Community Action: Applying Systems Thinking To Succeed

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Summary: As part of a Master of Environmental Science program at Monash University (Melbourne, Australia) three community actions were examined. The first was a practical application of systems analysis to establish a very successful bicycle users group in a large local government region in Melbourne, Australia. The second was a failed attempt by an organized community group to influence pollution control in a new road tunnel as part of a huge road development. The third was successful in its aims of improving viual and sound amenity of this development. In all cases the issues of the environment and transport were paramount.

The systems analysis included determination of boundaries, stakeholders, formal and informal social structures, influential elements within the system, etc. But the power of the analysis was in the recognition of the processes and inter-relationships of the elements, the inputs and outputs, and the reinforcing and balancing controls. The insights gained by this analysis enabled the identification of points of effective leverage.

This analysis was applied to the bicycle users group. The success of the process was not only in the formation of the group but also in its relationships with cyclists, the community at large and the local government. The group developed rapidly into a large effective organization, and has successfully lobbied on behalf of cycling and the environment, arranged consciousness-raising events and linked strongly with environmental groups.

In stark contrast, the second community group action on the road tunnel pollution was based on a public campaign and confrontational debate, and failed to achieve its aims. The third group successfully used extensive networking and leverage.

The paper is intended to stimulate debate about community action, especially as it pertains to cycling. In particular, the author seeks to demonstrate the power of systems thinking to shape community action, and welcomes discussion about this approach.

Introduction

Advocates for cycling, like those for the environment, often feel impotent to induce societal change. This may be despite well presented arguments, thoroughly researched positions, and the example of personal commitment to a healthy environmentally sustainable lifestyle. Systems thinking may offer not only insights into the reasons for society's resistance to change, but also tools for achieving change.

Although western democracies exhibit a mixture of social choice mechanisms, a persuasive argument can be made for the idea that we live in a predominantly corporatist society, one in which power is concentrated in the hands of political-economic elites. Fischer (1990) refers to this kind of organisation as that of a "technocorporate state", arranged hierarchically into 3 levels (Fig. 1):

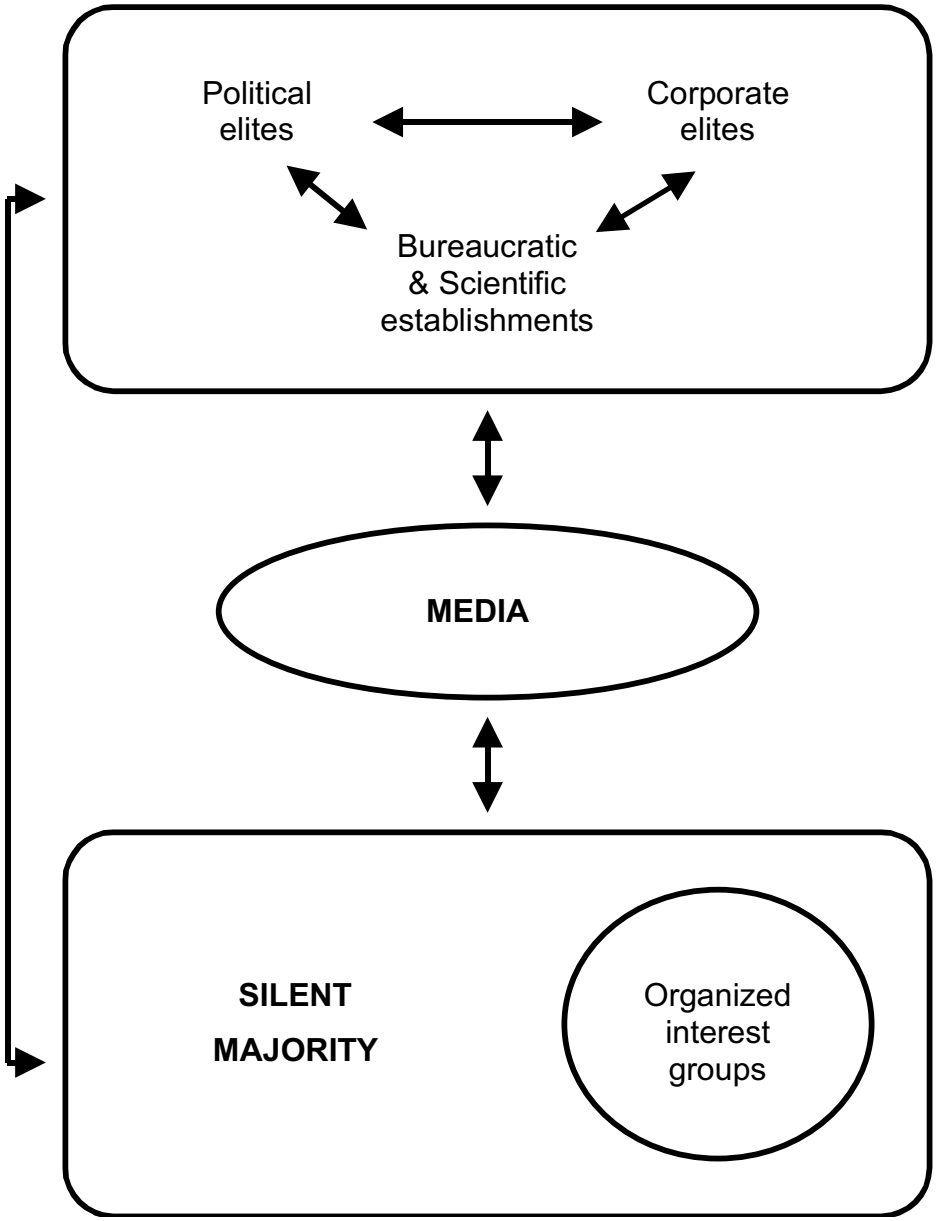
1. Political elites,	Corporate elites
2. Scientific/academic establishment,	Managerial/bureaucratic service
3. The public silent majority	Organised interest groups

