DOTTED LINES: NETWORKS, QUANTUM HOLISM, AND THE CHANGING NATION STATE
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DOTTED LINES: NETWORKS, QUANTUM HOLISM, AND THE CHANGING NATION STATE

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ABSTRACT

Borders and the nation-state model are increasingly under stress. This article demonstrates how networks and network structures are currently holding the nation-state model together while some as-yet-unknown future model of collective action develops. Networks are particularly useful at helping to overcome three acute problems associated with the nation state: (1) the internal clash of interests, (2) system externalities, and (3) synergy dysfunction. In keeping with a quantum, holistic view of reality, borders are best viewed as dotted lines on our maps. Another way to state this argument is that networks and network structures may now be viewed as constructs to help societies maintain the belief that national borders are still meaningful although for numerous specific policies these borders mutated or even disappeared long ago.

INTRODUCTION

> We may *distinguish* certain things for the sake of convenience. The word 'distinguish' means 'to mark apart.' A distinction is merely a mark which is made for convenience; it doesn't mean that the thing is broken. It's like a dotted line, whereas when we represent something as divided it's a solid line. . . . it would be good to draw only a dotted line between countries as well – because actually it's a distinction, rather than a division of two different things which are independent. (Bohm, 1994: 72)

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Networks and network structures (1) are holding the nation-state model together at a time when it is not yet certain what model of collective action will come next. The nation-state model for collective decision-making is under great stress because globalization and internationalization continue to accentuate how interconnected the world really is, as evidenced by the September 11, 2001, attacks on the World Trade Center complex and the Pentagon. Few decisions made under the sovereign authority of one nation have limited impacts beyond the borders of that nation while numerous decisions made by subnational units of government (i.e, states, provinces, municipalities, tribes, and clans) and specific corporations have global implications. Laurence O'Toole (1997: 446-448) identifies policies that do not reach beyond the scope of a single agency as rare, and he indicates that international agreements are a growing part of the reason for this predicament.

While it remains unclear what model may follow the nation-state model, it is clear that networks and network structures are being established on a regular basis to, in effect, patch the holes in the nation-state model by increasing cross-border cooperation and collaboration. The success of these networks may be heavily dependent on their ability to solve problems that cross national borders while avoiding the appearance of impinging upon national sovereignty. Sovereignty is in fact a social construction, a myth if you will. Sovereignty is the solid lines we put on maps when, as David Bohm emphasizes in my opening quote, dotted lines would be more in sync with quantum reality and his concept of thought as a system. "We" make the lines solid and "we" have the power to think of them as dotted lines instead.

Being "at the cutting edge" and "pushing the limits" have undeniable appeal, yet most administrators are faced daily with boundaries and borders that they seldom seek to

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dislodge, expand, or supplant. Personal experience teaching organizational theory and behavior to practicing public administrators tells me that these students enjoy reading about Senge's learning organizations (1990), Gabriel and Schwartz's psychoanalytic theory to explain why people act as they do within organizations (1999), and Behn's view that public managers must be active leaders (1998). While hours of stimulating student interaction form around such topics, most of these student-administrators do not believe they have the power to alter the basic structure and culture of their organizations. They frequently see a wide gap between such interesting ideas and their roles in creating the future of their agencies.

This gap increases profoundly when official jurisdictional issues are involved rather than just organizational boundaries. It seems as though in one breath people recognize that organizational and jurisdictional boundaries are human constructs and in the next breath they feel helpless to do anything to change these boundaries. O'Toole (1997) also notes this sense of perceived impotence and is ambivalent about whether a networked world is likely to increase or decrease such feelings. A philosophy of relational holism(2) may reduce the sense of helplessness that administrators may feel when confronted with problems that require multijurisdictional solutions because embracing such a philosophy might help administrators grasp the complex reality that interorganizational agreements are a reaction to the inherent limitations of organizational boundaries, just as cross-border institutions are often a reaction to the inherent limitations of national borders. The focus of this paper is specific to cross-border networks and network structures and numerous examples are drawn from the author's experience with the U.S.-Canadian relationship.

