Complexity science conflict analysis of power and protest*

Abstract

Complexity science, aside from adding considerable jargon, aids in understanding power, powerlessness and empowerment in conflict. Weaker agents, that would traditionally be viewed as powerless in a conflict, use protest and direct action to improve their own fitness, and deform stronger agents' fitness on their shared landscape. They attempt to drive a conflict system into instability, or unpredictability, or launch a cascade where a new equilibrium may favor their disadvantaged position. The data suggest that networked protest groups, as well as having passion and commitment, are structurally and organizationally well adapted for their fight against the powerful. Following complexity principles makes protest groups fitter, and makes the hierarchies against which they are protesting less inclined to understand or tolerate them.

The initial conditions of the policy protests

This is an era when protesters can follow policymakers to meetings in all corners of the globe. Policymakers react by deploying phalanxes of police around their meetings in easily sealed locations, such as Kananaskis, Alberta and Evian, France. Whether they are anti-globalization or local community activists, protesters with no traditional power and few resources have become interested in policy-making. This is neither new, nor unique, nor ending soon: "A little rebellion, now and then, is a good thing" (Jefferson Jan. 30 1787). The late Jane Jacobs affirmed this in a speech at a conference I attended in Vancouver B.C. in 2001, "Some things shouldn't be built anywhere."

My study of the 21st century heirs to Jacobs' and Jefferson's attitude used empirical methodologies and multiple theories to research how the agents in three large policy conflicts self-organized against the policies to which they objected. I use the complexity science term 'agents' rather than public participation theory's term 'participants', or conflict theory's term 'parties'. Analysis based on complex adaptive systems added new conceptualizations of seemingly stable systems that turned chaotic, illustrating the feedback loops, uncoordinated self-organization, connections, and interactions of the agents who experienced the conflict.

One finding of the study was that power in conflict, viewed through complexity science, has more dimensions than conflict theory alone has investigated to date. Some conflict theorists suggest that an impartial intervener can empower the less powerful (Barsky, 2007). Complexity science attributes power to affect whole systems to the tiniest perturbation that can create the conditions for a cascade, collapsing a powerful system that was thought to be robust. Each agent has its own power that it exercises at different times by adding inputs to the system.

Complexity science complemented this study's conflict theory, public policy theory, and public participation theory standard empirical analysis: theoretically informed case studies, comparative case methodology, and interviews. My research could cross disciplinary boundaries with nonlinear as well as linear conflict analysis using, as Crocker (1999) advised, whatever, whenever, and however theory works on the ground. The relevant ideas from each discipline could be brought to bear with information that each alone could not have. There are many models available, and "only by thinking like sociologists as well as like mathematicians can we pick the right one" (Watts, 2003: 156).

Conflict and public participation theorists and practitioners accept that conflict is inevitable. However, the conventional frames focus on interventions to prevent and deescalate conflict. The three issues that most conflict research addresses are: why or why not does an intervention process succeed; what will prevent, mitigate, or resolve conflicts and; how can conflict management skills be improved (Fisher, 1997; Harrison, 2003). In this conceptualization, protest is likely to be categorized as failure of public participation or conflict resolution processes.

Like conflict and public participation theorists, complexity scientists also accept destabilization in systems as inevitable, but for a reason that is quite different: because constant equilibrium runs counter to nature. Complexity science is as yet unburdened of wanting to prevent, manage, or resolve conflict as a goal. Using multiple frame conflict analyses I was not biased against protest escalation. Influenced by appreciative inquiry, I looked at how protesters pursued their goal of affecting policy debates when they were, in a traditional conflict analysis, essentially powerless.

I did not attempt to define success for anyone, or inquire into how, or with what skills some facility got sited somewhere, or how a policy was modified to make it acceptable to the protesters, or generalize an intervention model for public protests. I studied cases where the policymakers' power was so overwhelming, or constrained by 'reality' and rules that they had little incentive to

negotiate with their opposition, and offered few process interventions of interest to the protesters. With a large pool of peaceful protests that had mobilized masses of the publics, to choose from, I selected those in which I had the most interest — environment, governance and sport/social justice. From this research and my practice as a conflict manager I pluralize 'publics'. A monolithic, singular public does not capture the variety of audiences, the plethora of motives, and the diversity of interests present in policy conflicts.

1. The Anti-Adams Mine Coalition, 1996 to 1. October 2000. Because Toronto had consulted extensively on its landfill shortage for decades without a decision, city council used its municipal tender policy that does not necessarily offer public consultation. Council accepted private landfill operator RCN's proposal to use the depleted Adams Mine pit in a remote area of northern Ontario. The anti-Adams Mine coalition stopped the policy that would have converted the mine pit into a landfill.

2. Citizens for Local Democracy (C4LD), 2. October 1996 to April 1997. Ontario Conservative (Tory) Premier, Mike Harris, viewed his Parliamentary majority as a mandate for every policy between elections, and fast tracked the amalgamation of the cities of Scarborough, Etobicoke, York, North York, East York, and Toronto into one mega-city called Toronto. The government offered only the minimum legally required public consultation, and also stated it could ignore the publics' deputations. C4LD could not prevent the mega-city of Toronto being created.

3. Bread Not Circuses (BNC), January1997 3. to July 2001 (although the group did not 'officially' protest until March 2000). BNC opposing Toronto's Olympic bid ended when the International Olympic Committee (IOC) selected Beijing for the 2008 Games. BNC protested governments' spending priorities on elite hallmark events, but not on affordable housing. The policy incorporated consultation about how to bid but not whether bidding was appropriate, which was BNC's issue.

The three policy options of this study were in either/or terms, with no return to the original state if the policy created harm. "A common property of non-linear systems is hysteresis: once a change has been made, it is difficult or impossible to undo" (Orrell, 2007: 285). There were deadlines to vote on the policy, which compressed the time for people to become informed, consider the policy's intended and unintended consequences, decide to object, and form a protest group. The policy was the only reason for the protest groups to exist. Therefore, there was no group to consult prior to the policy announcement. The policymakers were suddenly confronted with hastily formed ad hoc groups raising concerns about potential harm that the policymaker had not considered, thought was a tolerable risk, or did not accept as possible.