At the top is a small number of elites who make the basic governing decisions. They include the executive branch of government, senior legislators and administrators, together with the powerful corporations and government departments. Fischer believes that although these elites compete over the direction of policy, they cooperate to shape policy agendas in favour of their own interests and ends.

The second level in this system is composed of the scientific/academic and managerial/bureaucratic experts who provide the technical information and skills upon which the elites depend for the implementation of policy. In return for a so-called comfortable position in society, they offer (on the whole) their allegiance to the elites whom they serve. These experts may on occasion fashion policy; however, their primary function is to provide the technical support upon which the power of the political-economic elites depends.

Fig 1

Model of the Technocorporate State (modofied from Fischer, 1990)



At the bottom of this hierarchy is the public, the silent majority, cut off from meaningful involvement in the decision-making processes. For example, the elites may attempt to structure the dialogue over environmental issues, in which transport could be included, as highly specialised technical and economic, which they could dominate, rather than as matters of social and environmental value about which the public may have a more powerful voice.

Emerging from the silent majority, however, are organized and vocal interest groups who are seen by elites as a worrisome threat to their agendas. They may attempt to change the dialogue, and argue outside the paradigms of the elite, or tackle the elite on their technical and economic ground.

In Fischer's view, then, modern western societies are corporatist states in which there is a strong movement toward the use of technical information to suppress or avoid normative discourse, that is, democratic discussion of purposes and ends.

Between these two often-opposing groups are the media, which inform, or scandalise, the public about the machinations of the ruling elites while providing the latter with an insight into grassroots reactions. The expression of power within this technocorporate state does not have to be repressive, coercive and violent. Rather, the system forms a continuous network in which both the weak and strong participate in a tight web of power relations. In this respect, power is closely connected with the production of knowledge and with what is

given the status of truth. With this sentiment, human choices are shaped by powerful elites who have access to privileged information and the means to manipulate public agendas and perceptions.

Therefore, with promises of political devolution and participatory decision-making implicit in recent discussions of environmental and transport management seeming hollow in the face of the reality of the technocorporate state, and with environmental and grassroots organisations recognising this, and being unwilling to stop their challenges to the status quo, the prospect for conflict is systemically embedded.

As a member of a team of students I examined three situations where groups concerned with cycling transport and environmental issues interacted with sections of the "technocorporate state". These studies were conducted as part of an environmental science course at Monash University, Melbourne, Australia. The first was the establishment of a bicycle users' group (B.U.G.) in a municipality in Melbourne, Banyule. The second and third were community groups with environmental concerns involving Australia's largest infrastructure project to link freeways in Melbourne.

For our analyses we were encouraged to use systems thinking. Without delving into the theory of this method, I shall describe it briefly and outline how I used it.

Systems Thinking

Systems thinking attempts to gain insight into the pattern of "the whole" (Capra, 1996), rather than trying to deduce it from analyses of the component isolated parts. One must shift one's attention up and down the levels of complexity of nested systems to gain the overall picture. Rather than seeing the component parts as objects with a set of properties, of which relationships with other objects are secondary, systems thinking regards objects as networks of relationships embedded in larger networks. Understanding these relationships allows us to see the large patterns clearer and enables us to see how to change them.