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THE ESSENTIAL PARADOX

Two minds are better than one. Depending on your point of view, this is either a trite old saying that makes it hard to manage in the real world or it is the very essence of the fact that humans are social creatures to our very core. This saying rings true for anyone undertaking a complex task, such as building a house. If the architect were the only thinker on the job site, the house would remain in shambles. So, are three minds better than two? Are ten minds better than three? Are a hundred minds better than ten? At what point do we either revert to the historical roots of administration in hierarchical structure and unity of command *or* accept that concepts of vision, participation, and even universal consciousness are more attuned to today's complex environment? When do we accept that any limitation on input into the decision-making process, that is not truly voluntarily imposed, inherently weakens the system?

In the beginning of American Public Administration, admittedly a narrow subset of public administration throughout the world, there were strong influences from the likes of Woodrow Wilson, Frederick Taylor, and Max Weber. Wilson argued that we must focus on governmental administration rather than constitution building, and he intimated that administration should be a scientific study (Wilson, 1887). Taylor went to the next step by spelling out the principles of scientific management, focusing on Henry Ford-like processes for increasing efficiency by subdividing work functions and figuring out the quickest, least resource intensive way to accomplish each sub-function (Taylor, 1911). Weber helped demonstrate how these ideas could be implemented by means of what is now widely known as the ideal-type bureaucracy. He focused on an approach to organizational structure that resonated with Taylor's ideas, rather than

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focusing on scientific management itself. In essence, decisions would be made at the top of a hierarchical management structure, rules would be promulgated to ensure that the actions of employees were consistent with these upper-level decisions, and "bureaucrats" would be non-ideological, impersonal, implementers of politically determined policy. While these were not the only ideas available to scholars or practitioners at the time, Richard Stillman (1998) convincingly explains how they were embodied in Luther Gulick's POSDCORB model to form a pre-World War II orthodoxy.

These origins have often been grouped to indicate the genesis of public administration in linear, Newtonian ways of thinking, which, as the next step of the argument proceeds, are not supported by the "new sciences" such as chaos theory in mathematics, quantum theory in physics, autopoiesis in biology, the emerging superstring theory or "theory of everything," and so forth. Margaret Wheatley made this argument at a broad level in *Leadership and the New Science* (1992) while Douglas Kiel, Euel Elliott, and colleagues get down to specifics in a series of books *Managing Chaos and Complexity in Government*, *Chaos Theory in the Social Sciences*, and *Nonlinear Dynamics, Complexity and Public Policy* (Kiel, 1994; Elliott and Kiel, 1996; Elliott and Kiel, 1999).

Quantum theory in particular affirms that all things are interconnected at a subatomic level and this generates a seemingly inescapable paradox between some interpretations of quantum theory, especially Paul Teller's "relational holism," and boundaries, so prevalent in our day-to-day experience. The first boundary that is shattered in quantum mechanics is the boundary between matter and space because it is no longer possible to think of matter as occupying empty space (Heisenberg, 1979; Brown, 1997). As human beings relate to one another, they form informal and formal organizations (Barnard, 1938; Blau and Scott,

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1962) and the bedrock of the study of organizations is the identification of these organizational structures. Applying quantum theory metaphorically, the seemingly "empty" space between individuals in organizations and between "separate" organizations or nations must be viewed as active and energized fields.

Piet Hut, an astrophysicist at the Princeton Institute for Advanced Study, illuminates the nature of structure and boundaries:

> There is a paradox inherent in the concepts of quantum theory and boundaries. Limits in the form of boundaries, separating one area from another, are what makes a structure a structure, rather than an amorphous something. . . . Whatever presents itself in our experience is structured by dichotomies: inner and outer, blue and not-blue, good and not-good, and so on. The boundaries that separate them form the very texture of reality as we know it: without limits no knowledge (1996: 173).

