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Turbulence and Bifurcation in North–South Higher-Education Partnerships for Research and Sustainable Development

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Abstract The article analyzes processes and objectives of transnational higher-education partnerships (THEPs) devoted to research and sustainable development by applying concepts and insights from chaos theory, Rosenau's work on turbulence, Farazmand's contributions on institutionalized chaos and the management of cascading crises, and the transnational-competence framework. The bifurcation of research and development activity into asymmetrical and symmetrical processes and objectives provides the focus for analysis. Building on Farazmand's insight regarding the positive possibilities of transformative change, the conclusion explores possibilities for amplifying the symmetrical trajectory. Given the structural forces of global capitalism and local political constraints, the range of symmetrical process- and outcome-path possibilities for THEPs is now bounded by the strange attractors of resource inequalities and collaborative decision making.

Keywords Higher education · Partnership · Chaos · Transnational competence · Crisis of global capitalism · Indigenous knowledge · Transformation

We inhabit an interconnected world that is challenged by climate change, shared economic aspirations and vulnerabilities, nanotechnology initiatives that are reshaping manufacturing, food supply, and health, unfulfilled human needs generated by poverty, persecution, ethnic conflict, and prolonged life, new and emerging infectious diseases, and lifestyle epidemics. Embedded in each of these glocal challenges are unfolding crises of sustainable development[1] and the synergetic possibilities of indigenous knowledge joined with global perspectives.

[1]Sustainable development incorporates economic growth and improvements in living conditions, equity and justice, and the interests of future generations. Farazmand (2009:1012) adds a research connection: "creating opportunities for … advancement in science and technology to help lift a society upward."

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The redistributional and service-provision challenges associated with the growing rich-poor gap are "too many, too complex, and changing too rapidly" for national governments to resolve or ameliorate through foreign aid (Farazmand 2009:1011–1012). Managing the daunting crises of sustainable development in the Twenty-first Century requires multiple actors collaborating in boundary-spanning partnerships (Brinkerhoff 2002:1). In the contemporary research and development arena, proliferating transnational partnerships constitute a new multipartite and multicentered framework of collaborative governance (Hamann and Boulogne 2008:56). This article is concerned with the means and ends toward which transnational higher-education partnerships (THEPs) devoted to knowledge-generation, sustainable development, and capacity building are directed in an increasingly complex and turbulent environment. Understanding the symmetrical bifurcation of North–South THEPs is of primary interest.

The first part of the article introduces the dynamic context of transnational research and development governance, critically treats the partnership paradigm, and explores the rise of THEPs devoted to research and sustainable-development activity. Then, the appeal of research and development partnerships is explored from the perspective of perceived benefits to universities in South and North and for the global commons. Applying insights from chaos theory, the work of James Rosenau, Ali Farazmand's contributions on institutionalized chaos and the management of cascading crises, and the transnational-competence framework, the following section treats the complexity and turbulence encountered in the transnational governance of research and sustainable-development undertakings. This discussion focuses on explaining the bifurcation of the research and development mission into asymmetrical and symmetrical processes and objectives. The conclusion explores on-going transformative processes involving THEPs and opportunities and directionality in the transnational governance of higher-education research and sustainable-development partnerships through the murky lens of institutionalized chaos.

The dynamic context of transnational research and development governance

Today, a vast and shifting network of informal and decentralized webs of governance that transcend national borders supplement long-established formal and institutionalized structures, such as national governments and international organizations, that have diminished capacity to frame goals, steer socio-technical systems, and shape policy and resource-allocation outcomes (Rosenau 2002:80; Reinicke 1998:220). Donald Kettl (2006:15) embellishes Gilles Paquet (2005: xi-xii, 2–3, 9) insight that "all modern effective systems have tended to become more decentralized and distributed, organizationally or spatially, or both" with the observation that "it is hard to use vertical structures to hold individuals accountable when they are working in increasingly horizontal partnerships." The shared and competitive interests and goals of the individuals, groups, and organizations crowding the global governance stage are so numerous, diverse, and disaggregated that a hierarchical global structure with a single mechanism for governance is not likely to arise in the foreseeable future. Epistemic communities (Haas 1997), including university personnel as well as independently organized groups of professionals, are deeply involved in this

dispersed, multilevel, and multicentric world of governance. THEPs offer an excellent example of how civil-society collectivities use expertise to create transnational rules and to evoke compliance with their issue-specific recommendations and interventions among policy makers, other nongovernmental actors, and lay publics.