Some of the tools to change these patterns are described by Senge (1992). They include: seeing inter-relationships rather than linear cause-and-effect, processes of change rather than snapshots, feedback loops both reinforcing and balancing, delays in processes, limits to growth, and "shifting the burden". This last feature describes the shift of a burden of a problem that is difficult to confront or obscure to a superficial solution that only ameliorates the symptoms, leaving the underlying problem unaltered or worsening.

The most powerful insights for change are recognising the types and points of leverage, "seeing where actions and changes in structures can lead to significant, enduring improvements" (Senge, p. 114). The opposites of leverage are pushing hard against the system. This produces a response in the feedback loops that preserves the system's homeostasis, or status quo. However, leverage lies in the balancing feedback loops, which are limiting the systems. One has to find a process that enhances these feedback loops.

Case studies

To demonstrate my practice of systems thinking, I shall describe my catalytic role in the formation of the B.U.G. I first had to decide on the "boundaries" of the systems under consideration. These may be drawn quite arbitrarily, but should have some recognisable features, e.g. the municipal boundaries in the case of the B.U.G.

I then listed all the stakeholders, social structures and institutions both formal and informal that may impinge on the formation of the B.U.G. These included the cyclists, their families, the council bicycle coordinator, various other council offices and staff, schools, colleges, hospitals, businesses, cycle retailers, the peak Melbourne bicycle organisation (Bicycle Victoria), police and politicians.

With the help of an experienced cycle advocate, Michael Oxer, I gained knowledge of the inter-relationships of these elements. I also understood some of the processes at work producing the (unsatisfactory) cycling environment in Banyule.

The most important step was the identification of the points of leverage in this system. The nascent B.U.G. was formed by myself and Michael Oxer as a “front” organization. It was used in letters written to council and other authorities about bicycling matters of concern, such as the need for a council bicycle strategy and a bicycle coordinator. The success of the nascent B.U.G. as leverage may have its roots in the social constructions concerning organizations that clearly advocate or take a stand. The name conveys the organization’s purpose, and its existence suggests a group of committed and concerned individuals whose united action would be a

power to be respected. Furthermore, it assumes an identity readily recognized by the council and the community. As it continues to be used in communications, its legitimation increases. An individual would be far less likely to achieve a similar status on a single issue.

We were fortunate in having a partially formed cycling strategy, which was used as a point of leverage. The strategy is a documentation of an agreed direction of development, legitimated by passage through the various council individuals and departments. Thus it becomes an authoritative guide for council and the community.

With the concept of a cycling strategy accepted by Council and its officers, we were able to argue for a bicycle coordinator to complete the strategy and plan its implementation. The bicycle coordinator's leverage stems partly from the coordinator's role for the implementation of the strategy. It is also enhanced by the relationships with the council and the community potentially within the structure of the job but realised by the coordinator's activities.

The peak cyclists' organisation was also used in leverage. We were very ably assisted by a senior member of its staff. It was the source of an extensive network of cyclists in Banyule. Its considerable resources were placed at our disposal to communicate with this network.

The B.U.G. was officially launched at a carefully prepared meeting. Its proposed aims and objectives had been worked out in advance, but the people at the meeting had the opportunity to change these and other aspects. Their opinions were obtained through a workshopping process in small groups.

The outcome was a thriving users' group. It lobbied successfully with council for cycling amenities and for the appointment of an officer who could continue the work of the cycling coordinator. It organised recreational and social events, and held informative general meetings. Having catalysed its formation, I was able to withdraw from active participation early in the B.U.G.'s formation without adversely affecting the group.

Importantly, the processes of the B.U.G. formation and most of its activities were free from the conflict predicted by Fischer. It was interacting with a part of the technocorporate state, but by the use of systems thinking its formation and at least initial objectives were achieved by levering change in the system.

By stark contrast, a community group in an inner suburb of Melbourne had a very confrontational relationship with the proponents of the Melbourne CityLink Project. Although their concerns were air pollution rather than cycling, their actions and results can apply to other situations that more directly involve cyclists. This project is the biggest infrastructure project in Australia and is supported by the State government and major private corporations, the essence of Fischer's technocorporate state. It links a number of radial freeways which used to end in city streets. It includes long bridges and two one-way tunnels, the longer of which is 3.2 km. Because of the large traffic volume, there is a substantial air pollutant load to be vented.