While protests do not follow one model or script, the generalized initial conditions of a public policy protest are that: a policy is proposed, there are objections to it, policymakers reject the publics' call for changes or make token changes, the objectors organize against the policy, and the policymakers defend the policy, which evolves into the protest groups and the policymakers in conflict. Prior to the policy announcement, those who became protesters were going about their lives. The announcement was the initial condition for the protest groups to form: they are an emergent property of a policy system. After the policies were announced, those future protesters became alarmed at what they viewed as unacceptable risks or outcomes that the announcements did not mention. They sought out other people with similar concerns. If the policymakers held to a linear implementation process, the protesters' strategy became to capitalize on the policy system's nonlinearity.

Hilary[1], an interviewee who had a busy professional life prior to taking on leadership of C4LD, described how quickly the protest group formed. "I gathered a group together in North Toronto and we called ourselves Concerned Citizens. A friend said that John Sewell was involved in a group called Together. They operated at a much higher level" (Interview with Hilary). Nodes of people met in community centers, churches and homes. Those nodes initially did not know of each other, and communication links were limited. The nodes sought each other out, and linked around the C4LD hub to form a network with the express purpose of opposing the amalgamation policy.

The wicked question of consulting the publics on policy has perplexed interveners designing conflict and decision-making processes. Wicked questions are challenges to traditional thinking that facilitate far-from-equilibrium conditions and self-organization (Zimmerman, Lindberg *et al.* 1998). A multi-theory approach suited case studies with no official conflict resolution or public participation intervention. The Butterfly Effect influences the direction of the system by amplifying some inputs (Lorenz 1993). Thus, different behaviors could emerge in each protest depending on how the initial conditions and the inputs along its path interacted. Words and acts of public dissent could be analyzed as inputs that might have outcomes that are larger, smaller, or simply different than the policymakers or the protesters intended or predicted.

Applying complexity science to conflict studies

The majority of public policies will not generate a protest or, any objections to a policy may be managed through public participation and conflict resolution mechanisms. Public policies exist within powerful systems able to withstand considerable

assaults on their authority. Perturbations continually enter and are absorbed by the political, economic, and social systems without creating conflicts in or shocks to the policy system. Policymakers in stable states, where public policy protest is not the norm, have reason to prefer policy system linearity, whether that is real or not. They would have difficulty justifying a policy, law, or program if they admitted uncertainty about the variables, how the parts would interact together, and what outcomes might emerge.

While policymakers might accept that instability is part of any system's natural order, there are long stretches of public policy time that are, or appear to be, stable. Thus, public policy protest is often viewed as a challenge to mandated policymakers, which makes the turbulence seem surprising and maladaptive. Protest is also "likely to be a relatively futile task since it requires a direct challenge to both the popular majority and power of the state. It is also likely to foster resentment and backlash" (Burgess & Burgess, 1995:114).

Geller and Johnson's (1990) analysis of public policies used complexity principles to evaluate outcomes. They compared planned, linear policy intentions with what actually happened; that is, the outcomes the policymakers intended and did not intend. They found that overall the relationship of intentions to outcomes was weak. Conditions pre-dating or post-dating policy implementation were as important to the outcomes as the policy implementation. Thus, they concluded, implementing a policy was but a single factor in "a context of historical significance, unpredictable current events or happenings, and playful minds at work" (1990: 57).

Gell-Mann (1994) explained that effective conflict strategies drive systems to the edge of chaos where learning and adaptation happen. Complex networked systems are robust and fragile in ways invisible by looking at the components making up the system. The parts do not sum up in a linear, direct cause and effect. Watching 8,000 individuals as they work or garden would not explain their behavior if they were 8,000 demonstrators marching. The behavior change is an adaptation; an evolutionary strategy for agents to thrive, and keep a system healthy. Those who do not adapt to changing circumstances in their environment can perish. A too stable system does not adapt and dies, and a too chaotic system cannot adapt and dies. Between the two extremes is a middle place where a system settles down in high fitness at the edge of chaos. Avoiding or resolving conflict early and quickly, as traditional theories promote, (this is not intended to include violent or bloody conflict) may prevent a system's adaptation. Protest can tip the policy system into chaos and back to the edge where innovation, richness of ideas, information exchange and change can flourish. Disorder in policy systems can be good news because the edge of chaos is a place with surprises where people learn.

Protest in the complexity frame can be envisioned as tuning of the fitness landscape, which is the environment in which an interactive dynamic occurs. Fitness landscapes are not topography in the physical sense. Landscapes adapt and evolve as the agents build capacity to climb higher or fall lower on their peak. Peaks are areas of optimal fitness that agents achieve by adapting to the environment, and by avoiding sub-optimal fitness. Those at their optimal peak tend to stay there. When the fitness landscape is in balance it is neither too smooth nor too rugged (Bar-Yam, 1992; Homer-Dixon, 2000).

Bread Not Circuses' protest against TO-Bid's (Toronto Olympic Bid Committee) bid for the Olympic Games introduced interesting topography to the fitness landscape in the 'gravitational pull' from a powerful, remote policymaker. The protest group wanted no public money spent on the Games while the International Olympic Committee Charter requires that hosts financially guarantee the Games. TO-Bid had to satisfy the IOC because it had the power to satisfy TO-Bid. Also, TO-Bid was competing with cities that made promises to the IOC that TO-Bid had to match or better. There was an externally imposed power input to the fitness landscape, limiting TO-Bid's adaptation to the protest if it wanted to host the Games.

Understanding agents as connected on their shared landscape reveals the public policy conflict relationship. In a conflict theory analysis, agents seek to keep themselves and their allies fit, while making the enemy's landscape rugged, and deforming its fitness. In a complexity analysis, the fitness landscape is jointly tuned, and one agent achieving a fitness peak can aid even their adversaries' fitness because the agents' landscape is interdependent.