"Knowledge, Governance and Access" have become "constant preoccupations" among academics, governments, and societies throughout the world (Neave 2006:22). In the midst of the U.N. Decade of Education for Sustainable Development (de Haan et al. 2010), higher-education institutions are competing for influence at the shifting core of research access and development governance. Exercising governance responsibility is difficult and tension-filled because today's universities are ensnared by their own crises. Higher-education institutions in the Global South confront acute resource, respiratory, and connectivity needs (Juma and Yee-Cheong 2005:90–94; Bloom 2003:140, 144–145). Tertiary-level institutions are in a particularly precarious position in Sub-Saharan Africa (Damtew Teferra 2003:129–130; Damtew Teferra and Altbach 2003:5, 10). Faced with massification and other extreme cost pressures, public and private universities devote few of their scarce domestic resources to encouraging and sustaining research and development undertakings (Cloete et al. 2011:xiv; Samoff and Carrol 2004:136; Wangenge-Ouma 2011:168–170, 180). In a number of African countries, the national government even penalizes universities "for raising third-stream income by subtracting the amounts raised from the next year's government subsidy" (Cloete et al. 2011:xvi). Concomitantly, in the wake of the global crisis of capitalism, universities in the Global North face competing institutional agendas and revenue and public-taxation constraints that limit their ability to participate in cross-border research and sustainable-development initiatives (Labi 2009:A23; Eckel and Hartley 2011:199; Johnstone and Marcucci 2010:18–20). The global economic recession also has adversely affected efforts to revitalize higher education in the South. Damtew Teferra (2009) laments that "just when we felt that the policy space guiding higher education in Africa was gathering momentum, the resources that help sustain its development seem to be depleted both at the internal and external levels due to the current global economic meltdown."

Emergence of the partnership paradigm

The traditional path-dependent approach to the practice of development assistance simply entails Northern donor agencies providing bilateral or multilateral aid packages to poor developing countries in support of specific development programs prioritized by the donors (Court 2008; Olsson 2008). On this "train whose destination and speed of travel are determined by donors and the MDBs [multilateral development banks]" (Botchwey 2004:1050), little room exists for flexibility. The donor-recipient model, which Gutierrez (2008:21; also Amsden 2007) unmasks as the "hidden reproduction of colonial domination," further requires that the Northern provider of funding retain control and oversight in all financial and management aspects of financially supported development projects. In the higher-education arena, for instance, "research agenda setting, activity planning, fund management, data interpretation, results dissemination and basic research components are taken on by Northern researchers, while their Southern counterparts are in charge of data

gathering and the more applied research components" (Gutierrez 2008:21). Donors also determine what knowledge counts. For instance, the World Bank's influential 1998–1999 *Knowledge for Development* report stresses Southern deficits and Northern transmission and gives short shift to "knowledge that is culturally, socially or spiritually valuable …" (King and McGrath 2004:41, 48–49, 52, 89, 210).

Under the asymmetrical Northern-inspired model of development assistance that dominated most of latter half of the 20th Century, higher education was viewed as a luxury by the World Bank and the principal responsibility assigned to government institutions in the South involved demonstrating compliance with the many conditions attached to external-funding instruments. The increasing complexity of underlying forces—including moves toward a global knowledge society, multiplying participants in transnational governance (see Teichler 2011:28), the rise of autonomous direction in the South, and the global financial crisis—undermined the viability of this unidirectional paradigm. Even at the World Bank, there has been "a significant change in emphasis in recent documents towards notions of mutual learning and capacity enhancement that seem to indicate a shift away from the old Bank tendency to see itself as the source of all knowledge" (King and McGrath 2004:90, 125, 211).[2] Although it has been widely criticized by experts for its tendency to reproduce and reinforce unequal and dependent power relations among Northern donors and Southern recipients, the asymmetrical approach to research and development has not disappeared.

Partnership ideology emerged as the preferred paradigm for governance in the realms of foreign assistance and transnational-higher-education linkages devoted to research and sustainable development in reaction against the power asymmetries and material dependencies that traditionally defined North–South relations (Kothari 2001). Over the past two decades, and particularly since publication of the OECD's influential *Shaping the 21st Century: The Contribution of Development Cooperation* (DAC 1996), the aspirational rhetoric found in international-organization and bilateral-donor approaches to the transaction of development assistance has shifted from "telling and conditionalities" to "mutual learning and autonomy enhancement" (McGrath and King 2004:177, 179; also Brinkerhoff 2002:7; UNCTAD 2008:94; Botchwey 2004:102). The 2008 Accra Agenda for Action, for instance, elevates partnerships to the "heart of development" (King 2008). Among Washington-Consensus institutions, moreover, sector-wide poverty-reduction-strategy papers (PRSPs) that establish "country-owned" national objectives "have become the main operational instrument for implementing the development partnership approach …" (UNCTAD 2008:95; Tarabini 2010:207–208).

