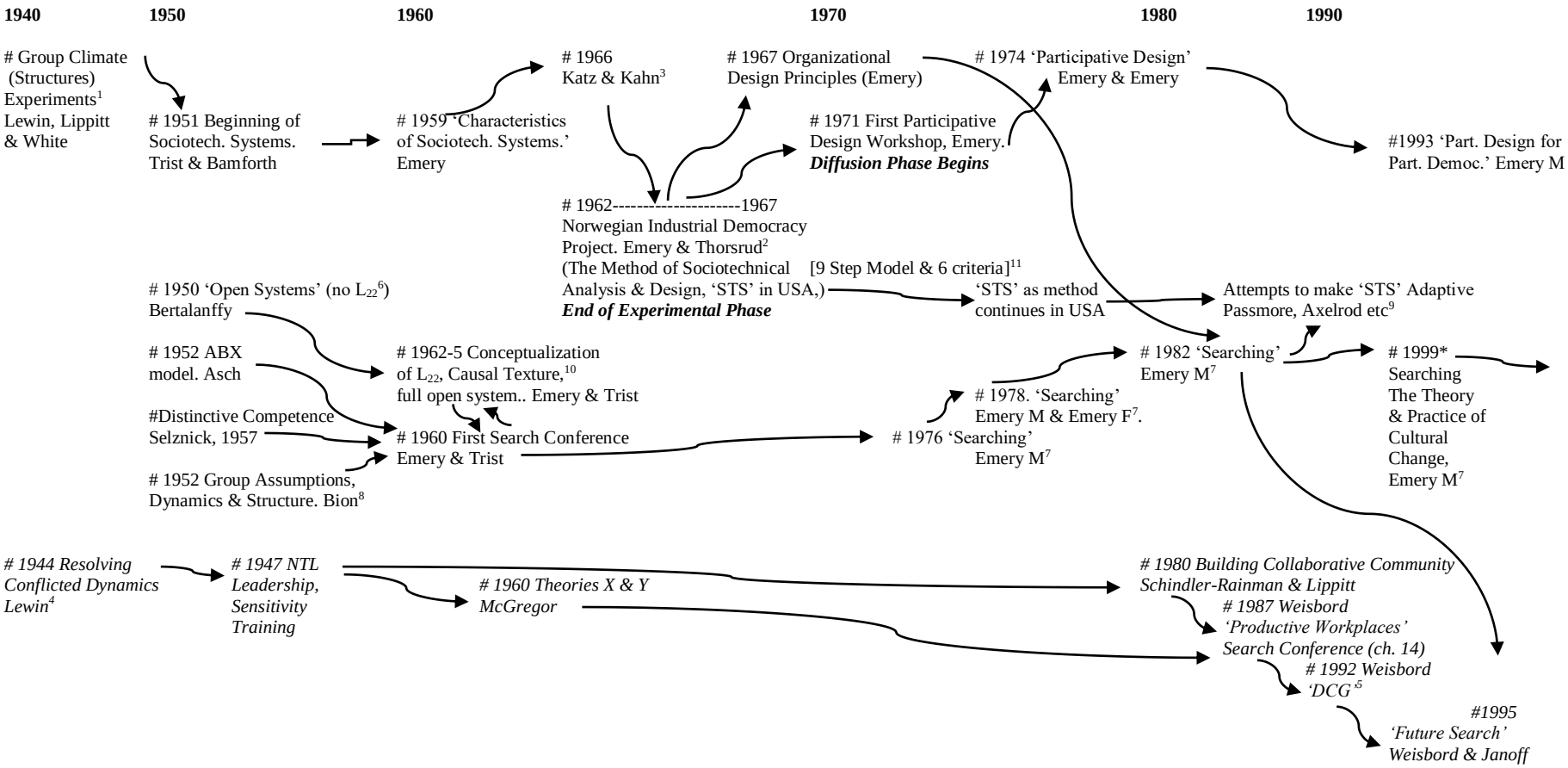
The Evolution of Open Systems Theory

Figure 1. The History and Relationship of Open Sociotechnical Systems Thinking and the Human Relations Movement with Relevance to 'Large Group Methods'

Merrelyn Emery, 1996; 2022



*Not shown but there has been a steady stream of developments and publications since 1999, including a full write up of *Unique Designs* in Emery & deGuerre, 2007.

Notes & References

General Note: Figure 1 is merely a more accurate and detailed record of the history leading to today's methods than that derived from Bunker & Alban 1992. The Bunker & Alban version of history has three streams, Gestalt, Systems and Psychoanalytic. This ignores:

- the fact that the Gestalt group was a primary and major source of stimulus, a precursor, to the flowering of systems research, and
- the major divide in the history of today's methods, namely that between those based on the *open system* with task mediated relationships and those based on personal and interpersonal relations, the foundations of the *Human Relations* school, a variety of *closed systems*.

All the methods derived from open systems theory (OST) are based on the ABX model while the Human Relations (HR) methods employ only the AB, AX and BX relations. The above history is organized into these two streams showing the influences and interactions between them.

There are multiple problems and inaccuracies in the Bunker & Alban version, not the least of which is that the Search Conference is placed within the psychoanalytic stream. It is wholeheartedly within the open systems and structural stream and it was not the psychoanalytic aspect of Bion's work which informed its process. The Search Conference IS open systems planning but that term (Jayaram) is put within the 'systems theory' stream. Alban & Bunker make no distinction -between general systems theory and open systems. Similarly, Weisbord is placed within the systems stream when his method owes more in its concept and process to the NTL tradition through Schindler-Rainman & Lippitt than it does to the method whose name he has appropriated. This has been dealt with in my paper on 'The Search Conference in the USA Today: Clarifying some Confusions'. In Weisbord's method, the importance of the extended social field, the environment, and learning about it as an entity in successful active adaptive strategic planning is trivialized and turned into an element of the human encounter.