This view is also expressed by John Casti (1994: 23) in *Complexification* when he states, "Experiencing the world ultimately comes down to the recognition of boundaries: self/non-self, before/after, inside/outside, subject/object and so forth." Thus, boundaries are cognitive structures that human beings use to experience the world (or at least to explain what we experience to others) rather than attributes of reality. Hut completes his logic by arguing that boundaries are bridges rather than limits:

> The paradox of limits lies in the fact that limits combine two opposite functions: setting apart and joining. . . . they structure the interrelationships and communication

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> channels between the pieces into which they have just carved up the world. . . . The paradox of limits can thus be summarized: we can view boundaries as bridges. (1996: 173-174)

Using simple geometrical shapes to characterize boundaries in the natural world (e.g., that mountain is shaped like a cone or this island is an oval) fails geographers completely, leading to the need for the more accurate fractal geometry (Casti, 1994). Similarly, manmade borders fail to capture or contain all relevant social, environmental, and economic relations because the natural world is a complex jumble of nested, overlapping, and interacting systems.

So where is this discussion heading? International borders are one type of boundary and they are used frequently as barriers rather than bridges because the current model of governing is based on the sovereignty of the nation-state. Insights from Teller's concept of relational holism, as extended by Danah Zohar (1990), can be used to highlight the nature of borders as barriers to effective and efficient governing.(3) The nation-state, however, has not always been the dominant conduit for collective action and is likely to give way to new forms of collective organization as the world progresses.(4) Networks and network structures are being used to "bridge the border" in the meantime, holding things together reasonably well without having to abandon the nation-state model for organizing collective action. Indeed, a patchwork of network structures may emerge in the 21st century with a degree of sovereignty that rivals that of 20th century nation-states.

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THE RISE OF THE LIBERAL DEMOCRATIC STATE

In his treatise *The Development of the Modern State*, Gianfranco Poggi (1978: 1-15) outlined two views of politics: (1) politics as protecting "us from them" or keeping the threat of outside societies at bay and (2) politics as institutionalizing the allocation of valued objects, especially allocating social goods by command, sanction, and enforcement. These sharply contrasting views are reconciled by focusing on their common needs around collective identity and mechanisms for coercion as Poggi concludes:

> Perhaps [Carl] Schmitt is in some sense right in suggesting that collectivities can only define their identity by denying others what they regard as theirs. But how can a collectivity discriminate between friend and foe if not by referring to a conception of what makes Us into Us; and how can such a conception be generated except by ordering in some distinctive fashion the internal life of the collectivity? (1978: 12)

Poggi refers to these as complementary definitions rather than pursuing the "chicken or the egg" nature of their relationship, and he proceeds to outline European state development from feudal times and the development of town councils (i.e., the Ständestaat), to absolutist rulers and the constitutional states that followed them. The heart of this 1,000-year-long evolution was boundaries and borders, or who could control what resources within a given territory. Perhaps the biggest losers in this scenario, as nations developed and property rights were established in nation after nation, were nomadic peoples such as gypsies and many indigenous peoples. The outcome of Poggi's

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historical development is the establishment in Western nations of a dynamic state/society distinction dominated by capitalism as a system of power and production and the state as a subordinate system of law and property rights. Poggi's (1978: 134) logic is that the pursuit of power abroad became an extremely dangerous political goal in the age of nuclear weapons and thus prosperity at home became the dominant goal – states seek "legitimacy through acts of rule that assist the economic system in an ever-increasing flow of goods and services for the consumer."

People nowadays naturally assume a sense of permanence in the nation-state model just as many of their ancestors assumed absolutist rulers would be permanent and their ancestors assumed that feudal lords would always rule the land. Woodrow Wilson observed this aspect of human nature long ago when he stated,

> Institutions which one generation regards as only a makeshift approximation to the realization of a principle, the next generation honors as the nearest possible approximation to that principle, and the next worships as the principle itself. . . . The grandson accepts his grandfather's hesitating experiment as an integral part of the fixed constitution of nature. (1887: 208)

Given Poggi's convincing developmental analysis, an excellent question is "What might come after the liberal, democratic state?"

The remainder of this essay begins to answer this question by exploring the concept of borders, relating the breakdown of meaningful borders to the rise of networks and network structures, and using quantum theory and the philosophy of relational holism as the grounding to explain why this is a natural development and a human response to

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complexity. First, however, the philosophy of relational holism must be spelled out.