However, development practice "has changed less than the terminology" (Samoff 2009:128). As Botchwey (2004:103) points out, the decision by the World Bank and bilateral donors to use complex and demanding PRSPs as the "trigger mechanism" for access to development assistance and determinations regarding the "form, content, and timeframe for the submission of PRSPs" all were made without consultation with the countries responsible for completing the documents. Unsurprising, lack of

[2] By the time the World Bank shifted its educational-policy priorities, however, "fragile higher education systems in developing countries had experienced years of underfunding and were in a state of crisis" (Robertson 2009:113).

recipient-country capacity and failure to link PRSP objectives with a national human-resource-development plan has seriously constrained the preparation of country-owned PRSPs and implementation has required reliance on external experts (Botchwey 2004:103; Samoff 2009:144; Yusuf et al. 2009:70, 120–128). In the absence of transparency regarding Southern partner capacity weaknesses and their resultant inability to exercise leadership, donors continue to "set the international development agenda, targets, and performance benchmarks, and the issues that are current in the international development discourse dominate the national development debate" (Botchwey 2004:105; also Samoff 2009:143; Samoff and Carrol 2006:157–163).

Rise of transnational higher-education partnerships (THEPs)

Among the multiple versions of transnational partnerships found on the development scene, university-to-university collaborations stand out due to the recent proliferation of such arrangements and their purported value as a driver of economic progress and sustainable-capacity building in an era of knowledge-intensive development. The higher-education-partnering vision holds that universities in both North and South can help low-income countries "leapfrog stages of development" (Bloom 2003:140–142). Therefore, multilateral development agencies and industrialized-country governments have invested substantial resources in promoting THEPs in recent decades (Koehn and Demment 2010:3).[3]

THEPs involve intricate, contested, and fragmented organizational arrangements.[4] Given the extensive sociocultural, economic, and political differences that exist among countries, universities, and individual researchers, transnational academic collaboration involves an interlocking set of relationships with manifold pathways and outcomes that can be both convoluted and unexpected. Diversity and autonomy heighten system volatility and unpredictability at the same time that they facilitate distinctive place-oriented contributions (Trani and Holsworth 2010:228–229). Principles of chaos theory help to reveal the underlying dynamics and directions of transnational higher-education partnerships. Specifically, insights from the institutionalized chaos literature extend the thrust of Simon McGrath's compelling review (2010, especially pp. 248–251) of the complex, contextual, and even contradictory relationships involving education and development that educationalists discern.

Diverging process streams

We know that some North–South partnerships continue to be manifestly asymmetrical in practice (see Maselli et al. 2006:13; Bradley 2007; Holm and Malete 2010a). David Gutierrez (2008:20) maintains that "the main problem with the partnership and

[3] Over the same period of time, however, USAID "has grown to be a less consistent partner of universities seeking sustained beneficial ties with developing countries" (Smuckler 2003:169) and the support that has been forthcoming in USAID grants awarded directly to universities tends to be short-term in duration and meager in amounts (Koehn 2012).

[4] The scope and complexity of U.S. university involvement in international research and development activity is apparent from the roughly 800 project profiles at 77 member institutions posted at the Association of Public and Land Grant Universities (APLU) website (http:\crwww.nasulgc.org/NetCommunity/Page.apx?pid=776&srcid=776).

participation ideology is that it implies that it is possible to mitigate power asymmetries without *first* reducing *capital endowment asymmetries*" [emphases in original]. The alternative stream of symmetrical partnerships is grounded in mutual respect, trust, influence, and responsibility. Proponents advocate symmetrical partnership processes out of conviction that they constitute "the most ethically appropriate approach to sustainable development" because they embody "values and principles of mutual influence, equality, and reciprocal accountability" (Brinkerhoff 2002:17–18).[5] Symmetrical partnerships are founded on shared processes of selecting project objectives, transparency, and accountability for results.

Diverging missions

The Post Washington Consensus education-policy rhetoric consistently links poverty reduction and social stability to economic-growth objectives (see Tarabini 2010:206–208; Amaral and Neave 2009:82–83, 94) and conditionalities remain embedded in modalities such as the World Bank's Comprehensive Development Framework and the PRSPs (see King 2007:386; King and McGrath 2004:28–30). The World Bank's approach to knowledge building has emphasized responding to market-driven changes and selective enrichment through commodification rather than participating in the enhancement of values and lifestyles that promote sustainable quality-of-life improvements for all (Moja 2008:162–165; Taylor 2008a:98). Commercially driven academic systems accept that "interests such as corporations have claims that come before those of the public" (Naidoo 2010:79). The alternative perspective holds that "higher education has multiple purposes and ends, not all reducible to narrow corporate understandings of the knowledge society" (Singh 2007:54). Thus, genuine THEPs differ from technical assistance and commercial partnerships in that they are driven by the appeal of complementarity and synergy for the benefit of all participating parties.

Benefits of transnational research & development partnerships

The potential benefits of transnational and transprofessional higher-education linkages include positioning at the cutting edge of information flows, emerging ideas, resource opportunities, impending policy changes, and technical and social breakthroughs (Koehn et al. 2008). "Partners that join together learn from one another," a key advantage when purchasing knowledge and expertise in the marketplace is "prohibitively expensive" (Eckel and Hartley 2011:200). This section considers expected benefits of genuine, mutually responsive partnerships from the perspectives of Southern universities, Northern universities, and the global commons.