If conflict resolution and public participation processes are not options

To better understand the dynamics of power asymmetry, I disconnected the analysis from the outcome of the protests. Complex adaptive systems have attractors that define the boundaries around what is being studied. I used temporal attractors for protest start and end dates for data collection, and geographic attractors around the City of Toronto. However, in complex adaptive systems, events are the cause and the effect of other events. Each protest had initial conditions that preceded the start date and consequences after the end date. As well, power was imposed by agents outside the geographic limits of the protest, and by agents who would not normally be considered stakeholders, parties or participants to the protest. Thus, any protest boundaries are somewhat arbitrary.

If the study includes outcomes, another difficult issue is 'who won'? The interviewees of the amalgamation case, for example, expressed to me their concern that their efforts had been wasted. Outside, instead of inside, the study's boundaries, 'outcome' and 'success' might be different, indefinite, or even unknowable. It might appear that there is a winner based on whether a contested policy is implemented or not. However, in a complexity science analysis, wins and loses are temporary; no victory is permanent. This keeps systems in equilibrium as losers continue to work to reverse their fortunes (Kiel & Elliott, 1996). An

outcome might be a global loss, but a local win. Even 'winners' feel this: "Our success was not in stopping Adams Mine. It will come back if we don't do the other things" (Interview with Peter). Or, an outcome might be a local loss, but a global win: C4LD did not stop Toronto from being amalgamated, but did stop later amalgamation plans for other Ontario cities. In conflict theory, wins and losses are somewhat easier to tally than if conflicts are viewed as complex adaptive systems.

Defining outcomes also depends on which agent's critique of the policy one believes. Passing a policy is a win for some, a loss for others. As the *Toronto Star* reported of amalgamation: "It's either an anti-democratic screed tantamount to the War Measure's Act or a timely blueprint for a better city. Take your pick" (Swainson, 18 December 1996). *Toronto Star* publisher John Honderich wrote: "When one of Toronto's most cherished former mayors, David Crombie, tells the guru of urban planning, Jane Jacobs, that she's got it wrong, you know the debate isn't about classic party politics" (Honderich 11 January 1997). Public policy protest can bring out extreme opinions, making outcomes an interpretation of even the local result.

Another reason I analyzed conflicts not outcomes is that there is a large body of research on the need for early prevention, management, and resolution, but little research on benefits aside from the ultimate resolution of the conflict (Daniels & Walker, 2001). Harrison also noted that conflict resolution studies are generally from the perspective of the intervener seeking a balanced outcome. His research demonstrated that the voices of the disputants, in that case aggrieved students at a university, have been neglected in conflict studies. Since it was the protesters' perspective that I was attempting to decode, my research speaks from their points of view. In these cases, the protesters had a larger vision of the policy area in question than the policymakers.

"We have an issue agenda and also a social agenda. We're always looking for the opportunity to bring them into the frame. Each reaction is an opportunity. The hole in the ground is an opportunity to get traction to discuss democracy, as are secret meetings about throwing garbage in a hole in the ground. I have to find the opportunity to heat things up so that I can talk about those things. I can't heat them up by throwing rocks" (Interview with Peter, anti-Adams Mine Coalition).

While Peter was teaching the technical language of leachate pumping systems, he was using the controversy to "get traction" for a larger discussion about democracy, and the meaning of being a citizen in an age of garbage-creating consumerism. The policymakers wanted to find an acceptable place to put garbage on behalf of the communities they served. The resolution of these kinds of conflict can be important to the long-term well being of communities. However, in some cases, conflict resolution processes can stifle dissent, preserve the status quo, and improve the lot of the powerful. It was the inputs and learning from the protests, and not what outcome was achieved, that revealed the interdependent conflict system relationship. Since each conflict system had a distinctive history, participating agents and context, and each unique policy system can absorb some inputs but not others, it would be difficult to generalize how to achieve desired outcomes from particular inputs.

Finally, outcomes are not always connected to being powerful in the traditional sense. In all three cases, the power imbalance was extreme, and the protest groups started with little except their beliefs that the policies were wrong. Negotiating these policies was not an option unless the three powerful policymakers were prepared to examine the ideologies that had created the policies: they were not. Protest power, a "weapon of the weak", was the choice for these objectors.

"I remain opposed to the Games — that horrific aberration. It's completely compromised, without hope of reform. I have to say that to temper the statement that 'thanks to BNC, social issues have made their way onto the bidding process'" (Interview with Sam, BNC).

As Sam made clear, some people are not interested in negotiating with powerful elites on how to modify a policy to make it palatable, or to site a facility in someone's backyard, or on planet Earth. And, not surprisingly, the proponents of the facility and the policymakers did not necessarily want to negotiate with them either. The protesters understood that they did not have clout to act unilaterally, and no recognizable ability to sanction the powers that did. If they could not force the policymakers to the table to negotiate with them about changing the policy, common sense suggests they should not have power to compel the withdrawal of an offending policy, which was a more extreme 'win'. Yet, that was their goal.

The power imbalance was a personal burden on the interviewees. Policymakers, such as Toronto Mayor Mel Lastman and Ontario Premier Mike Harris, who labeled them chronic malcontents, and Mr. Dick Pound of the IOC, who called BNC bottom-feeders, and journalists who accused them of sensationalism and lying, (although interviewee Chris noted that it was the new journalists who disbelieved BNC) may not have appreciated the cost of being protesters. As volunteers they took on the forces of well-paid policymakers and hired-gun consultants. John Sewell, leader of C4LD, estimated that he often gave it 60 — 70 hours a week (personal conversation in Toronto, October 2001). Kate gestured to a height above her table to show how the C4LD paperwork took over. "We were spending 18 hours a day for free" (Interview with Kate). Betty, while working at a full time job, coordinated a database of thousands of C4LD supporters (Interview with Betty). Hilary devoted herself to C4LD full time for a year (Interview with Hilary). It was the same for the Adams Mine protest.