Within the open systems camp, very different methods have been developed for the functions of planning and structural redesign for the very simple reasons that the functions are themselves vastly different, require different event designs and the participation of different people. The conceptual intertwining and coherence of open systems and structural design is illustrated in the development of the Search Conference. The practical linking of the methods of the Search Conference and Participative Design Workshop for large scale system change, is found in the 'two stage model' discussed by Diemer & Alvarez, 1995, (incorrectly attributed to Fred Emery by the Editor). All of these differences are confused in the Bunker & Alban version.

It is of course a great disadvantage for the Bunker & Alban version that most of the world's relevant social science literature is missing. Its concentration on what is known to Americans automatically introduces distortions and light weight sources such as Miller & Rice. As my version makes clear, Bunker & Alban have little notion of the rich history of open systems and its influence on their reading today. This potted history which includes only the major milestones and influences has been elaborated in great detail by the 3 volume anthology of the Tavistock - *The Social Engagement of Social Science*. In correcting this version of history I have not attempted to be exhaustive. Left out are such formative

influences as Sommerhoff (1969) and references such as *Systems Thinking* (Emery 1969, 1981), and *On Purposeful Systems* (Ackoff R L & Emery F E, 1972).

Other Notes

1. This series of experiments and publications established that there are only 2 genotypical structures and an absence of structure which is known as 'laissez faire'.

2. The conclusive nature of this project meant that no further research was required to prove that democratic structure based on the second organizational design principle (DP2) was a more human and productive alternative than the bureaucratic (autocratic), based on the first organizational design principle (DP1). As part of the project, Emery & Thorsrud also demonstrated that representative democracy (DP1) cannot produce the same results. Emery & Thorsrud included a republication of *Participative Design*, 1974, as Appendix 1 of the 1975 & 1976 editions to reinforce the message that a new method specifically designed for diffusion was available to replace the old STS analysis and design required for scientific validation.

3. This publication has become a major USA source but it was based on 'Characteristics of Sociotechnical Systems'.

4. The paper 'The Solution of a Chronic Conflict in Industry' is an example of that small part of Lewin's work which did not emphasize structural considerations and allowed serious misinterpretation of much of his work as fitting within the Human Relations school. Lewin was open to all the influences of the time but as his work and his biographer Marrow make clear, he was a 'systems man' although open systems thinking was at an early stage. His work has provided a foundation for much of the following development of open systems. The split between the open systems and human relations camps took place shortly after Lewin's death as elaborated below.

5. DCG = *Discovering Common Ground*. In 1987, Weisbord used the terms Search Conference and Future Search synonomously as they were used in Australia. This is also the way that Bunker & Alban use them (see pages headed 2. 'History of Ideas: Large Group Interventions' and 3. 'Types of Large Scale Systems Events.') However, on p3. they describe the Weisbord model and put the name Emery on it. In DCG Weisbord used the term Future Search to cover virtually any participative event. With great irony, Weisbord & Janoff in *Future Search* reserve the term for their own model and urge others not to use the name for other models (p51). The name Search Conference can now be reclaimed for the original and distinct concept.

6. L_{22} = 'extended social field of directive correlations' or broad social environment. Bertalanffy's 'open system' was an immature and incomplete conceptualization because the nature of the environment to which the system was 'open' was not specified. While it was called 'open', it was therefore, more closed than open. The conceptualization of an open system was completed in 1965 with Emery & Trist's identification of environmental causal textures.

7. These publications document the progressive and integrated theoretical and practical development of the Search Conference. The first publication in USA was in Sutherland John W (ed) 1978 *Management Handbook for Public Administrators*, van Nostrand Reinhold. USA. The intensive conceptual work put into the Search Conference drawing together the open systems stream and sociotechnical design based on the design principles can be found in Emery M, 1982, and further developed in Emery M, 1999.

8. Bion's appreciation of the role of structure was minimal. However, it was present as documented in Emery M, 1982. Further work on the group assumptions has shown that they are indeed the results of structure.

9. All these various models draw upon earlier work documented in this history. Axelrod for example, acknowledges the Australian work.

10. The completion of the conceptualization of the open system was clearly in Emery's mind at the time of the first Search Conference. The first publication of the concept of the extended social field of directive correlations (environment) and its causal texture was Emery 1963, 'Second Progress Report on Conceptualization'. Doc. T125, TIHR.

11. In 1967, many international social scientists, including Lou Davis attended the 'Lincoln' conference where what is now called the '9 step model' and the '6 criteria', the basic 6 psychological requirements of productive activity, were presented in a paper by Fred Emery. The 6 criteria were first published in Norwegian in 1964 and in English as Appendix V of Emery & Thorsrud, 1969.

The rest of this paper elaborates on the evolution of the open systems stream to its current state where a very comprehensive suite of methods covers most queries and problems organizations and individuals can run into today. It does not include statistical methods but open systems theory has also developed statistical techniques that deliver genuinely systemic analyses and syntheses (e.g. Emery F, 1976).

The Evolution of Open Systems Theory

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1998, 2022

The current state of the practical art in open systems theory (OST) consists of a suite of methods; the Search Conference, the Participative Design Workshop, those two combining when relevant to become the 2 stage model plus Unique Designs. Together these methods cover the vast majority of puzzles, problems and design options that most organizations and individuals will encounter.

This paper traces the origins of these methods back through history as far as the 'group climate' experiments conducted by the team led by Kurt Lewin in the late 1930s. There appears to be a general lack of knowledge and/or much misunderstanding about this history today. Other current methods often share these origins although many also include assumptions and components from the Human Relations movement. Open systems and human relations are the two major traditions in today's organizational field and in their modern forms, spring from very different sources.

The Human Relations movement in the modern era begins with the Hawthorne experiments, 1924-33, associated with the name of Elton Mayo. These experiments came to a set of conclusions which many contended were less decisive than claimed at the time, and have definitely not stood the test of time. However despite the weight of this negative evidence, these conclusions have become sacred cows in many parts of social science (Emery M, 2010).