Southern universities

Transnationally collaborative research initiatives are vital for universities in the South that are committed to public engagement and contributing to national development

[5] Citing Dwight Waldo, Farazmand (2009:1012) affirms that development is a quest for Northern as well as Southern countries.

because "modern science and technology are characterized by the increasing concentration of higher-level development research and knowledge production within the industrialized countries of the North and chronic stagnation and erosion in the countries of the South" (Obamba and Mwema 2009:351,355,362,366; also UNESCO 2009:6; Damtew Teferra and Altbach 2003:10). From the Southern university perspective, "the high priority goal for an international partnership is the development of the institution and its infrastructure" (Samoff and Carrol 2004:116–117, 98). Partnerships offer higher-education institutions in the South prospects of tapping into useful resources, networks, and skills.

Northern universities

For Northern as well as Southern universities, transnational partnerships are pivotal mechanisms for the advancement of research, curricular offerings, and institutional reputations as well as for the mobilization of financial and technical resources across national and organizational boundaries. Participation by Northern higher-education institutions in transnational connectivity and capacity building is essential for the creation of sustainable knowledge-driven economies at a time when "new sites of knowledge production are continually emerging that, in their turn, provide intellectual points of departure for further combinations or configurations of researchers" (Gibbons 2003:112). For Northern universities, THEPs also offer a proven mechanism for campus internationalization and enhanced faculty competence in transnational interactions (Koehn et al. 2010). In USAID-funded THEPs, moreover, U.S. university benefits have included multiple serendipitous spin-offs, often involving strengthened transnational linkages (Gore and Odell 2009a:27, 40–43).

Global commons

The quest for collaborative knowledge production has been accelerated by recognition that intellectual resources are arguably the world's most important asset in addressing transnational challenges to sustainable development and that no amount of research in any one country, nor any single academic discipline, can fully comprehend, let alone resolve, the interconnected problems that face humanity today (see Koehn and Rosenau 2010). In Kettl's words (2006:13), "boundary-based solutions are out of sync with 21st-century problems." Managing the daunting challenges of socio-economic development and enhancing sustainable-development initiatives in the 21st Century requires multiple actors collaborating in all kinds of boundary-busting initiatives and boundary-spanning partnerships. At their roots, *transnational* HEPs are inspired by the imperative that "local needs require local prospects in global frameworks, and global challenges need global solutions that are locally acceptable" (Escrigas and Lobera 2009:12–13; also Taylor 2008a:xxiv). This understanding "makes clear the contextual nature of knowledge and the importance of exchange and joint creation of knowledge rather than its transfer" (King and McGrath 2004:141, 209).

In October 2008, the International Commission on Education for Sustainable Development Practice concluded that "in a fragile planet that requires management of countless complex and delicate natural and social systems, future generations will require all the cross-disciplinary expertise that they can muster" (Shaw and Kim

2008:55). Indeed, the transnational ability "to bridge disciplines and transform specialized knowledge into integrated practice may well become one of the defining competencies of universities in this millennium" (Anderson 2008; Mohrman et al. 2011:44).

Chaos, turbulence, cascading crises, & transnational competence in research & development governance

In this section, we consider the utility of concepts from chaos theory, James Rosenau's work on turbulence, Ali Farazmand's contributions on cascading public-administration crises, and my own work on transnational competence for the analysis of governance developments in North–South research and sustainable-development activity. North–South THEPs present a fruitful context for analysis given their complex, interdependent, and dynamic nature; this section's principal objective is to uncover constructs that help explain observed paradigm shifts in directionality of process and mission.

Chaos theory concepts and transnational research and development governance

Chaos theory offers one transdisciplinary approach for examining "the uncertainties, nonlinearities, and unpredictable aspects of social systems behavior" (Elliott and Kiel 1996:1). I understand the strength of chaos theory in social-science analysis to lie in the concepts it offers for understanding paradigm change. A number of these key concepts possess particular utility in the study of transnational research and development governance. Here, applicable chaos-theory concepts are treated, and then, the value of each for exploring the transformation of THEPs devoted to research and development activity is illustrated.

The Chaos theory concept of *bifurcation* particularly is useful to explain the issue. Simply put, bifurcation refers to "a point where a trajectory can proceed in different directions" (Mayntz 1997:299). At such direction-changing points, a new order arises that can be fundamentally different from the previous one (Murphy 1996:96). The emerging bifurcation of previously asymmetrical transnational research and development partnerships in a symmetrical direction provides the central focus of analysis in this article.

In nonlinear systems, the relationship among variables is unstable. *Positive feedback* amplifies deviations in these relationships, "breaking up existing structures and behavior and creating unexpected outcomes in the generation of new structure and behavior" (Elliott and Kiel 1996:1; also Murphy 1996:97). Positive feedback amplifying innovative faculty-initiated projects helped destabilize prevailing approaches to research and development assistance and paved the way for the new symmetrical partnership paradigm. From the chaos-theory concept of the *butterfly effect*, we understand that such paradigm shifts can be brought about by a tiny change and that they can be a source of renewal and positive change (Kiel 1994:6–8).