"We dropped everything to work on this. It was full time for everyone... For six months, Shelley, Katrina and I talked nothing but garbage every day... We ask how we can cope in an increasingly charged political atmosphere... In five years I'll be out of

BNC protest leaders Helen Jefferson Lenskyj noted that she received death threats, and became reluctant to give out her telephone number; Chris and Sam confirmed this:

"Two people were nominated to the finance committee and that was Helen and I because we had... pensions and a grievance procedure and we were protected. Cathy's job was threatened when she spoke out about the Olympics" (Interview with Chris).

"I got death threats. Some I took seriously…. rancor against us was so brutal that I directed my children not to answer the phone" (Interview with Sam).

Premier Harris attributed the protest groups' opposition to the 'litigation industry' rather than to democratic debate. Among other attacks on the protesters, he stated it was the six cities' mayors anxious to keep their jobs who agitated citizens that would otherwise favour amalgamation. In this perspective, the protesters were just self-interested. In other words, an advocate for a position must keep the conflict alive or else the advocate's job 'dies' (Daniels & Walker, 2001). The protest groups rejected the view that they were protesting out of self-interest, and pointed to the high costs they personally paid. The policymakers wanted to return the policy system to stability and predictability through the protesters accepting that Toronto would be amalgamated, and should bid for the Olympics, and ought to use the Adams Mine pit for garbage. In response, the protest groups attempted to destabilize policy-making equilibrium. The protesters believed that the policymakers who ignored their worldview gave them no other choice.

A complexity analysis of power

A wicked question of conflict theorists is the impact of conflict resolution on those with lesser power (Davidheiser, 2006). Boulding (1989) defined power as being able to get what you want. He described power in social systems as explaining the past, determining the future, and constraining or permitting activities in the present. He demonstrated how different agents use different categorizes of power in different contexts to get what they want. For policymakers' governance this often meant a smooth walk over a well-known political landscape with the resources of multi-national corporations, lobbyists, special interest groups, news media, courts, executive branch, and police included in the policy system. Based on a conflict analysis of power available to each agent in the protest system, it was not a fair fight on an even playing field.

Analyzing protest activities as inputs into a nonlinear public policy system reveals the power dynamics. The cause of system collapse might be the cumulative effect of multiple inputs, or that one input struck something in exactly the right spot, or perhaps one input struck in a fateful order after another input. It cannot be predicted what, or in what order, or how many, perturbations a system can absorb before it goes chaotic. The cause of the collapse might be inherent interdependencies in which once one thing happens, more things are likely to happen (Watts 2003). Whether a system cascade is likely to occur, or to be benign or disastrous if it occurs, are currently unknowable because of all the combinations or orders in which the components in a system could be undone. Thus, the technically disempowered protesters' strategy and hopefulness makes sense. They add inputs to aid policymakers' adaptation or, if that fails, to create a policy system cascade.

"[The anti-Adams mine coalition] didn't have the votes going into the October meeting. We were up against the largest garbage company in the world, up against the largest contract in municipal history in Canada, up against the most powerful lobbyist around working for WMI, and up against most of council and the Mayor. We didn't think we had a chance against the aligned powers that massive. We had nothing; no resources, no money, no time to organize. … None of us thought we could win, but we passionately believed that we had to fight" (Interview with Dusty).

Policy-making systems view protest as disruptive to social order because of the self-interest in getting the policy passed with the least possible expenditure of resources. Legally, policymakers have the power and responsibility to act as if linearity applied, policy consequences were knowable, causes were linked to and could explain effects, and predicted policy outcomes could be controlled (Elliott *et al.*, 1999; Carpenter & Kennedy, 2001). However, this may be only a preference, not a reality. People, who were often powerless except at elections, disrupted the smooth walk of the powerful by effective protest that forced issues onto the policymakers' agendas, which ordinary politics would otherwise have ignored (Euchner, 1996).

Protest groups generated alternative knowledge and risk assessments to counter assurances about the policy's efficacy. When that alternative knowledge was ignored, the protest groups' organizational structure demanded the policymakers' attention. Structures of hubs, nodes, and networks are resilient and inspirational in small worlds, whether it is organizational structures, human social structures, or information transfer (Arrow, 2002).

Small world networks are connected by interpersonal links of social ties. The ties can be as varied as families in close proximity, or widely spread groups that share a similar faith or identity or hobby. The paths from one individual to another in a small world network are clustered, not random (Watts, 2003). Whether the individuals know each other as people or not, they know that others of their 'kind' exist and they could find each other. Every person interested in an event would tell someone in his or her small world network until everyone interested in the event anywhere could have the information.

Zimmerman (1998), citing Kelly, referred to this flexible, highly networked structure as "swarmware" that can rapidly respond to crises. It is distinguished from the hierarchical structure of "clockware" that does not as easily respond to new information coming at high speeds, or to system turbulence and perturbations. The structures of policymakers' clockware and protesters' swarmware compounded their differing worldviews, making it difficult for them to agree on likely or desirable policy outcomes, or to understand each other. The policymakers considered protesters unelected, unaccountable, and governed in a way (the protest groups operated by consensus) it may not have understood or approved, or both.

Swarmware, while foreign to the policymaker's hierarchy, proved adaptive and resilient (Arrow *et al.*, 2000; Falconer, 2001). Complexity principles suggest the clockware power used against the protest group may have optimized the swarmware organization. The protest groups' organization was so many-headed, leaderless and self-organizing that it had, intentionally or otherwise, built-in efficiencies. Since each protest group was stretched thin with limited resources, it created effective complex hubs of coordination, clustered nodes, and interlinked social networks.

All three protest groups followed the complexity principle of requisite variety, and were as diverse as the issues and agents on whose fitness landscape they were interacting. The dispersed hubs of leadership coordinated the protest activities. They were channels for information created and disseminated, in the Adams Mine case, by a linked network in the provinces of Ontario and Quebec that share the watershed. C4LD coordinated with Ontario-wide networks of people concerned about Tory power. It became the hub of many local community-based protest groups because it held regular Monday night meetings where people could vent their anger, get information, listen to celebrities speak about democracy, and volunteer for protest activities. BNC had an international network of allies in bid and host cities.