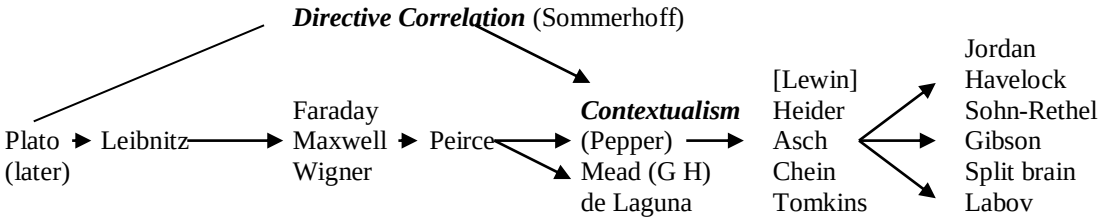

Figure 2. The Thin Red Line as Perceived by Fred Emery

As Figure 1 shows, the history of open systems extends back through the mists of time but there has always been such a discernible stream which Fred Emery and Eric Trist called the Thin Red Line (TRL). The TRL is the history of material universals while the HR stream consists of abstract universals (Emery M, 2000). We must not neglect here the very solid, and still accumulating, body of evidence that human history itself has an open systems past built on the second design principle, the basis of participative democracies. These cultures were acutely attuned to their environments, knew them intimately and nurturing them was their top priority (Knudtson & Suzuki, 1992; Emery M, 2021).

Figure 1 contains the overall road map of the evolution of open systems from its more recent origins to today. It is clearly not exhaustive as the three volume Tavistock Anthology (Trist & Murray) shows but includes the critical conceptual and practical breakthroughs.

For convenience sake, our map (Figure 1) for both Human Relations and OST starts with Lewin. Note that Fred put Lewin in brackets in Figure 2 because while Lewin was a 'systems man', he never entirely escaped from closed systems. His concept of 'life space' is one where personal forces were coordinated to thing-like regions and their properties of pressure, tension and boundaries.

These two sides of Lewin's work continued as quite separate streams of development until Weisbord tried unsuccessfully to integrate them in the 1980s. I have not attempted any greater detailed history of HR as that is not my focus here but needless to say, these streams are incompatible as their most basic assumptions and world hypotheses are opposing.

Brief history of the evolution of open systems

OST begins on the top left hand side in the late 1930s with one of the great classics in the history of social science. It illustrates the first type of Kurt Lewin's work, with the series of experiments and publications known as the 'group climate' experiments which would be called today 'structural' experiments. They established that there are only two structures and an absence of structure which they called 'laissez faire'. This was the stream which explored systems, and systemic phenomena concentrating on task mediated relationships. His work provided a secure foundation for some of the development of open systems

The second and much smaller body of Lewin's work is exemplified by the paper 'The Solution of a Chronic Conflict in Industry'. This did not emphasize structural considerations and has allowed serious misinterpretation of much of his work as fitting within the Human Relations school. Lewin was open to all the influences of the time but as his work and his biographer Marrow make clear, he was a 'systems man' although open systems thinking was yet to come. Lewin was obviously searching for a concept of social environment with the development of the 'life space' but his topology remained a closed system. One of the significant antecedents to Lewin's work was of course, the Gestalt school which gave us the formative concepts of 'figure/ ground,' 'pragnanz' and many other fundamental concepts relating to systems. The split between the open systems and human relations camps took place shortly after Lewin's death as discussed many times by Eric Trist, as for example in his introduction to the Orillia conference in 1985. "We were moving into the society and they (the Research Center for Group Dynamics at Ann Arbor) were moving away from it" (Trist, 1985). Post Lewinian social science in the USA has since been dominated by the human relations school.

The 'birth of sociotechnical systems' which was a direct ancestor of the climate experiments is acknowledged to lie in the work of and famous paper by Trist and Bamforth (1951) which explored a natural experiment with long wall coal mining. This work pioneered the first break with both human relations methods in industry which centres on improving such matters as personal growth, interpersonal relations and communications. It also provided an alternative to the other conventional approach of the time which concentrated on the technical and economic dimensions of work and workplaces. Trist & Bamforth showed that there were gains to be made for both productivity and people when the social and technical systems were jointly optimized.

At almost the same time, Bertalanffy was working on the concept of an open system and is generally conceded to be 'the father' of this concept. His concept however was incomplete as there was no conceptualization of the environment(s) within which these open systems existed. However, it was a major step forward and was picked up by Fred

Emery before he went to work with Trist at the Tavistock Institute in London. Building on Trist & Bamforth and further work and also including the concept of the open system, Emery wrote the other classic in 1959 which changed the concept to that of open sociotechnical systems. Open and closed systems were stated as alternative concepts in the development of theory but the intrinsic nature of enterprises dictated that only open systems thinking had the power to comprehensively explain the relations between an enterprise and its external environment. "If it is to achieve its ends, an enterprise must reckon upon the constraints implicit in its means and resources, both human and material. Beyond this, the people within an enterprise, particularly those concerned with leadership

- must come to see that they must organize themselves in ways appropriate to the nature and order of the tasks required by their environment
- their institutional ideologies and self-perception must in some way reflect their real relations with their environment" (EmeryF, 1959: 39-40).

From virtually the very beginnings, therefore, the sociotechnical stream was but a subset of open systems. The matter of open versus closed is, however, more serious in its implications than the note about enterprises would indicate as there is no such thing as a closed system in reality, nor have we even been able to create one. What does it mean then that we have many theories based on the notion of a closed system when such a thing does not exist and to the best of our knowledge cannot exist?

Katz & Kahn (1966) became a major USA source but it was based on ' Characteristics of Sociotechnical Systems'. The ***development*** of open sociotechnical systems continued with the Norwegian Industrial Democracy Program which began in 1962 (Emery & Thorsrud, 1969 & 1976). It was during this program that the method known as *STS* in the USA was fully developed and exported around the world. In 1967, many international social scientists , including Lou Davis from UCLA attended the ' Lincoln ' conference where what is now called the '9 step model' and the '6 criteria', the basic six psychological requirements of productive activity, were presented in a paper by Fred Emery. The '6 criteria ' were first published in Norwegian in 1964 and in English as Appendix V of Emery & Thorsrud (1969). From this point onwards in the USA, use of *STS* continued until it became obvious to many practitioners that it wasn't meeting its purposes very well. Its more recent evolution into participative and 'fast tracked' forms is outside the scope of this paper as it is outside the major line of open systems development.