RELATIONAL HOLISM

While systems theory emerged as an attempt to look more broadly at the environmental setting of a particular policy problem (for example, see Katz and Kahn, 1966; Morgan, 1998: 40-44), many interpretations of quantum theory take the next step of arguing that there is essentially one system, inconceivably complex though it may be.(5,6) Teller states,

> Holism has always seemed incoherent, for it seems to say that two distinct things can somehow be entangled or enmeshed so that they are not two distinct things after all. Yet apparent unintelligibility does not prevent holism from recurring, not only in the works of philosophers of East and West, but also in what quantum mechanics seems to many of us to be saying about the world (1986: 73).

Teller coins the term relational holism for his attempt to describe quantum holism without falling into the trap of incoherence. He argues that objects that in at least some circumstances can be identified as separate also have inherent relations that do not supervene on their non-relational properties (Teller, 1986). Therefore, it is sufficient for objects to be distinct if they have at least one property that is not tied to the relationship. Teller clarifies how things can have distinct boundaries and also be deeply interwoven with other things, and he reasons that inherently relational properties are inevitable in a quantum view of reality. Dotted lines!

Applying this scientific approach to the social sciences – to people rather than just subatomic particles –

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relational holism becomes a philosophy that embraces both materialism and consciousness as the roots of existence by denying the claim of each to mutual exclusivity. This interpretation of quantum mechanics takes a middle road between materialism, which argues that mental and spiritual aspects of reality are somehow dependent on matter or that they do not even exist (Zohar, 1990: 94), and various non-materialistic ideas that the mind or some form of universal, transcendent consciousness creates the material world. Rather than accepting that matter or consciousness must be the ground of all existence, relational holism takes the quantum-compatible viewpoint that they both exist and simultaneously co-create reality (Mingus, 2000).

To grasp this concept fully, it is important to relearn to value "experience" as something that happens to the self before thought (see Fox, 1980). This is critical because non-materialistic views of reality, such as those of self-described ecophilosopher Henryk Skolimowski or quantum physicist Amit Goswami, do not associate consciousness with thought or rationality. Skolimowski (1994) argues for a participatory truth wherein reality unfolds through the medium of human discourse, which is thickly embedded in one's species, one's culture, and one's community, while Goswami (1993) argues that a transcendent consciousness creates reality by collapsing the quantum wave function in the presence of mind-brain awareness (Mingus, 2000). Goswami's approach is more spiritual and better grounded in quantum theory, but both make the monistic argument that there is no duality of mind and matter – Skolimowski's *noetic monism* focuses on the power of our minds to co-create the material world while Goswami's *monistic idealism* insists that the objects of our external perception are actually ideas, that ideas are the primary substance of reality while matter is an epiphenomenon of consciousness.

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In contrast, relational holism unites these views with materialism by suggesting that matter, consciousness, and the continuous interplay between the two, form reality (7) (Zohar, 1990: 99-104). Teller and Redhead (1991) leave open the possibility that physicists have understated the relational aspects of quantum mechanics by demonstrating that standard quantum theory has defined too many types of particles while a more simplistic theory has equivalent explanatory power. In other words, the formal theory has surplus structure because it provides an identity to objects that are not individuatable. Even at a subatomic level, particles have both a material and a conscious existence; they communicate, coordinate, and make choices. This is akin to the Chinese concept of the yin and yang because neither yin nor yang is considered good or bad, but rather, goodness is in the dynamic balance between the two (Capra, 1982: 36). Likewise, relational holism does not suggest that matter or consciousness is good or bad – or more or less important, or primary or secondary – but that they are complementary aspects of one reality and therefore must both be taken into account for an accurate view of reality.

The implication in terms of borders is that borders are created as cognitive structures ("us" as opposed to "them") and as legal structures (so "we" can achieve wealth, democracy, and so forth without the need to share these things; so "they" can maintain a dictatorship rather than embracing "our" principles, etc.). As far as many issues are concerned, these borders are surplus structure because the nations are not individuatable with regard to the policy, program, resource, or issue of concern. For example, my research with the Canada-U.S. Pacific Salmon Treaty highlights the core problem as providing too little decision-making power to the Pacific Salmon Commission (Mingus, 2001). The commissioners from each nation exercise the sovereign power of their individual nations

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("solid lines" view) rather than working together strictly to make the Pacific salmon fishery as efficient as possible while insuring its long-term viability ("dotted lines" view). In this instance the surplus structure is the nation-state, and demands for sovereignty by the states, provinces, and nations threaten the underlying interconnectedness of the salmon ecosystem.