The daunting power asymmetries suggested that the protest groups ought not to have had any influence over the policy debate. The power against them included the police to control crowds by detaining and arresting protesters, guards to clear the legislative public galleries, the courts to obtain injunctions that the police served upon and enforced against the protesters. The policymakers had large budgets to promote their favored outcomes, and news media support for the perspective that policymakers' were maintaining social order (Brooks, 1998). All the interviewees complained of news media indifference to their perspective. When Kate was certain C4LD's protest would make the front page, she found the newspapers did not even carry the story.

"We were mice trying to get attention from the floor… We had a meeting with the [Toronto] Star, with their writers. We were shunted to a little crammed room on stools, like a principal's office… We had similar meetings at the Globe [and Mail] and CBC [Canadian Broadcasting Corporation]" (Interview with Kate).

The policymakers could make a telephone call and get in the news. They had access to power elites, and the news media, and were able to restrict the protest groups' access. "David Crombie [Chair of TO-Bid] put the word out that he wouldn't tolerate any positive coverage of us or the issues we would raise" (Interview with Sam). When the IOC Technical Evaluation Committee invited BNC to meet with it, TO-Bid attempted to restrict their meeting, including a face-off with security guards (Interview with Helen).

Policymakers also defined what behaviors were acceptable. They had powerful norms for control. The Speaker of the House decided what was disorderly, banned C4LD's leader from the legislature grounds, and ordered the public gallery cleared if, in his opinion, protesters disregarded the rules. The Tories introduced legislation that read, "Decisions taken cannot be reviewed by or appealed to a court," putting policy outside the court's jurisdiction. The Tories changed the Environmental Assessment Act before the Adams Mine was considered so that it could pass review, and also changed the time-allocation rules in the legislature for the amalgamation debate. TO-Bid established policies for visitor behavior to avoid what it decided was disorder at open meetings.

The policymakers could even create an image that the protesters were escalating the conflict. They had barriers erected to restrict access to the steps of the legislature where C4LD habitually made public statements. As the number of rules and police presence increased "you kept trying, you'd look more lunatic. We didn't change our tactics but as [the rules] changed, the dynamic changed" (Interview with Hilary). The news media could make Bread Not Circuses look more radical by reporting that BNC had contributed to Toronto losing a previous bid for the 1996 Olympics.

Instead of attempting to use traditional power against policymakers, the protest groups used power that is visible through a complexity lens. They perturbed the policy-making system as often, as robustly and in as many creative ways as they could to churn the fitness landscape, counting on system vulnerability to a cascade. Protest power lay in driving policymakers from their comfort with central control, stability, and predictability to the edge of chaos where they might learn, adapt, and coevolve.

Using a multitude of tactics to make space for discussion of their knowledge and issues, the three protest groups strove to create the conditions for a bifurcation in the public policy. Systems at bifurcation points are far-from-equilibrium and unstable. The protest groups attempted to keep the system unstable by generating novelty and surprise. When unable to directly affect powerful policymakers, the protest groups used tactics to attack the policymaker's fitness peak. For example, the protest groups pressured even more powerful institutions to deny the local policymakers the decisions they wanted. They asked the Pope to cancel the international World Catholic Youth Day that would attract approximately 400,000 visitors to Toronto. They lobbied the IOC to reject Toronto's bid, and petitioned the Governor General of Canada and the Lieutenant General of Ontario to refuse to allow amalgamation to proceed. The power wielded by His Holiness and Their Excellencies became analyzable inputs in the complexity science frame.

The protesters understood that they would not be perceived as credible if all they did was demonstrate. They wanted their worldview as part of a democratic debate and therefore, they reasoned, they had to behave democratically. "Some people wanted to do more civil disobedience. For the most part, C4LD was not interested in civil disobedience. It was not part of what we did" (Interview with Hilary). The protest groups hoped at least one of their activities would be *the* perturbation that created a bifurcation and a policy system cascade. They used what power they could: moral persuasion, research into the government's facts to provide alternative facts, multiple nimble community mobilization strategies, and mass dissent. Without staff or money a few protesters could reach large audiences. Technology and information were power balancers. Where social movements of decades ago had to rely on costly and time intensive printed and mailed literature, the protest groups instantly posted online research, opinions, bulletin boards, and links to others' websites (Falconer, 2001).

BNC stopped doing what Helen referred to as the "liberal stuff," such as trying to meet with councilors. "We thought that everything we did was creative … given the climate and high security (Interview with Helen). Anti-Adams Mine protesters did the liberal stuff and street theatrics. Dusty put Mayor Lastman's phone number on cell phones' speed dial, and had summer festival attendees clog the mayor's voice mail with messages objecting to his support of the Adams Mine plan (Interview with Dusty). Peter and Henry coordinated a telephone bank from which volunteers phoned Torontonians asking them to call their councilors (Media release Pollution Probe, 29 September 2000). The protesters calculated that they needed to change approximately nine votes and found constituents who would telephone potential swing vote city councilors. They urged people to write, phone and visit councilors (Interviews with Henry, Peter and Dusty). They filled a fiberglass moose [a symbol of Toronto in 2000] with garbage. When councilors went on a five-hour tour to the Adams Mine site in June 2000, a cavalcade of protesters with black armbands and a hearse dogged them.

When the chaotic period of the protests ended, the systems returned to stability in new states of equilibrium with an amalgamated Toronto, a changed garbage disposal policy, and Toronto considering its next Olympic bid. Globally, BNC is still a hub of information linking protest groups in other Olympic host and bid cities. The anti-Adams Mine coalition won their protest at a local time scale. At a global time scale, the Adams Mine is still a tempting pit for Toronto.