The 6 criteria appear not to have been used as part of STS in the USA but they have proven powerful and arebuilt into the process of the *Participative Design Workshop* (below) as a part of the analysis of what the organization has been doing to its people. They are the intrinsic motivators. No amount of external rewards can substitute for them. The six criteria also balance the tension between autonomy and homonomy, the term which expresses our requirement for belongingess, interdependence with others (Angyal 1941).

The six criteria are:

1. Elbow Room. autonomy in decision making
2. Continual Learning for which there must be
    a. ability to set goals
    b. accurate and timely feedback
3. Variety
4. Mutual Support and Respect
5. Meaningfulness which consists of
    a. doing something with social value
    b. seeing the whole product or service
6. A Desirable Future

The first three criteria must be optimal for each individual. The second three exist within the climate of the system itself and are things you can never have too much of.

But the end of the Norwegian project was significant in more ways than one. In 1967 . Emery published his first appreciation of the two genotypical organizational design principles. These were to revolutionize the concept of open systems, his method for performing open sociotechnical systems redesign and as Figure 1 shows, much else.

The first design principle (DP1) is called 'redundancy of parts ' because there are more parts (people) than arerequired at any one given time. Its critical feature is that responsibility for coordination and control is located at least one level above where the work or planning is being done. DP! yields a supervizory or *dominant hierarchy***.** The second organizational design principle (DP2) is called 'redundancy of functions' because as many skills and functions as possible are built into every person. Its critical feature is that responsibility is located where the work or planning is being done (Emery F, 1967; Emery & Emery, 1974).

When the design principle of a whole system is changed. the resulting flat *non dominant hierarchy of functions* operates as a coherent whole with negotiations between peers replacing the former system of instructions down. Each self managing group at each level of the functional hierarchy does productive work which is governed by a comprehensive set of measurable goals covering every major aspect of the work. DP2 structures can operate equitably and safely only when there is a 'pay for skills and/or knowledge held' system in place and all essential training for multiskilling has been done before the new design goes into operation. DP2 structures evolve and provide the essential flexibility for dealing with changes in either the external environment and/or the organization itself. Designing on DP2 conveys the capacity to be internally active adaptive.

The results from the four field sites in Norway was accepted by industry, government. unions and academia asproof that democratic structure based on DP2 was a more human and productive alternative than bureaucratic or autocratic structure, based on DPl. So conclusive was this project that no further proof was required. This marked the end of the ***experimental phase*** of open jointly optimized sociotechnical systems. As part of the project, Emery & Thorsrud also showed that representative democracy (from DPl) cannot produce the same results as those produced within a participative democracy, that organizational form produced by DP2.

Emery returned to Australia in 1969 and immediately began devising a method for the diffusion of jointly optimized sociotechnical or DP2 structures. This method is called the *Participative Design Workshop* (PDW) and he piloted it for the first time in 1971. In

1972 he put it through ICI Botany with five chemical factories and a power plant. This marked the beginning of the ***diffusion phase*** of genotypical change for societal change which had been long discussed (Emery, 1969). Emery and others at the Centre for Continuing Education at the Australian National University poured considerable work into testing and developing this method in Australia and overseas and by 1973, we were sufficiently sure of its efficacy and reliability to write it up (Emery & Emery, 1974). Emery & Thorsrud (1976) included a republication of *Participative Design* as Appendix l of their final report of the Norwegian ID Project to reinforce the message that a new method specifically designed for diffusion was available to replace the old STS analysis and design.

Since that time, we have learnt much more about the whole process of producing participative democracies in many different areas and systems, including education and governance (Emery M, 1993). This is where we will leave this stream temporarily while we return to look at another part of the work of developing open systems which was occurring simultaneously . And to do that we return to the 1950s.

Development of the Search Conference

As well as the innovations of Trist & Bamforth and Bertalanffy in the 1950s, ground breaking work was also being done by Asch (1952, Bion (1952; 1961) and Selznick (1957.) Asch researched the parameters for effective or influential communication and Emery realized that Asch ' s work amounted to the conditions required to maximize the probability of success of task oriented work within an ABX situation (Newcomb, 1953) where A and B are people or groups and X is an object or purpose of mutual concern.

Bion discovered the basic assumptions that groups can make under certain conditions . These basic assumptions interfere with creative task oriented work and learning and are commonly what people refer to as negative group dynamics. We now know that these assumptions are a direct consequence of the first design principle DP1 (Emery M, 1999). Selznick explored some of the dimensions of organizational leadership and devised the concept of the distinctive competence of an organization, what that organization is uniquely good at. These sources are vitallyimportant in the development of open systems theory and practice as they were the major dimensions Emery built into the design of the first Search Conference held in 1959.

The first Search Conference also departed from the methods available at the time in other ways. It was specifically designed to produce learning and creative work in the pursuit of the task of planning a merger of two existing organizations , without the interruption of Bion' s group assumptions, and it almost succeeded in this. The most significant way in which it deviated from conventional methods was that it included as a major part of the work. the task of exploring the extended social field of directive correlations (Emery F, 1977; 1998) or social environment (Emery & Trist, 1965). Before we can understand this ground breaking innovation we must also look at the work Emery was doing concomitantly with the development of the Search Conference.