Relational holism might therefore be used to argue for a degree of interconnected decision-making on an international scale that has heretofore only existed with regard to isolated military actions such as seeking to defeat Hitler in World War II or the Gulf War. Such interconnectedness would be quite different from these situations as there are situations such as with global warming where having excluded parties may dramatically reduce network effectiveness.

NETWORKS, NETWORK STRUCTURES, AND CROSS BORDER INTERACTION

Returning to the paradox between quantum theory and boundaries, Susanne Kelly and Mary Ann Allison attack the heart of this paradox in *The Complexity Advantage*,

> Boundaries are used by system components to help in self-regulation by containing energy and filtering information to prevent overload. Boundaries that stabilize the system too much become barriers that cause rigidity; an absence of boundaries leads to chaos. Either extreme is dangerous. Natural boundaries [e.g., cells] are permeable and flexible, allowing a variable energy and information exchange with the environment as needed (Kelly and Allison, 1999: 87).

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Relationships are nested and intersected, akin to entanglement in quantum theory. Applying this idea to the current discussion – viewing the world as one interconnected system (i.e., a world without political borders as we thought of them in the 20th century) might tend toward chaos. Chaos could be viewed as a natural result of not having borders to help contain and manage complexity. This begs the questions, "If we need borders for cognitive and legal reasons, what types of problems are created because these same borders deny fundamental quantum holism?" and "What can be done to minimize the impact of these problems?"

At least three general types of problems are readily identified, although others may certainly exist. The first type is that subnational units of government may have interests they wish to pursue that conflict with the more general national interests, and vice versa. This type can be referred to as an internal clash of interests. The second type is that decisions made within one nation may have positive and negative externalities that are not appropriately channeled. This type can be referred to as system externalities. The third type is that opportunities for synergistic action across borders may be difficult to identify and/or act upon. This type can be referred to as the synergy dysfunction. These three problem types threaten the continuation of the nation-state model and so the life span of the nation-state model can be stretched, so to speak, by minimizing the impact of problems that fall into these three categories.(8) Each of the three categories will now be discussed in turn.

Internal Clash of Interests

It would be a gross understatement to say that local, state, and national interests frequently differ from each other in virtually any nation. Astute observers of the U.S.-Canadian relationship might easily argue that Western

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states such as Washington and Montana have more in common with Western provinces such as British Columbia and Alberta than they have with other members of their respective federal systems. Likewise the New England states and Atlantic provinces have much in common that transcends their sense of nationalism. As evidence, consider that the New England Governors and Eastern Canadian Premiers have joint meetings on a regular basis (Lubin, 1993) and on the West coast the Pacific Northwest Economic Region promotes cross-border unity on issues that may clash with their respective national interests (Bluechel, 1991; Kaplan, 1998).

In fact, these trends are not new and are not limited to the U.S.-Canada relationship. In his edited volume, *Foreign Relations and Federal States*, Brian Hocking (1993: 3) put the emphasis on "the interrelatedness of the domestic and international political environments and the need for national policy makers to conduct diplomacy in both theatres simultaneously if they are to succeed in achieving their objectives." Hocking stressed that subnational governments are frequently coequals in the international sphere and that extraconstitutional means for collaboration are often developed to recognize the valid interests of all levels of governmental actors in global issues. He specifically cites that international networks developed by national diplomats can be quite useful to subnational actors and also explains that Intergovernmental Affairs sections in American federal departments and the Federal Provincial Coordination Division in Canada are internal national networks to help minimize the difference of national and subnational interests (when viewed by other nations) (Hocking, 1993).