A related concept is the *threshold phenomenon*, where a dependent variable only reacts to continuous change in an independent variable when a *critical mass* is present. At such "tipping points" (Gladwell 2000:9) or "flashpoints of change" when

"dissonances have accumulated to the point of destabilizing the existing order" (Murphy 1996:101,109), the reaction is sudden and extensive (Mayntz 1997:299–300). The switch from asymmetrical control over development assistance by Northern institutions to partnership discourse and symmetrical-governance initiatives marks a bifurcation point where amplified micro-level changes in social values reached a critical mass that even penetrated the hallowed halls of Post-Washington-Consensus institutions.

In chaos theory, all systems are bounded by inherent organizing principles, or attractors. Chaotic contexts are characterized by *strange attractors*, "where outcomes wander constantly and unpredictably" but within a "bounded range" (Murphy 1996:98; Kiel 1994:27–29). They are strange "because it is not clear why the system is attracted to them …" (Farazmand 2003:354). Chaotic systems "may switch from one attractor, or set of underlying rules, to another at bifurcations" (Murphy 1996:99). Thus, today's THEPs continue to be bounded by resource inequalities while the rules governing the distribution and allocation of funds have leaped toward collaborative decision making.

Chaos-theory concepts are useful in understanding linear as well as nonlinear dynamics in a social context of both order and disorder. *Transformation*, "a process out of or through which order gives way to chaos and chaos again leads to order" (Loye and Eisler 1987:58), is the common crux of bifurcation, positive feedback, and threshold phenomena. At times, nonlinear transformations lay "a foundation for creating organizations that can cope with a world of increasing complexity and provide novel ways of solving problems" (Kiel 1994:5). The sudden and unexpected rise of symmetry-seeking transnational higher-education research and development partnerships from hierarchical Northern-directed organizational arrangements can be understood as an outcome of linear and nonlinear transformation processes.

Due in part to *sensitive dependence on initial conditions*, chaotic behavior can be distinguished from random behavior. This means that when chance enters chaotic systems that initially are similar, the outcomes will not be entirely random although they will be uncertain and substantially divergent (Elliott and Kiel 1996:6).[6] While each of the intervening forces that impact initial conditions can be minuscule, they "amplify exponentially as their effects unfold so the end result bears little resemblance to the beginning" (Murphy 1996:97). In the chaotic THEP arena, university actors typically are conscious of interdependency, but "unaware of the repercussions of their actions" (Rosenau 1990:64). Broadly, the concept of sensitive dependence on initial conditions helps us understand how THEPs that start with similar features and missions end up with many different and unanticipated outcomes.

Turbulence in the transnational governance of research and development undertakings

Turbulence is a key concept in chaos theory with potential for illuminating the governance dynamics of North–South THEPs. Rosenau's (1990:9) conceptualization of global turbulence, which builds in critical places on the contributions of

[6] As Rosenau (1990:49–50) notes, the assumption that randomness governs would bring to an end inquiry, reflection, and aspirations for improving the human condition.

organization theorists, offers a rich launching pad for analysis with special appeal to political scientists. The unsettled, constantly rearranging dynamics of turbulent change are found at the *micro (skill and orientation) level* of individual citizens, denizens, and NGO members, the *macro (structural) level* of constraints and possibilities embedded in the distribution of power and influence within and among interdependent state, international, and transnational collectivities, and the *relational (transmission-belt) level* where increasingly capable, involved, and less manipulable individuals at the micro level intersect and interact with macro-level collectivities and where alternative authority systems collide (Rosenau 1990:7, 10, 13, 182). The hallmarks of turbulence are newly generated processes and boundaries, uncertain and transitory outcomes, and prolonged disequilibrium. Turbulent environments are "marked by high degrees of complexity and dynamism" (Rosenau 1990:9, 59). *Complexity* refers to the number and variety or dissimilarity of actors in the environment and the degree of interdependence among them (also Hay 2010). *Dynamism* involves the extent of variability in their conduct. When the number of actors is vast, their dissimilarity is profound, and interdependence among them is extensive, the resulting density is "so great [and continuous] as to enable any event to give rise to a restless commotion, which reverberates in fast-paced and unexpected ways throughout the environment and its diverse systems" (Rosenau 1990:9, 62). For Rosenau (1990:65), "turbulence both accounts for the dynamism of actors and is itself dynamic. It reflects change and can stir further change."