C4LD was a local loss by the protesters. However, C4LD networked in Ontario ridings where they felt that a Tory might be vulnerable in the next election. That input amplified and Premier Harris retreated from his policy of amalgamation of other small into large cities. In future, amalgamations would only happen at the request of local municipalities. A government source confirmed the Premier did not again want to face protests in unwilling communities. Within the selected temporal and geographic boundaries the protests' outcomes were known, but the protests' effects and learning remains in the policy system.

Protest contributes to the health of the policy system

Those in power and the news media who dissed (disrespected) and dismissed the protesters may not have appreciated the alternative knowledge. Had the anti-Adams Mine coalition not raised the issues of leakage from the Adams Mine, the proponent's report that the pit was solid rock without fissures would have been uncontradicted. C4LD critiqued the cost savings of amalgamation, and BNC discredited TO-BID's bid budget. Those contributions are usually unacknowledged, marginalized, ignored, or criminalized.

What protest groups say to policymakers is approximately: 'despite your planned policy outcomes here are the unexpected impacts on our mutual interests or fitness that are unacceptable risks.' The policymakers might either rewrite the policy to take those impacts into account, or respond that the potential risks raised by the protest groups did not outweigh the potential benefits, or were not realistic, as policymakers did in these cases. Certainly, the protesters wanted to win. However, to them winning meant preventing policy mistakes and, by doing so, solving the problems of garbage disposal and revitalizing Toronto other than by the Olympic Games and restructuring. These protest groups were not just against the public policy. "We could point to alternatives that worked. We were not just saying 'no,' we were also saying 'yes' to something else" (Interview with Dusty). The protest groups took responsibility for helping the policymakers solve each problem, but on different terms than

originally conceived.

Self-interest allows agents to negotiate from informed positions about what is important to them, which is a foundational concept in negotiation theory. Complexity science credits self-interest with improving the fitness landscape shared by *all* the agents. By improving its own fitness, an agent can contribute to the fitness of other agents who are competing or trying to live cooperatively with it. Paradoxically, although the preferred outcome for each was 'death' of the other, their struggle made them fitter. The agents of all three policy conflicts chose an extreme place: one wanting to implement policy in stability with the protest dead, and the other trying to tip the policy-making system over into chaos where the policy would die. This improved the possibility of maximizing their own fitness, and maximizing the possibility of death to the other. Together they improved their joint fitness landscape with, among other things, more information, expanded allies, unusual public and media interest in public policy and increased options for the future.

> *"The print journalists thought we were whacked out extremists except we did our research and got our facts right. The media came to us for inside information, while portraying us as ne'er do wells and opportunists. The [Toronto] Star ran long stories on the Olympics and facts came right from BNC without credit, because that would've legitimated us. The media still come to us for reliable inside information, while not supporting our political stance. It was a sophisticated relationship" (Interview with Sam).*

BNC interviewees expressed the alleged self-interest of getting their version of the facts into the public domain. However, they did not obviously benefit when that happened because they were not attributed as the source. BNC kept reminding council that the bid's financial statements were outstanding. When TO-Bid finally produced them, BNC exposed flaws until To-Bid withdrew them for revisions (Cain 24-30 September 1998). Their knowledge improved the bid, which is part of risk management.

C4LD differed from 'classic' protests (if there is such a thing) because there was no threat of something sited in Toronto's backyard, such as the Adams Mine landfill. Nor was there an undertaking, such as a multi-billion dollar Olympics building project. Amalgamation would change very little in ordinary Torontonians' lives. Kate commented that there was "a purity" about C4LD's mission to preserve democracy by keeping it local. From a conflict theory lens, that could be a demand to be consulted about public policy. Protesters' 'purity' might also be in improving the shared fitness landscape, intentionally or not.

Casey and Peter, in the Adams Mine protest, shared the worldview that democracy requires informed people who have dialogues about policies. Peter described giving councilors "briefs [that] were non-polemical with clear recommendations and, in an incremental way, we got councilors trained to ask staff tough questions" (Interview with Peter). Sincere public participation requires publics and policymakers willing to share information (interview with Casey). The protesters provided councilors with knowledge about alternatives to and harm from landfills, and with the meanings of some of the clauses in the landfill contract, which resulted in adaptations among councilors, and amendments to the contract that changed the outcome.

These public policy protests also created the incentive for other agents to learn what they needed to know to be able to make informed decisions, whether it was to join or not join the protest, or how to vote on the public policy being considered. The fitness landscape was improved for all agents experiencing turbulence by information, including knowledge from alternative worldviews, which helped them cope with rapid change.

From a local time sequence point of view, the policy systems recovered from the turbulence when the protests ended. On a global scale, the policymakers benefited from a more informed populace and a fitter shared landscape, even as their local scale was made more uncomfortable. Casey was satisfied with the result because, the "politicians became very knowledgeable and that's my goal. Some were on a learning curve, which is necessary for good decision-making. Society is sharper, participating better in the end" (Interview with Casey). Casey was pleased that, because of the protest, councilors learned what they needed to know to switch Toronto's policy from reliance on a mega-landfill to zero reliance on landfill ten years hence.

The line of sight for bifurcation points in complexity science is from the future looking backwards, so the question of the degree of fitness these protests contributed may have to wait to be answered. For how long is uncertain since, as Holland (1995) pointed out, adaptation can take milli-seconds or millennia.

Self organizing protest networks are part of democratic debate

The protesters considered themselves democratically engaged, giving knowledge freely to get an alternative version of the policy consequences onto the fitness landscape. Others in the systems could choose to access that knowledge, and thus the protesters filled a crucial niche in the policy-making. The protest groups had three target audiences to persuade with their version of the facts and risks: the policymakers, the publics, and the news media.