Emery realized that Bertalanffy's concept of the open system was incomplete and began researching its completion. He presented the first draft of this work to a meeting of the Informal European Group in 1963. The first publication of the concept of the extended social field of directive correlations (environment) and its causal texture was Emery F, 1963, ' Second Progress Report on Conceptualization', (Doc. T125, TIHR). This was later published as the citation classic ' The causal texture of organizational environments' (Emery & Trist. 1965). Essentially this paper conceptualized the nature of the social

environment within which open systems exist and presented its changing nature over time. Because systems are open to their environment, this extended social field is a major influence on what a system can and cannot do in the present and in the future. Hence, for an organization to establish active adaptive relationships with its social field, it must be able to explore this field and determine its most probable character in the future time of relevance to the organization' s strategic plan . It drew upon the formative work of Sommerhoff (1950; 1969) in defining a directive correlation for active adaptation. The 1965 paper is much cited but rarely used which goes a long way in explaining the rash of maladaptions evident in our world. OST appear to be largely alone in building this critical component of adaptation into all its methods.

The first Search Conference in 1959 explored this social field for the first time in practice and extrapolated its novel and predominant characteristics into the time frame relevant for the strategic plan of the merged organization. The minimal design of the Search today is built on the open system, thoroughly exploring the environment, the system and then integrating them. The transport equations between the two entities are met in the learning and planning the conference accomplishes. Its major task is to establish an active adaptive system principle, that which expresses the unique relationship between that particular system and its environment. In practice, this system principle is a set of strategic goals which are called the 'Most Desirable System' at whatever time the system deems it possible and relevant to establish active adaptation, usually these days about 2-10 years in the future.

As with the development of the Participative Design Workshop, the Search was subjected to intensive testing by the CCE team and others around the country with a continuous stream of publications about it, each showing a quantum leap in our knowledge. The first USA publication about the Search was in Sutherland's 1978 *Management Handbook for Public Administrators*. This development continued until the 1999 publication when it seemed all major aspects had been satisfactorily researched and problems solved. The final step was the resolution of the nagging problem of failures during implementation. This solution was the 2 stage model.

During this early development phase I realized that basing the Search firmly within a DP2 structure could overcome many problems in process and dynamics. Up until this time , it had been quite common practice to include small presentations within the Search Conference and this had proven disruptive of task and creative work. We often experienced two of Bion 's group assumptions. particularly fight/flight and dependency. More detailed research of Bion' s work showed that while his appreciation of the role of structure was minimal, it was present. Further observations of the group assumptions within Searches showed that they are indeed the results of DP1 structure (Emery M. 1982). From here it was easy to redesign the parameters of the Search Conference so that it encompassed a DP2 structure from the very beginning of the process. Our experience with it from this point has proven conclusively that the so called stages of group formation - ' forming , storming, norming and performing ' - are not inevitable but are structure dependent. When people start task oriented work within a DP2 structure, the group assumptions or negative dynamics do not appear (Emery M. 1999).

While it is quite clear from the above that there were only ever one stream of open systems, and the conceptual intertwining and coherence of open systems and structural design is best illustrated in the development of the Search Conference, there was a differentiation of methods for planning and structural redesign. This is for the very simple reasons that the functions themselves are vastly different, require different event designs and the participation of different people. The Search Conference was developed

specifically for planning and the PDW for redesign. But by 1982, the intensive conceptual work put into the Search Conference had drawn much more closely together the various components of the theory behind the methods . This integrative work has now been taken further to its current form as the 2 stage model. The 2 stage model is a more comprehensive and practical linking of the methods of the Search Conference and Participative Design Workshop for large scale system change (Emery M. 1999). It has been in the testing and development phase since 1991 and an earlier discussion of it can be found in Diemer & Alvarez (1995, where the 2 stage model was incorrectly attributed to Fred Emery by the Editor).

The two (2) stage model

The impetus for initiating the 2 stage model came from practice but its development involved returning to theory. On the practical side, there was the disturbing and continuing failure rate of implementation of Search Conference plans. From the beginning of the seventies, it became clear that there were two classes of Search Conference failure, those that failed because of inadequate preparation , design and management and those that failed during implementation. The former attracted by far the most attention and much conceptual and practical effort was put into developing the method and various forms of education.

The latter class, failures of implementation, received far less attention. The early SCs in Australia were predominantly community and issue based Searches. Pretty soon, however, after the first few had been tried and news of them diffused, organizational Searches began to be held. A consistently different pattern emerged with a much greater success rate during implementation for these organizationally based events than for the geographical community, industry and issue Searches. Organization was clearly involved.

But not all are as honest as Alan Davies when he noted (1992: 281) that many of the Searches he has designed and managed "failed to meet their primary organizational objectives". A well designed and managed Search usually only runs into problems in the third phase of implementation. When participants are asked why the Search worked so well. they often say it was because everybody worked so well together as equals, regardless of status and other differences. This observation is accurate because the SC has a DP2 structure. Implementation however, particularly for organizational Searches, proceeds through the current organizational structure which is usually DP1. People. therefore. do not work together as equals, nor do they communicate accurately or when they should. The DPl structure overcomes the positive experience of the SC. What is missing is the conceptualization of the design principles and their effects. Without it. there is no clearly articulated and understood alternative to DP l and no barrier to reverting to it. Implementation can then just fade away. While the Search Conference is designed to produce adaptive relations between system and environment, it is insufficient on its own to maintain the adaptation in the long term.

Some SC managers faced with imminent failures of implementation of their community Searches, but without a clear theoretical answer, reverted to the older consultancy practice of holding the client's hand during implementation and working to create the results on the ground. While this almost certainly increased the success rate, it in no way solved the dilemma and just as certainly slowed the growth of confident self managing communities.

Even when there was understanding of the cause of the failure, the cases were dealt with in isolation. For example, after the Search for the Future of the Canning Peach Industry in an irrigation area of New South Wales in 1977, the SC community set up a committee to coordinate the implementation of the action plans. Six months later, the Agriculture Extension Officer who was codesigner and manager, was asked to attend a meeting of this committee to help them get the process back on track. Attendance at meetings and subsequent action had steadily declined. Energy for implementation had dribbled away to virtually nothing

The structure (DPl) and dynamics of a committee as opposed to those of a group (DP2) were already known and so we worked in these cases to restore a participative group process in order to put energy and motivation back into the system. While the Search Conference is designed to produce active adaptive relations between system and environment it was clearly insufficient on its own to maintain the adaptation **in** the long term. The diagnosis was clear and the remedy was obvious and put into effect. But nobody made the leap to prevention.