The multicentric governance of transnational research and development activity is illuminated by Rosenau's conceptualization of turbulence in numerous ways. Contemporary THEPs are characterized by innovative micro-level actors; fragmented and conflicting bases for authoritative decision making and leadership; ad hoc situational rules governing interaction among partners; susceptibility to change; shared but dissimilar and loosely defined expectations regarding project benefits; diffused control over outcomes; and emergent institutional transformation.[7] Most dramatically, the long-prevailing asymmetrical rules determined at the macro level no longer serve to constrain relational behavior and outcomes in an era of micro-level networking, increasing equality in the capacity of individual and relatively autonomous faculty members in both South and North to initiate action, and discursive emphasis on symmetrical, even Southern-university-driven, relationships (e.g., Wanni et al. 2010:11,18). The resulting clash of old (asymmetrical) and new (symmetrical) orientations leads to "intense contractions" and "profound turbulence" (Rosenau 1990:51, 60,66) in THEP practices. Out of turbulent practices arise transformative outcomes.

Cascading crises and public management under conditions of hyper complexity

With a vast number of university actors from around the world operating in the research and development arena, and extensive interdependence among partnering nodes, the resulting diversity and density and expanding partnership interconnectivity increases the likelihood that erratic and serendipitous fluctuations in personnel, organizational structure, and project parameters will cascade rapidly and unpredictably across

[7] Most of these process characteristics are drawn from Rosenau (1992:250).

national and institutional boundaries. Unanticipated interactions can catapult complex systems built to unprecedented scale into cascading regional and transnational crises (Perrow 2007:261) that "carry severe threat, uncertainty, an unknown outcome, and urgency" (Farazmand 2001:3). Both Farazmand and Rosenau (1990:299–300) employ the metaphor of the cascade in ways that are illuminating for understanding the nature of transnational research and development governance. Rosenau (1990:304) anticipates that cascading changes "will be increasingly marked by surprising outcomes." Farazmand contends that "'we are facing an increasingly unknown world because of hyper complexity and changes worldwide'" (in Koehn and Rosenau 2010:37). The cascading challenges of crisis management, Farazmand adds, will be further complicated when they occur transnationally because alternative approaches are not immediately available; they must be discovered and negotiated.

Farazmand (2003:349, 352, 357) foresaw that the "widening gap between rich and poor countries" could generate bifurcations that "produce long-term paradigm shifts." Lack of transnational competence on the part of insensitive managers at the helm of donor institutions further contributed to the cascading crisis of governance in development assistance that facilitated bifurcation in the symmetrical-partnership direction (Farazmand 2001:4). The current crisis of global capitalism also undermines the dominance of the Washington Consensus policy paradigm (Beeson 2010:81, 87, 91). The management bifurcation of special interest here is the sudden shift from asymmetrical, market-driven, path-dependent, superior-subordinate relationships to a symmetrical, sustainable- and reciprocal-development, partnership-based trajectory. The punctuated equilibrium of conditional aid and structural-adjustment mandates engendered by transnationally collaborating university personnel who responded to the worsening resource-gap crisis facilitated this opportunity-liberating, inequality-mitigating transformation.

In the chaos-driven context, "traditional administrative capacities, important and valuable as they may be, are not good enough to meet the challenges ahead" (Farazmand 2009:1007). Crisis management requires nonlinear thinking, learning from outliers (Kiel 1994:209), and "flexible and fluctuating structures" (Farazmand 2003:339–341). Under conditions of multilayered instability and complex transnational interconnectedness, managers must keep organizations primed for all types of change and innovations (Kiel 1994:15–16,210). In *Riding the Waves of Change: Developing Managerial Competencies for a Turbulent World*, Gareth Morgan (1988:3,13) suggests a valuable set of managerial capabilities for responding to constant nonlinear change, including reading the environment (analytic skill), managing ambiguity and developing abilities to relish change (emotional skills), striking a balance between chaos and control and promoting learning and innovation (creative skills), communicating an actionable vision (communicative skill), and proactively valuing people in an environment of equals and multiple stakeholders (functional skills).

In crisis-management contexts, Farazmand finds transformation theory particularly valuable for public mangers. Public managers are challenged to minimize the destructive effects of chaos while maximizing its renewal and opportunity-providing properties (Farazmand 2003:348; also Kiel 1994:10,15). In an elaborate discussion of successful crisis management, Farazmand (2001:4) contends it requires "(1) sensing the urgency of the matter; (2) thinking creatively and strategically to solving [sic] the

crisis; (3) taking bold actions and acting courageously and sincerely; (4) breaking away from the self-protective organizational culture by taking risks and actions that may produce optimum solutions in which there would be no losers; and (5) maintaining a continuous presence in the rapidly changing situation with unfolding dramatic events."