> *"We got to a place where people realized that their government was doing something fundamentally undemocratic. The public became advocates of accountability and free speech. Without these moments then social movement activists cannot do their work. Without this, we have to leave it to the corporations and governments to decide public policy, because this debate cannot happen at a ballot box. Suddenly, everyone had an opinion and was talking about politics, and seeing the possibilities*

of involvement and responsibility. All the issues were getting shoved into the frame and the frame exploded. It was getting so big that there were no constraints on the debate. What we win is public's expectations of what government should do and governments' understanding of the change in the public's expectations. The space for talking about product take-back expanded in four months because the debate made a difference. … It became politically necessary for [Mayor Mel] Lastman to put diversion in place and that was the success. It became impossible for them to say no to increasing recycling" (Interview with Peter).

Information was important because the technical nature of the policy was challenging for people who had no reason to be informed about such issues prior to a policy announcement. The networks of protesting allies shared and offered research that refuted some or all of the policy assumptions, options that offered alternative facts, and the tactics to make a policy controversial to gain the media's attention. Without those tactics media and policymakers' attention wanders.

These policies were within the policymaker's mandate to decide. Thus, people had to find ways to participate since they had no voting power. They made the protest rowdy to get publicity that would pack the legislative public galleries. Northern residents made the 1200 kilometer round trip to Toronto to express their opinions to councilors they could not vote for or hold to account, but whose votes on the Adams Mine affected their lives. Toronto councilors might have preferred to satisfy everyone, but their constituency was Toronto and it needed a garbage solution.

"Being polite and quiet and nice wasn't going to get us anywhere. It had to be lively at council. I thought we had to make a lot of noise. We had to make it so difficult that they couldn't do it with impunity. If no one is there they can do what they want. If chambers are full, it's harder to make unpopular decisions… The election was in November so the timing was good. If the chips fell in our favor, it could be an election issue" (Interview with Dusty).

In the interviews, Dusty and Peter both referred to the importance of lining up the small things necessary for a protest campaign to put democratic power in the hands of people who believed that being quiet would enable a wrong policy decision. Dusty predicted that the alternative knowledge would remain in the policy arena beyond the temporal boundary of the protest to affect the next election. Premier Harris was not able to prevent or contain the public debate once C4LD started it. As a result, the publics, policymakers, protesters, and news media became better informed – a result less likely in an official public participation process that no one except attendees hears about. Normally unattended council meetings became a place for exciting democratic discussions. The Adams Mine protest even made a decades long policy process of selecting a landfill site newsworthy.

"Martin Mittlestadt [reporter for the Globe and Mail] said to me four months earlier that unless the President of Coca Cola is seen choking the last panda on coke packaging, it [garbage] isn't a story… It changed in four months because of the Adams Mine strategy" (Interview with Peter).

When the news media reported these protests, the publics had the option of becoming informed and involved, thus creating opportunities for civic engagement and democratic debate. A complexity analysis adds to conflict theory's explanations of how things happen; not from one sensational event, but because quite ordinary little events pile up (Watts 2003). Agents are influenced by their networks and what people they know are doing. If a policy protest has already attracted a crowd, it will attract more of a crowd (Gladwell, 2000). As Gell-Mann (1994) quipped: "them that has, gets."

In these three protests the policymakers were explicit that they did not intend to pollute the Temiskaming watershed with leachate from an Adams Mine landfill, nor evict the poor from affordable housing to build sports facilities, nor to destroy local democracy. The protest groups, viewing protests as opportunities for civic engagement, believed that they had the correct analyses of the risks and unintended consequences of the policies. They made the policies controversial and lively, thus engaging the news media and publics' interest. They persevered in spite of the personal costs because they believed policy-making needed information from their worldview.

In the conflict and public participation literatures, there is virtually no space or lexicon for protest as a legitimate expression of civic engagement. Carpenter and Kennedy (2001) summed up the publics' choice for exercising power as either political pressure or litigation. Cruickshank (1999) pointed out that while the smallest acts could create political capital, it would be preferable to transform the political territory, rather than leave politics as it is and add a layer of struggle to it. Public participation and conflict theories include protest in the categories of conflict, but as a problem to be managed or transformed (Dukes, 1996). The protesters did not accept the assurances that the risk of harm was negligible, or that unintended consequences could be managed if they happened; protest was an expression of their risk management.

Risk enters into probability theory. Before events happen, which possible future will be the one that a nonlinear system settles into is unknowable. The protesters' alternative probability analyses and risk assessments about a policy were judgments that may or may not be true or real, but were nevertheless knowledge contributions to a policy system that had not previously included those risks as probable or possible. Even *Toronto Star* columnist and Games booster Royson James, who wrote that

bidding on the Games was worth it and called the Olympic spirit "euphoric," agreed BNC's facts could be correct (James, 18 May 2001).

The policymakers were made to hear directly from the publics about the issues important to multiple worldviews, rather than through official public processes on the issues that were important to the policymakers. During the protests information was abundant and generated at high speeds. That may have had an impact on how people made meaning of all the conflicting reports, divergent expert opinions, rhetoric about risk, claims about democracy, and predictions of harm if the policy was or was not implemented.

Conclusion

This study connected linear and nonlinear research approaches to the ways that differing interpretations and risk assessments of the same facts can generate conflicts even when the goals and interests are the same, such as solving a garbage disposal problem. Another connection has implications for agents such as multi-national corporations, non-governmental organizations, news media, police, or government institutions who influence or add inputs to systems, while not being 'counted' as agents in, inhabitants of the landscape of, or exerting gravitational pull over the conflict. Complexity analysis exposes the influence of allegedly non-involved agents. This opens opportunities for a complex conflict analysis of the temporal, geographic, and stakeholder boundaries that would otherwise be limited by the known outcome, and by the usual definition of parties or participants.

It is unlikely that conflict or public participation theorists would encourage news media, or police, or union members who expect jobs if an undertaking proceeds, or public employees who drafted policy for their political bosses, to then be at the negotiation table. However, from a complexity frame, the journalists and police and even the Pope had direct and indirect impacts on how the protest groups set their strategies and conducted their tactics. This is a contribution to stakeholder and conflict analysis, although it complicates designing manageable conflict resolution processes.