On thinking about this, it became clear that a major plank of the theory had been effectively left out of the practice. This was the concept of ' people as open purposeful systems' (Ackoff & Emery, 1972) with conscious conceptual knowledge of the organizational design principles. This was the key to the solution. If people do not know what is causing a problem, they cannot solve it. As the cause of the problem was lack of knowledge of the design principles and how to design a DP2 structure, then the solution was obviously to add these components to the Search Conference. Then the purposeful people can make their own most desirable future happen with a much higher probability of success. The solution involved, therefore, a loop back into the evolution of open systems in order to move forward.

Adding purposeful people to the open system

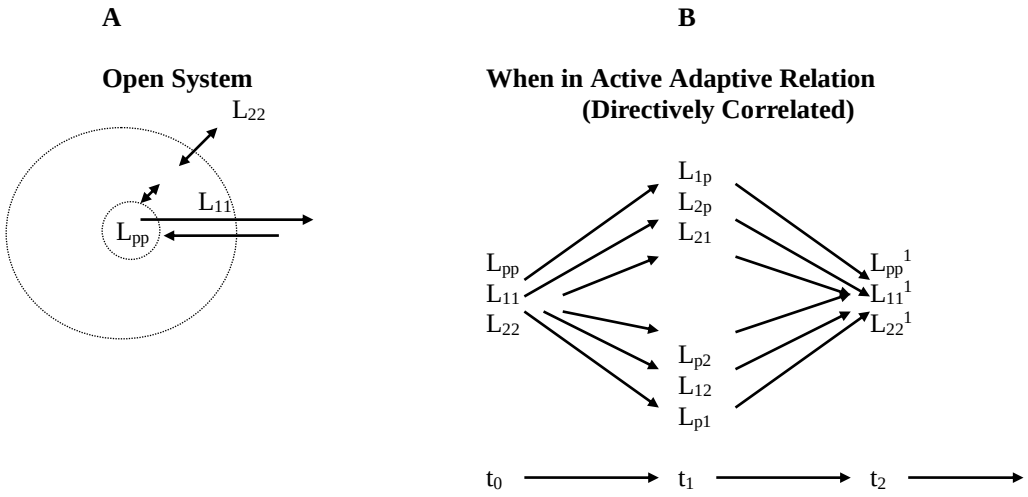

Figure 3. Individuals Within Systems Within the Extended Social Field

The basic diagram of adaptation between system and environment can be elaborated . What is a system in one context can function as an environment in another depending on the focus of the inquiry. Let us redraw the open system diagram with purposeful people

at the centre (Figure 3). Purposeful people have been recognized as being at the heart of the system for a long time (Emery F 1959; Ackoff & Emery 1972). People are systems in their own right. Figure 3 shows people as purposeful systems living and working within larger systems such as families or workplaces which function as task and learning environments. There are, therefore, ***three*** sets of adaptive relations, between people and their organizations, i.e. their immediate environments, between people and the extended social field and between the organization and the field. All must be congruent if there is to be adaptation.

The third set of arrows representing the relation between individuals and the extended field is often forgotten, but it is required to completely explain the dynamic nature of the set. It is obvious that people bring to any system or organization, values and expectations derived from the whole of their life and their immersion in the broad social field. When these expectations and values are not met an intensifying spiral of discontent is generated. While the system or organization may be aiming for outcomes which are adaptive interms of the environment, they are producing behaviours in individual people which are maladaptive in termsof these desired outcomes.

The organizational system (L_{11}) acts as an environment for the individual systems within it. Rather than have the simple model of open system in environment which yields the one set of transport equations (L_{21} and L_{12}), the more complex model yields 3 sets of cross boundary relations. the original plus two sets involving the individual purposeful people themselves. If staying with the original notation (1 for system, 2 for environment) and adding a p for individual people, the diagram looks as in Figure 3. The Lpp then is the lawful nature and internal dynamics of people themselves. The relations L_{1p} and L_{p1} then define the system acting on the people or the people learning about the system and the people acting on the system. "beating the system' or otherwise working with it. This model also shows that when people are living and/or working in a system, they also have a continuing set of relationships with the environment or field, learning from it and acting upon it as individuals regardless of the behaviour of the system itself.

In Figure 3B, adaptation can be seen as a constant state of change appropriate to both the nature of people and a continuously changing environment. Learning and dynamism are inherent to active adaptation.

Note however that none of these sets of relations are totally independent as:

- by definition, all are mutually determining and
- if the system is a human system, it consists of these people in some type of structured relationships.

There is, therefore. constant interdependence between the people and the system but the implications of the model for active adaptation are quite clear. There must be congruence between **all** sets of relations if there is to be genuine continuing active adaptation.

The system itself must be meeting the needs of the people as per the six psychological requirements as above and both the Norwegian Program and subsequently the Participative Design Workshop had proved that open jointly optimized sociotechnical (DP2) systems had far superior ability (than non jointly optimized sociotechnical, DP1, systems) to achieve directive correlation with their people.

Putting together the conceptualizations of the SC and the open sociotechnical system and redrawing it in the form of the open system, it is easy to see the implications for

implementing the action plans of a Search Conference. The relations L_{21} and L_{12} as part of the set required for active adaptation define the process of the SC and are necessary but insufficient on their own. The other necessary and sufficient part is given by the internal active adaptive structure of the L_{11} such that all relations of person, organization and environment are directively correlated. *Therefore, the Search Conference cannot achieve active adaptation unless the organizational structure of the system which implements the action plans is also either designed or redesigned as a DP2 structure* (Figure 4).