In the process of transforming and revitalizing the environment of transnational research and development, moreover, THEP managers also are required to "change themselves" (Farazmand 2003:359). Under conditions of chaos and transnational interconnectivity, they need to be boundary spanners (Williams 2002). The ability to build and steer transdisciplinary research and development teams with multiple partners who "span sectors as well as national borders" is an increasing expectation of public and university managers (Bikson et al. 2003:xv,4; Williams 2002:109). Matrix-management systems are likely to work best in such circumstances (Kaul and Ryu 2004:83). Further, managing for sustainability involves learning (1) how to maintain and enhance diversity, adaptability, and renewal capacity, (2) means of incorporating and retaining redundancy, and (3) ways to retain flexibility and spread risks (Koehn and Rosenau 2010:93). In a crisis-prone context where local approaches cannot succeed on their own, human welfare is dependent on forward-looking, transnationally competent, and ethically responsible[8] managers who are capable of promoting "social-ecological resilience for adaptive capacity and sustainability" (Folke et al. 2003:382).

Chaos, THEPs, and capability building: The transnational competence (TC) imperative

The simultaneous 2011 impact of earthquake, tsunami, and nuclear meltdown in Japan provides a global wake-up call. Societies in both North and South face a pressing need to develop extraordinary skills and governance capacity in order to prepare for multiple unpredictable and interconnected systemic challenges. To "cope with chaotic changes and transform them into organizational and managerial assets," educational leaders need to be equipped with anticipatory skills and life-long learning abilities (Farazmand 2003:367; 2009:1013–1014). This insight underscores the importance of continued engagement with human-capability and institutional-capacity building in transcontinental higher-education research and development projects. Ethiopia, for instance, currently projects 31 universities, including 13 new regional universities, while less than 25 % of the Ethiopian faculty employed at the country's established premier higher-education institution, Addis Ababa University, hold doctoral degrees (Koehn and Ngai 2011). In addition to their own staffing needs, higher-education institutions are responsible for the preparation of professionals who will lead other development-challenged sectors of society and "there simply aren't enough" adequately qualified persons to fill urgently needed development roles (Lindow 2009:A23). Furthermore, professional-education programs are deficient in preparing graduates with the skills needed to work in teams of specialists from many countries and fields (Shaw and Kim 2008:iii). Working with others across boundaries

[8] Here I have in mind Kiel's (1994:215–216) notion of the manager's ethical responsibility over time for any serious and irreversible consequences one's actions have set in motion.

on tomorrow's challenges requires that educators develop curricula that address interpersonal skills with as much ardor and rigor as devoted to technical competencies. We need education for instability. From project design through implementation, evaluation, and dissemination, skills in interacting with professionals, policy makers, and indigenous-knowledge holders of diverse nationality, specialization, and perspective are pivotal for all partners intent on addressing the interdependent complexities of sustainable development that challenge humanity (Koehn and Rosenau 2010; Vessuri 2008:125; Taylor 2008a:94–95). Cultivating and nurturing external links through symmetrical THEPs are key components of a synergetic, forward-looking, human-capabilities-building strategy.

Few, if any, individuals interact on a world-wide scale[9] and global competence is neither practicable nor necessary. Increasingly, however, human interactions occur across interconnected boundaries, many of which are not primarily culturally defined. We need a competence construct that does not sacrifice attention to the capacity of nongovernmental actors to cross multiple and fluid frontiers in the process of addressing complex interdependence challenges. "Transnational" captures the diversity and multiplicity of contemporary nongovernmental boundary exchanges "that share the characteristic of not being contained within a state" without requiring global reach (Hannerz 1996:6; also Jonsson 2010). When attached to competence in human interactions, transnational is less universalistic than "global"; yet, it encompasses more than culture.

The transnational competence educational framework that Rosenau and I have articulated, which involves applications of five sets of clearly differentiated and augmented capabilities (analytic, emotional, creative, communicative, and functional), is focused on human-capability development.[10] Each skill set is elaborated generically in *Transnational Competence* (Koehn and Rosenau 2010:chapter 2; also see Taylor 2008b:98) and, then, developed specifically with reference to transformative curriculums in education, business, engineering, social work, agricultural sciences, development administration, natural-resource management, and health and medicine. The TC curriculum is about preparing for emerging challenges to our interdependent destiny that arise at margins where *we* ends and *they* begins, where the known shades into the unknown. TC enables the graduate to "edgewalk" along and across the permeable and intersecting boundaries of culture, discipline, social class, organizations, and identities—as well as maps. TC prepares for cascading changes by enhancing the graduate's grasp of complexity, propensity to perceive and account for long-term consequences, and "pragmatic capacity for appreciating that the unrestrained pursuit of narrow self-interests is counterproductive" (Rosenau 1990:336, 366–367, 453). Further, transnational competence assumes special value as

[9] Ann Florini and P.J. Simmons (2000:7) also opt for "transnational" rather than "global" in their discussion of border-crossing civil society in recognition of "the fact that rarely are these ties truly global, in the sense of involving groups and individuals from every part of the world." Even "campaigns, organizations, networks, and/or movements that claim to be global do not … reach all corners of the planet" (Khagram and Alvord 2006:66).