Is this coordination really needed? You bet. Among the 25 leading nations in terms of gross national product one could insert ten American states and all 50 rank with the top 75 nations in terms of GNP (Fry, 1993:

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124). Further evidence includes the fact that 40 governors lead at least one international trade mission each year and numerous cities do likewise [Ibid.]. While Fry warns that civil disobedience on the part of state governments should not be tolerated by the federal government, it seems within the realm of possibility that the trend of public administration theorists to focus on discourse and democracy (for example, Fox and Miller, 1996; King and Stivers, 1998) might soon have us wording that statement in the reverse (i.e., that civil disobedience might be when the national government seeks to force its general or international interests on the state governments).

The internal clash might take a form other than national versus subnational because subnational governments may also hold disparate interests. An example of this from my Pacific salmon research has been the bond between Oregon, Washington, and numerous Native American tribes that has occasionally formed because of united opposition to Alaskan policies and negotiating positions (Mingus, 1999). In this case, it has been incumbent upon the federal government and the U.S. courts to manage the dispute and it was frequently impossible to contain the damage by holding together some form of a united front during international treaty negotiations.

System Externalities

If public policy decisions are made within nations although the true system relevant to the policy issue is international or even global in scale, then externalities will exist. For example, when dams are built on the Colorado River in the United States to maintain drinking water and irrigation systems, Mexico suffers the loss of water. Similarly, dams on the lower Columbia River have virtually eliminated salmon in the upper Columbia across the border in British Columbia. In "Managing

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Transboundary Resources" Ingram, Milich, and Varady (1994) demonstrate the impact of domestic water planning decisions in a border region in southern Arizona and northern Mexico. They stress the concept of "bridging borders" through binational regional institutions that represent state, local, and nongovernmental interests and state that such institutions must "fit into the already crowded space of existing institutions by cooperating and helping existing institutions reach their goals" (p. 37). Once again, networks are touted as part of the solution and some progress is demonstrated.

System externalities may prove to be positive or negative. Unfortunately for human advancement throughout the world, logic dictates that positive externalities will be minimized and negative externalities will multiply if national decisions are viewed through a domestic rather than an international lens. After all, what nation is going to invest heavily to mitigate flooding outside its borders, cut back on its fisheries if fishermen from other nations might take up the slack, or force a reduction in industrial pollutants that are conveniently flowing across the border never to been seen again within that nation's borders? The answer seems to be that unless externalities are running in both directions, a nation will lack either the interest or the leverage in creating positive externalities or reducing negative ones. Interest will be lacking if the nation is not being harmed by externalities from another nation while leverage will be lacking if a nation is not creating negative externalities for a border nation or creating potentially reversible positive externalities for that nation.

Where interest and/or leverage exists for multiple nations, networks and network structures may be utilized to minimize negative externalities and/or maximize positive externalities. For example, part of the Pacific Salmon Treaty calls for joint enhancement and conservation efforts

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and binational working groups were created to plan and, in some cases, implement these efforts. In many cases either nation acting alone would achieve very little. In some sense international diplomacy (viewed as part of the nation-state model) paved the way for such agreements, yet without serious ongoing international networks and network structures (before and after the negotiation of such treaties) the "paper" agreements would be essentially meaningless. Evidence of this includes the fact that most parties involved in the annual treaty negotiation process and on the Pacific Salmon Commission panels and working groups were involved ten or more years before the treaty was signed by both nations. Few people from the respective state departments were involved throughout the process although they provided an important and necessary supportive role.

This section provides a modest sketch of the possibilities with regard to positive and negative externalities, yet the key element is that "within-border thinking" will frequently miss critical aspects of a policy when compared to viewing the system through the lens of relational holism. Various externalities result from within-border thought processes, and cross-border networks offer the possibility of making decisions that are more effective and efficient with regard to the larger system (the contours of which change from one policy area to the next). The role the networks would be performing is to increase system feedback on the full impact of policy actions, thus promoting learning organizations (Senge, 1990).

Synergy Dysfunction

Synergy is when creativity and ability combine in such a way that previously unimagined opportunity is capitalized upon. In contrast, the field of international relations is often more focused on troubleshooting than on opportunity development. Diplomats and politicians rise to

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the occasion when events force them to do so and that usually means reacting to a crisis rather than acting upon an opportunity. Operating in this basically reactive mode also makes it quite difficult to spend much productive time looking for creative opportunities that might exist.