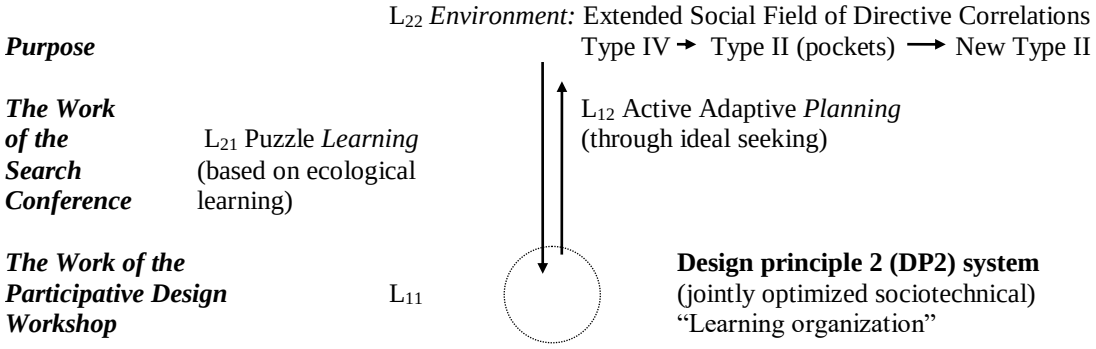

Figure 4. The 2 Stage Model for Active Socioecological Adaptation

For continuing long term active adaptation, the system itself must be organized as an environment for learning, in other words, a 1earning organization' . But there is no implication here that organizations learn - they can't because they don't have nervous systems. The only sensible definition of a 'learning organization' is "an organization that is structured in such a way that its members can learn and continue to learn within it" (Emery M 1993, p2). Only then do people have the opportunity to continuously learn from and about their changing environment and to continuously and actively adapt their systems to it. It is now necessary to see the focus of active adaptation as *'purposeful people in environments'***.**

We can now explain failures of SC implementation quite precisely. Because the SC is designed and managed as a DP2 system, at the end of it one of two things may happen depending on whether there is an already existing system or not. For an existing system, as in an organizational SC, the system begins to implement the action plans, still with the existing DP1 structure. The people walk out of a democratic system within which they have determined their new future straight back into a bureaucratic one within which they are supposed to implement it. Immediately, there is a conflicting or maladaptive relationship instituted between the system and environment on the one hand, and the system and the people on the other.

In the cases of a geographical community, new networks or issue Searches where there is no pre-existing organizational structure. one must be designed to implement the action plans. The hope had been that the experience of the Search as a DP2 structure will be sufficient to inculcate knowledge of the design principles, that is, people will recognize the difference and therefore, choose to continue working as they did during the Search. In some cases they do. However, the number of cases in which they haven't shows that the experience of a DP2 structure on its own is often insufficient to overcome the conventional and implicit assumption that there must be a DP1 structure. Despite their experience of something entirely different, there is no ***conscious conceptual*** knowledge

of an alternative. Therefore, they set up what they know, usually a committee with the normal disappointing results.

Practical outcome

The model is clear. Adaptation must inhere in all sets of relations of people, system and environment. But at the end of a community SC, either a geographical community, industry or issue based Search there is no organization (system) to redesign. One must, therefore, be designed. Note that whether or not this is consciously conceptualized. an organizational structure will be brought into being. And as above, this is precisely where so many failures of implementation have arisen . The very act of people coming together to implement a set of action plans means that an organizational structure has been decided. And when people know of no alternative to bureaucratic (DPl) structures such as committees, this is what they design. They then experience the disillusionment of watching the inevitable results - attendance at meetings fade, energy rapidly drain away and implementation stall.

If there is an organizational Search. E.g. the Future of Existing Organization X, best results over the long termwill be realized only if the existing structure is redesigned on the second design principle. As stated in the introduction, Searches for existing organizations have a better track record of implementation than do community Searches. And that is simply because there is a known structure regardless of its design principle. Any reasonably well run organization, and most that initiate SCs are amongst the better run, will use the most appropriate parts of the organization to carry the implementation. And for the short term , this is sufficient. The problem for existing DP! organizations begins later in that the people who live and work within them are not motivated to maintain the adaptive relation between organization and environment. Without a change of design principle and the creation of a learning environment, all of the implicit individual learning of environmental change and its implications is lost to the organization. Worse, when the people realize that the new relation between system and environment has little relevance to their daily work and lives, they will come to regard it with the same cynicism as any other trivial or superficial change. This means, of course, no change to the principle of hierarchical dominance (DP1). When people are denied the opportunity to use their capacity to learn, think, make decisions and plan, no amount of money, profit or new technology is goingto impress them.

To prevent these failures, all that is required is to tack a modified PDW onto the end of the Search. It is modified because it is to design an organization rather than to redesign an existing structure, which is the purpose of the original PDW. Both the original PDWs for redesign and the modified form for design from scratch can be found in Emery M, 1999, pp211-217.

The major differences in workshop design between thosefor redesign and SC follow up (design) are for the case of a community Search first:

- These people may never have worked together before and as there is no existing organization, the 6 criteria must be done on a previous similar experience. Most people will have been involved in some community or voluntary activity which involved trying to get some plan achieved.
- Goals have already been set in the SC as the Most Desirable System and action plans have been devised for these
- If particular resources such as skills do not reside within the implementing

group, they must be brought in.Communities usually will not have the resources to start training up people in specific skills or knowledge. Instead, the community must do some further action planning to acquire the required skills or other resources, either directly or through the process of diffusion. There may be some considerable work done matching and then readjusting immediate steps in implementation with the needs of effective organization for implementation.

For already existing organizations , the members can of course complete the matrix for the 6 criteria for their own work. Using the PDW in these settings serves as an easy introduction to the design principles and opens the way for further discussion of full scale organizational change. Adaptations of the modified version have been used for industrial greenfield designs.

Tests to Date (from 1991)

The following initiatives provided opportunities for trialling this more comprehensive design for a totallysuccessful process and implementation.