The technocorporate solution to the long tunnel ventilation was a vent at the emerging portal end of the tunnel. By using very high air flows the vent effectively expelled untreated tunnel air into the atmosphere and preventing any egress of tunnel air through the emerging traffic portal. Residents in the suburb surrounding the vent became concerned about the health implications of the pollution from the vent, and formed R.A.C.O.F. (residents' action committee on freeways).

R.A.C.O.F.'s aims were to have the vent doubled in height from 20 to 40 metres, and air cleaning technology installed. The CityLink authorities took the view that the increase in air pollution over background with the current design would be insignificant, and that the measures demanded by R.A.C.O.F.were unnecessary.

R.A.C.O.F.entered into an acrimonious debate with the CityLink authorities and the Environment Protection Authority (EPA) about the levels of pollution that would be expected. The surface arguments were about technical issues with modelling of the pollution distribution being a central issue. However there were also underlying arguments about competence of the experts, the motivation and honesty of the EPA and the motives of R.A.C.O.F. There was no indication of a systems approach. In fact, one could have demonstrated their predicament in systems terms.

So far the R.A.C.O.F. situation fits the prediction of Fischer regarding the systemically embedded prospect for conflict. But even with CityLink it does not have to be so. This was nicely demonstrated by another residents' group, the Southern Unity Group (S.U.G.). Admittedly their aims and objectives were very different from R.A.C.O.F. They were primarily concerned with visual and noise pollution rather than air pollution. They were

arguing for better sound barriers and the partial replacement of concrete walls with transparent material. They had concerns also about the landscaping of the project near their homes.

S.U.G. very successfully achieved nearly all their aims. They had a partial systems approach. Stakeholders were clearly identified, and key personnel in various institutions networked extensively, building trust and cooperation. They chose a direct low key approach in their negotiations with the CityLink builders. Rather than competing on the technical front with imposing detailed scientific reports, they presented the issues in a visual format, illustrating the effects of various design proposals, realising the power of this type of presentation. They were not questioning the expertise of the authorities. One can see the identification and use of leverage in S.U.G.'s approach.

Discussion

Fischer's model does not explain the successes of the B.U.G. or S.U.G. In both cases a systems approach helped achieve their goals. Fischer is far more successful explaining R.A.C.O.F.'s situation and failures. Of course, the situations and aims of the three organisations are quite different, but this does not explain their different achievements. For example, there was an equivalent group to S.U.G. who tried to achieve similar objectives in a different part of the CityLink development. They chose the confrontational approach similar to R.A.C.O.F. and failed.

These cases may illustrate the utility of a systems thinking approach in cycling advocacy. Of course, this type of analysis may show that a particular system is very resistant to change, and no effective leverage readily identified. This situation prevails in environmental transport and cycling advocacy in several regions of Melbourne. The organisation responsible for road planning and building, Vic Roads, is very powerful within government and the community, and well resourced. It is separated from the public transport departments, and as a result there is no effective overall transport planning. This "system" results in continuing enormous investment in large road building, both freeways and tollways, but never meets the insatiable demand for more car facilities. There seems to be no attempt at demand management except serendipidously through tolls and traffic congestion.

Planning for bicycles is very much a peripheral issue in this system. However, there are opportunities for bicycle advocacy. One lever that is being used at present is the legitimisation of some bicycle planning within Vic Roads. This is achieved with the help of key senior personnel experienced in bicycle needs. A program has been developed for a principal bicycle network, costed and itemised in the budget.

Another way around a seemingly unchangeable system is to extend the boundaries. In this way new elements and processes within the system may become apparent, and new feedbacks and levers discovered. In the example above, the creation of a ministry responsible for all transport may make possible the consideration of several modes of transport other than cars and trucks, in a coordinated system. This type of change occurred in the USA where Federal transportation funding and policy took a new turn in the early 1990s, when the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 opened up federal transportation spending to uses beyond road building.

Conclusion

In conclusion, these case studies demonstrate some successful and not so successful ways of producing change in the technocorporate state. The study of the B.U.G formation was prospective and deliberately used systems thinking. The other two cases are anecdotal and retrospective. The three case studies do not scientifically prove the value of systems thinking. Although one can generalise from them, the differences in aims and objectives, and in contexts, make detailed comparisons and conclusions less meaningful. Nevertheless, they do suggest that there may be value in using systems thinking for successful bicycle and environmental advocacy.

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