This third type of problem may be the least harmful to the continuation of the nation-state model because the corporate sector may focus on what government has difficulty doing. Ali Farazmand (1999: 512) argues that "surplus accumulation of corporate capital, the role of the dominant states and their bureaucracies, domestic constraints, rising human expectations, international institutions, and technological innovations" are the contributing factors to globalization. He stresses that surplus accumulation has "crossed territorial borders and transcended national boundaries for decades," that the search for new markets and cheaper labor has taken capitalism global, that corporate restructuring has increasingly lead to transworld corporations and that a "concentration of corporate power at the global level [includes] the creation of a global ruling class" [Ibid.: 512-513]. These are powerful arguments for advanced capitalism as the major underlying factor in globalization. Farazmand (p. 513) also points out that capitalism relies on a strong state to create stable economic, political, and social environments so that it can thrive – and stresses the number of military interventions and proxy wars that have been fought to protect the global interests of Western nations.

Ironically, this line of reasoning means that borders are essential to increasing globalization. Without national borders, it would be difficult to maintain the very disparities of wages, unionization, regulations, and other conditions that have created the so-called efficiencies that have allowed corporate growth to continue. Indeed, it would be even more difficult to quell social unrest (with martial law, haphazard social programming, and/or military

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intervention) as necessary to allow production and exploitation to continue. Significant disparities can certainly exist from region to region within any given nation, but it seems plausible that few nations would allow the extent of social and economic disparities that capitalism has come to rely upon in a global sense.

Farazmand (1999: 514) states that, "Globalization has not brought about the end of the state and its bureaucracy; nor will it result in a decline of the state in the future." This is a double-edged statement as far as humanity is concerned. While the corporate sector may find ways to take advantage of potential cross-border synergies, it has also utilized the power of the state to reinforce disparities. One can easily long for the day when the poor and downtrodden revolt or when the well-to-do decide to mend their ways, but signs of either extreme are not easy to spot on the horizon. Perhaps the "anti-WTO riots" during the November 1999 World Trade Organization meetings in Seattle, Washington, provide one such sign as 50,000 people protested on some days (CP, 1999). President Clinton won some "grudging praise" for seeking to put labor and environmental issues on the WTO agenda (Grimaldi, 1999) and the meetings ended without any progress on the top priority of cutting red tape to speed transport of goods across borders because of the need to focus on agriculture, labor standards, and environmental protection (Freudmann, 1999).

An example of an apparent synergy with regard to Pacific salmon is that Alaskan technology and facilities have been used to incubate salmon stocks in the transboundary rivers of Northern British Columbia. There are disputes about how well this cooperative arrangement is working, but there is no dispute that it has lead to the development of thousands of salmon that would otherwise not have been available for harvest. Do tensions exist? Yes. Has a cross-border network created something

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valuable for both nations? Yes. Do both nations still argue about how to fairly divide this transboundary resource? Yes. All is certainly not harmonious with regard to the transboundary rivers, yet a cross-border network has taken advantage of a synergistic opportunity and generally made the situation a bit better. Perhaps this has reinforced the sovereignty of each nation-state or perhaps it is one more step toward the recognition that both nation-states are inherently limited in their ability to manage the Pacific salmon fishery while the Pacific Salmon Commission as a network structure may encompass the appropriate system boundaries for managing this fishery.

What can we conclude? Synergistic opportunities are actively pursued in the international arena by corporate actors, yet synergy in this context means increased profit and productivity rather than meaning the opportunity for all parties involved to develop their full potential. It seems likely that the existence of borders and the concept of national sovereignty lead to the loss of many opportunities for synergy precisely because of the great extent of corporate power. Looking back to Poggi's analysis, feudal lords, elitist councils, and absolutist rulers each ceased to dominate modern Europe in part because new knowledge, resources, and combinations of the two allowed previously repressed people to assert their power. This suggests that history may not be on the side of those who exploit others.