- experimenting in short training courses on participative methods for active adaptation at the Centre forContinuing Education (CCE) of the Australian National University (ANU)
- designing an introduction to ANU's new Internship program
- community planning in Torres Strait
- a participative event to rescue a community from conflicts exacerbated by a Weisbord so called 'Future Search' (Weisbord, 1992; Weisbord & Janoff, 1995).
- SC for the 'Future of Participative Democracy' in the Americas
- whole system change in Region 9 of the US Forest Service

During the short training courses at CCE it became obvious that several participants were taking the course because of an immediate need for wholistic organizational change projects which would necessarily involve both SCs and PDWs. They wanted to learn methods for structural change as well as participative planning. They were a sign of the times. Increasingly, organizations were looking for something that actually worked because everything else hadn't. And there were enough well educated people around who understood the lessons of time to know that long term solutions could not not result from short term fixes. They provided a space to experiment with a range of sessions designed to meet these expectations. A modified PDW to follow the SC was one of these experiments

I was asked to design an introduction to ANU' s new Internship program. It required a modification of the *Participative Design Workshop* such that the Interns could design their own organization for mutual support and learning while working individually in sometimes hostile environments. Interns had no problem conceptualizing their own democratic organization to provide genuine mutual learning and support. Time after time, they decided upon self managing groups based on common sense practicalities such as research interests, geographical location, etc. Coordination and sharing across the groups has been remarkably easy and productive. It has been handled by informal meetings after scheduled lectures, through events arranged over phones etc. Nothing

further from bureaucratic 'meetings, meetings' could be imagined. Each of the six intakes resulted in a tight knit community.

Successful community planning in Torres Strait required a conceptual understanding, translated and built into a practical organizational infrastructure, sufficiently robust to overcome years of entrenched dependency. This resulted in a two phase project consisting of individual community SCs followed by two multicommunity integrated training, planning and design workshops. During these workshops, all basic concepts in both the SC and the PDW were briefed and were used to do further joint community action planning and organization for such critical matters as educating their people for customary (Indigenous) law and designing effective community meetings. This was to provide the reality of self management that was so strong on the rhetoric but so weak on the ground. The results have been evaluated in part and built into further planning at the regional level (Emery M et al, 1996; Paton & Emery M, 1996).

The 'rescue event' was complex and needed a unique design to bridge the gap between the failed Weisbord 'Future Search' and a new more promising start. The original conference followed no logic. Different components of the open system were muddled together and there was some immature action planning in the form of 'shopping lists' in the middle of the event[1]. This was left hanging and time ran out to return to it at the end. There was no effort to integrate small group reports. The participants (there is no evidence that they became a learning, planning community) were left with an undifferentiated array of data and utter confusion. There were serious conflicts underlying this confusion which were rapidly exacerbated by the setting up of committees with their predominant dynamic of fight/flight. They needed a clear set of goals and a new effective organizational structure to replace the failed committees. Elements of both the SC and the PDW were woven together in order to begin the necessary reconstruction of goals, action plans and community (Diemer & Alvarez 1995).

The SC for the 'Future of Participative Democracy in the Americas' was a large complex Search to create a network of people committed to improving the chances of a more adaptive and participative democratic Western Hemisphere. It entailed a unique design, the last part of which was a PDW to design the organizational structure to carry the implementation.

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[1] There is much confusion between the Search Conference and the Future Search but they are very different methods. Weisbord 's method is often placed within the systems stream but it owes more in its concept and practice to the Human Relations (NTL) tradition through Schindler-Rainman & Lippitt than it does to the method whose name he has appropriated. I have documented the main dimensions of this confusion (Emery M, 1994). In Weisbord 's method, the importance of the external social field and learning about it is trivialized and turned into an element of the human encounter.

In 1987, Weisbord used the terms 'Search Conference' and 'Future Search' synonymously as they were used in Australia. In 1992, he used the term 'Future Search' to cover virtually any participative event. With great irony, Weisbord & Janoff (1995. p51) reserve the term 'Future Search' for their own model and urge others not to use the name for other models. The name 'Search Conference' can now be reclaimed for the original and distinct concept.

Region 9 of the US Forest Service had long been aiming for active adaptive change. Many members of the Forest Service had been trained up in the methods discussed here and in December. 1995, the work began on a wholistic system change in Region 9. Of the 16 individual forests within the region, 14 participated in Search Conferences with PDWs attached and one followed up with a full scale forest organizational redesign. The consolidation event to produce a coherent direction for the region was held on 14-16 May, 1996.

Conclusion and The Future

Most failures of implementation of SC action plans have involved lack of knowledge of the organizational design principles when setting up an organization to implement. The necessary congruence between system, environment and organisational structure had been neglected. This deficiency has now been recognized and addressed. Each of the testings so far for the two stage model has been successful. People can design a DP2 organization from scratch.

Why has it taken so long for the solution, the preventative method to implementation failures to emerge? The first and foremost answer appears to be that the two methods of the Search Conference and the Participative Design Workshop were conceptualized and, therefore practiced, as separate and discrete methods doing two quite separate jobs, the SC for participative strategic planning and the PDW for redesigning existing organizations. They had not been seen as complementary parts of a whole change towards active adaptation and therefore, continuous change.

The second answer is that only specific conscious conceptual knowledge of the design principles can overcome our culture's wholescale rush into mechanistic thinking, and therefore bureaucratic structures, from the beginning of the industrial revolution. The active adaptive planning done within the SC to establish a directive correlation between system and environment was necessary but insufficient to fully achieve active adaptation. Active adaptation has to include both an active adaptive relation between the system and the environment, and active adaptive relations within the system itself.

The 2 stage model not only raises the probability of successful planning and design, it also speeds up diffusion as more people gain conscious conceptual knowledge of the design principles. It has been successfully tested in the higher education system and here there is a low level of awareness of both the need for fundamental change and the possibility of it (Emery M, 1998). As the breeding ground for most of our professionals and managers, this fundamental change is required to encourage creativity and innovation. Large scale change projects in the education systems will demand new and different designs and we can expect that these will generate substantial new knowledge.

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