process in which they had engaged and to evaluate the process and progress that they had made. Indeed, if the conversation had led to an holistic process then an appropriate evaluation might involve the identification of salient points between the conversation and the exercise developed by the Group. We each came to the Conversation with our own pieces of the picture (our particular areas of expertise) it took us two days before we were able to identify an area of common concern (how to engender in others the ability to appreciate what it is to adopt an holistic approach and why it is important to do so) akin to the overlapping of the segments of the photograph (variant 3 of the exercise).

Further, it was believed that by accident rather than design the Group had also put into practice a key systems principle - the importance of points of leverage in a system. The simple relating of one member's experience of using a quick exercise with his students provided a focus for the group and resulted in the creation of an exercise with many variations to which the whole group had contributed. Further, each member of the Group was committed to using the exercise with their students and, given the diverse locations in which the Group members taught and practiced systems thinking, the knock-on effects are potentially quite considerable. Indeed, it might be said that the identification of a focus for the Group led them to become a learning community. But might such learning have taken place without the Conversation? In order to evaluate the Conversation it is first necessary to examine critically the notion of learning.

Van der Knaap (1995) defines three categories of learning:

- | | | |
|-----------|---|--|
| System | - | corrective system learning on the basis of feedback |
| Cognitive | - | development of a capacity for problem-solving based on knowing and understanding |
| Social | - | learning by means of dialogue and argumentation |

The Fuschl Conversations are fundamentally based on learning from the third perspective, social learning. Van der Knaap states well the importance that is accredited to social learning:

“In a dialectic connection, mutual convictions and opinion are continuously tested and verified. Some argue that truly innovative learning is only possible in processes of collective argumentation: the individual can only learn something fundamentally new when her or his learning process involves the assimilation of or accommodation to the

dynamics of social interaction (Bandura, 1977; Miller, 1986). Challenging by nature, taking part in discussion will in many instances increase the need for reflection, the prospect of cognitive change and development and, hence, learning (Van der Knaap, 1994)" (1995, p. 197).

If we are to evaluate whether the dialogue process is necessary for satisfactory learning to take place, it is necessary to consider the problems that may occur with the system and cognitive forms of learning. In relation to systems learning which, as has been stated, is based on feedback, it is argued that the feedback information may simply be ignored or may result in 'tunnel vision'. Secondly, it is stated that many of the problems related to the second form of learning are based on 'cognitive blindness' as "...we cannot observe or experience what we cannot recognize. In addition, since our powers of perception are limited, many things go by unnoticed. Most of our interpretation is biased: the perceived stimuli are made sense of in such a way that they correspond with accepted worldviews." (pp. 198-199). Many of the problems that are associated with system and cognitive learning are overcome with social learning. 'Tunnel vision' is less common in group situations where there is usually comprehensive evaluation of the arguments put forth by group members. Also, 'cognitive blindness' is not usually associated with group learning as the resources available, especially 'brainpower', is far greater. Whilst, in the light of the criticisms which have been leveled at systems and cognitive learning, the argument for social learning may be advanced, it is not without its critics.

According to Van der Knaap social learning may be blighted by a particular set of communication related problems: "social learning...may get distorted by deficient or incomplete comprehension between participants. In addition, when communication consists of merely the disconnected exchange of convictions and ideas, there can be no such thing as the construction of a shared or social reality. When strategic considerations prevail, participants often develop defensive routines: concealing practices to obstruct the confrontation of viewpoints (Argyris, 1991)" (p. 199). In the case of the Fuschl Conversations, engagement in defensive routines is overcome by the inculcation of a set of norms and values which are passed on from one Conversation to another: everyone has a contribution to make and everyone will be respected for that contribution. Even the contribution of the cynics in the group is respected as this prevents 'tunnel vision' and 'groupthink'. These strong values are established from day one and serve to overcome many of the problems Van der Knaap associates with social learning. Given the strong culture that has grown up as a result of participants of the Fuschl Conversations participating time again, there is a healthy scepticism that ensures that the meetings do not just become a talking shop. Indeed, it was this scepticism that led the Design Group to critically reflect upon the Conversation and to engage in 'double loop learning' (Argyris and Schon, 1978), that is 'the modification of underlying norms, policies and objectives'. Indeed, it was this form of double-loop learning that led to the questioning of the value of conferences in 1982 by the founders of the Fuschl Conversations and it is this ongoing questioning by the academics and practitioners involved that ensures the Conversations are relevant and have worth beyond the event.

Conclusion

This paper summarises the experiences of the Design Group at the Fuschl Conversation 1996. By way of introduction, an overview was given of the generative dialogue process and the preparatory activities it implies was given. Discussion was then made of the process by which the Design Group found a focus for its efforts based on members providing accounts of systems practice. Consequently, the exercise 'Building the whole from the parts' was explained and the variations developed by the Group summarised. The paper concluded with a critical look at the conversation process and a discussion of whether the Group could be said to have become a 'learning community'. In the light of the critical reflection process it was argued that the Group had engaged in 'double-loop' learning as it had not only further developed an exercise to engender in students the wisdom that is systems thinking but, also, the Group had reflected upon the norms and values that led to the meeting and the Group members had discovered for themselves the worth of the Conversation.

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