CONCLUSION

Cross-border networks and network structures may continue to push the envelope in terms of sovereignty, thereby making a patchwork of network structures the model that supplants current nation-states.(9) This would seem to be supported by David Rosenbloom's recent assessment that "globalization promotes policy diffusion and convergence among nations" (1999: 491). While

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Rosenbloom presents constitutional schemes, administrative cultures, and political coalitions as barriers to convergence, he fails to fully discuss the power of the corporate sector to push for convergence in a networked world as outlined in detail by Farazmand (1999).

This essay has begun to outline the need to view borders as tools to help us better manage real-world complexity and the need for networks and network structures to manage problems that borders create. The nation-state model is vulnerable because it deals with public policy concerns with a narrow focus rather than a holistic focus that can be grounded in an interpretation of quantum theory. A strict nation-state model perceives borders as organic divisions rather than as convenient distinctions, as indicated in the opening quote from Bohm. This has been found to create at least three types of situations where the narrow within-border focus has the potential to create problems: internal clash of interests, system externalities, and synergy dysfunction. Networks and network structures are currently utilized to alleviate the impacts of these problems.

Another way to state this argument is that networks and network structures may now be viewed as constructs to help societies maintain the belief that national borders are still meaningful although for numerous specific policies these borders mutated or even disappeared long ago. The fact that federal systems lead to a deterioration of the sovereignty of national governments within the nation-state model has been well documented (Elazar, 1987; Duchacek, 1990; Soldatos, 1990; Boeckelman, 1996). This may be viewed as the first step away from a concentration of power and toward a model where power is granted and/or dispersed based on the specific issue or policy arena at hand. Phrases such as "perforated sovereignty" have been used to describe this trend, yet a philosophy or worldview such as Teller's relational holism would be much more

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productive. We need to use dotted lines on our maps, literally and figuratively, so that we are embracing quantum systems rather than protecting sovereignty.

NOTES

1. O'Toole (1997: 445) defines networks as "structures of interdependence involving multiple organizations" while Mandell (1999) is more specific using (1) "networks" to denote the existence of regular coordination between multiple organizations through a formal arrangement and (2) reserving "network structures" to denote the existence of a joint organization of sorts in that network structures take actions that are not simply the individual actions of the member organizations.

2. This concept is grounded in an interpretation of quantum theory and will be described momentarily.

3. For example, Mark Considine and Jenny Lewis explain that market bureaucracy may not be able to "build new systems of quality service delivery" or "create effective institutional linkages within policy sectors" and that network bureaucracy is a coherent orientation that might be able to do these things (1999: 471, 475). Additionally, maximum effectiveness may frequently involve working with systems that exceed national borders.

4. "Progresses" is used in the sense of moving through time rather than to imply that social advances will occur. Indeed, nothing in this essay is meant to imply that cross-border networks or network structures are less likely to be dominated by corporate or elitist powers than are individual organizations or nations.

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5. This view may justify Poggi's original avoidance of the "chicken and the egg" nature of the two views of politics by suggesting that neither view is first and foremost because they are co-evolving concepts.

6. For a user-friendly review of the competing schools of thought among quantum theorists, see Morcol (2000).

7. Zohar's interpretation extends beyond Teller's in that Teller does not mention consciousness, just matter and the relationships between matter. Zohar, however, examines a much larger grouping of scientific theories from biology, physics, and psychology and her goal is to discuss how these explain human nature or consciousness.

8. Some readers may be wondering by now, "How does this fit into a symposium on chaos, complexity, and uncertainty?" The answer is that borders help manage the complexity of collective action on a global scale and this essay provides an early attempt to discuss the practical impact of borders as "complexity management tools."

9. Clear evidence exists that subnational units of government are pushing this sovereignty envelope. An interesting example is when British Columbia's Premier Clark sought to end American use of the Nanoose Torpedo Testing Range in British Columbia (B.C. Office of the Premier, 1997; Reuters, 1997). After much litigation the Government of Canada finally decided to expropriate the land from the provincial government and extend use to the U.S. rather than allow a province to dictate policy on an issue that appears to be in the realm of national defense (Staff Reporter, 1999).

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