Using a complexity analysis gave a more complete picture of types of power affecting the conflict relationship, and how those were interpreted and acted upon by other agents in the policy conflict system. It made a deeper analysis to explore all the inputs, all the different sources of power, and all the agents who had the possibility of creating, amplifying or dampening inputs in a conflict system.

Since protesters face monumental power while being ignored and / or deliberately excluded from the policy-making, their sources of power are adaptive in the complexity sense of the word. Power in a complexity frame does not guarantee that the more powerful agents will prevail. Perhaps they might dislike the idea, however, decision-makers, policymakers, influentials such as the media, and protesters are coevolving partners shaping and jointly tuning the fitness landscape, influencing, adapting to and learning from each other. Protesters intend to add alternative knowledge that shapes policy debates and outcomes. They tolerate being dissed and dismissed to improve democratic policy-making from the bottom up.

Notes

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1. All interviewees are identified by pseudonyms for anonymity except Professor Helen Jefferson Lenskyj at her request.

References

1. Arrow, H. (2002). "Perturbations and reorganization of identity and social networks," 12th Annual International Conference of the Society for Chaos Theory in Psychology and the Life Sciences, Portland State University.

2. Arrow, H., McGrath, J. E. and Berdahl, J. L. (2000). Small Groups as Complex Systems: Formation, Coordination, Development, and Adaptation, ISBN 9780803972292.

3. Barsky, A. E. (2007). ConflictResolutionfor the Helping Professions, ISBN 9780495092254.

4. Bar-Yam, Y. (1992). Dynamics of Complex Systems, ISBN 9780813341217 (2003).

5. Boulding, K. E. (1989). Three Faces of Power, ISBN 9780803938625 (1990).

6. Brooks, S. (1998). Public Policy in Canada: An Introduction, ISBN 9780195412727.

7. Burgess, G. and Burgess, H. (1995). "Beyond the limits: Dispute resolution of intractable environmental conflicts," in J. W. Blackburn and W. M. Bruce (eds.), Mediating Environmental Conflicts: Theory and Practice, ISBN 9780899308463, pp. 101-119.

8. Cain, P. (24-30 September 1998). "What do Olympic bigwigs have to hide? Taxpayers on the hook for Games but kept in financial dark," Now, Toronto, p. 28.

9. Carpenter, S. L. and Kennedy, W. J. D. (2001). Managing Public Disputes: A Practical Guide for Government, Business, and Citizens' Groups, ISBN 9780787957421.

10. Crocker, C. A., Hampson, F. O. and Aall, P. (eds.) (1999). Herding Cats: Multiparty Mediation in a Complex World, ISBN 9781878379931 (2000).

11. Cruikshank, B. (1999). The Will to Empower: Democratic Citizens and Other Subjects, ISBN 9780801434808.

12. Daniels, S. E. and Walker, G. B. (2001). Working Through Environmental Conflict: The Collaborative Learning Approach, ISBN 9780275964733.

13. Davidheiser, M. (2006). "Harmony, peacemaking, power: Controlling processes and African mediation," Conflict Resolution Quarterly, ISSN 1536-5581. 23(3): 281-300.

14. Dukes, E. F. (1996). Resolving Public Conflict: Transforming Community and Governance, ISBN 9780719045127.

15. Elliott, E. and Kiel, D. L. (eds.) (1999). Nonlinear Dynamics, Complexity and Public Policy, ISBN 9781560727071 (2000).

16. Euchner, C. C. (1996). Extraordinary Politics: How Protest and Dissent are Changing American Democracy, ISBN 9780813329062.

17. Falconer, T. (2001). Watchdogs and Gadflies: Activism from Marginal to Mainstream, ISBN 9780670894178.

18. Fisher, R. J. (ed.) (1997). Interactive Conflict Resolution, ISBN 9780815627159.

19. Gell-Mann, M. (1994). The Quark and the Jaguar: Adventures in the Simple and the Complex, ISBN 9780805072532 (1995).

20. Geller, H. A. and Johnston, A. P. (1990). "Policy as linear and nonlinear science," Journal ofEducation Policy, ISSN 0268-0939, 5(1): 49-65.

21. Gladwell, M. (2000). The Tipping Point: How Little Things Can Make a Big Difference, ISBN 9780316346627 (2002).

22. Harrison, T. R. (2003). "Victims, targets, protectors, and destroyers: Using disputant accounts to develop a grounded taxonomy of disputant orientations," Conflict Resolution Quarterly, ISSN 1536-5581, 20(3): 307-329.

23. Holland, J. H. (1995). Hidden Order: How Adaptation Builds Complexity, ISBN 9780201442304.

24. Homer-Dixon, T. (2000). The Ingenuity Gap: Facing the Economic, Environmental, and Other Challenges of an Increasingly Complex and Unpredictable Future, ISBN 9780375713286 (2002).

25. Honderich, J. (11 January 1997). Star's support for unicity is a decades-old battle," Toronto Star, Toronto: F2.

26. James, R. (18 May 2001). "Infectious song sets joyous tone for bid festival," Toronto Star, Toronto: B1.

27. Jefferson, T. (Jan. 30 1787). The Correspondence between Thomas Jefferson and James Madison 1776-1826, ISBN 9780393036916 (1995). Kiel, L. D. and E. Elliott (eds.) (1996). Chaos Theory in the Social Sciences: Foundations and Applications, ISBN 9780472084722 (1997).

28. Lorenz, E. (1993). The Essence of Chaos, ISBN 9780295975146 (1996).

29. Orrell, D. (2007). Apollo's Arrow: The Science of Prediction and the Future ofEverything, Toronto, Canada: HarperCollins Publishers Ltd.

30. Swainson, G. (18 December 1996). "One Toronto for all," Toronto Star, Toronto: A6.

31. Watts, D. J. (2003). Six Degrees: The Science of a Connected Age, ISBN 9780393325423 (2004). Zimmerman, B., Lindberg, C. and Plsek, P. (1998). Edgeware: Insights from Complexity Science for Health Care Leaders, ISBN 9780966782806.