[10] Note the many parallels between the capability dimensions and achievable functionings presented in McLean and Walker's Table 1 (2011:6) with Koehn and Rosenau's dimensions of transnational competence (2010:8–9) and between McLean and Walker's Table 3 framework for educational arrangements (2011:10) and our discussion of TC learning processes (Chapter 11).

a lifelong-learning asset as specialized knowledge rapidly becomes obsolete in a deeply interconnected and crisis-prone world.

Transnational research and development governance: Asymmetrical & symmetrical processes and objectives

In large measure, the bifurcation of research and development partnerships in a symmetrical direction can be attributed to the dramatic expansion (Marginson 2009:96) of direct transnational interpersonal relationships among individual faculty members in North and South. In a study of U.S.-Africa THEP awards recently funded by USAID, 18 of 22 reporting project directors (82 %) indicated that they were personally connected with their partner co-director prior to collaborating on the successful proposal; 10 of the 18 had known each other for seven years or longer. Indeed, prior personal and institutional ties figured prominently in the reasons project directors offered for deciding to partner with one another (65 % of the respondents cited this reason). Another 22 % selected "common interests" (unpublished data from a study conducted in 2010/2011 by Marisa Griffiths in collaboration with the author).

The intra-institutional locus of the Northern initiative can determine asymmetrical or symmetrical partnership paths. Projects and THEPs generated in accordance with a university's strategic (business) plan will impact partnership relationships differently (asymmetrical processes and commercial interests) than those generated at the eclectic and uncoordinated institutional "understructure" of independent and opportunistic faculty members and departments (symmetrical processes and sustainable-development objectives). The principal instigator for most recent THEP arrangements is the faculty member. In the Koehn et al. study (2010), fully 90 % of the reporting SIOs rated faculty members as instrumental drivers of transnational research and development-project activity on their campuses. Further, survey responses submitted by the 22 project directors awarded pilot partnerships grants under the U.S.-African Higher Education Initiative indicated that U.S. and/or African faculty members initiated a majority (55 %) of the successful THEP projects (unpublished Griffiths and Koehn 2010/2011).

Process Critics of asymmetrical THEPs involving U.S. and African universities maintain that "the U.S. partner receives most of the money; the availability and use of resources are far from transparent; the U.S. partner makes or controls the principal decisions, from conception through design and implementation; the African partner has little say over starting, transition, and ending points …." (Samoff and Carrol 2004:147; see also Holm and Malete 2010b:A28). The transformation of North–South THEPs involves a dramatic reconfiguration of research and development work processes. The new trajectory of faculty-inspired symmetrical research and development governance, with its qualitatively different, more complex structures, elevates broad inclusion, comprehensive transparency, and sustained trust-building. Decentralized, fluid partnerships have become the preferred modality for research and development initiatives because they constitute "a key to sound governance and public administration" (Farazmand 2009:1014). The symmetrical THEP incorporates mutual influence at all stages of project decision making "whatever .. . [the parties] differences in wealth, expertise, experience, and status" (Samoff and Carrol 2004:115).

Data from the exploratory 2010/2011 study of pilot partnership awards presented in Table 1 are suggestive regarding the extent to which the process trajectory of THEPs that involve African higher-education institutions shifted in symmetrical directions. Most of the reporting U.S.-African university partnerships have established process arrangements that provide joint responsibility for identifying project and research objectives, for managing the project, and for project monitoring and evaluation.

In chaos terms, dramatic symmetrical process shifts resulted from the rapid increase in dispersed individual micro-level actions that characterize THEP development. Along the bifurcated pathways, transnationally competent and equity-sensitive faculty members are championing the establishment of symmetrical THEPs while "third-stream" higher-education managers pursue market-focused knowledge-exchange and technology-commercialization relationships with industry that will consolidate "entrepreneurial architectures" (Vorley and Nelles 2011:251–257,261).[11] The outlook for the third-stream approach is limited, particularly in Africa, by the common tendency for the Northern rhetoric of private investment to outpace the resource-commitment reality.[12]

Objectives In an interview that illuminates the bifurcation of THEP objectives, one medical-faculty member in the Ontario "major university" study conducted by Jones and Oleksiyenko (2010) reported that "`in our office, the first priority is to build capacity outside and help low and middle income developing countries build their own training programs, using our expertise. If you move to another office, let's say to research, their priority is not to look at low and middle-income developing countries, but rather to build partnerships with the top 100 institutions in the world.'" From the Southern vantage point of the University of Botswana, Holm and Malete (2010a:9) confirm the prevalence of status-seeking partnership identification and selection, mainly among "universities in Europe and Australia which are seeking to move up in international rankings."

In the Griffiths and Koehn 2010/2011 study, however, equal percentages (32 %) of THEP directors identified "sustainable development" and "faculty development" as their principal partnership objective; another 18 % ranked "transnational or global competence" first in importance from the menu of 13 choices. No U.S. project

[11] See Amy Metcalfe's (2010:507) domestic analysis of the increasing pressure placed on Canadian universities by the formal agreement entered into by AUCC and the federal government in 2002 to "triple the amount of commercialization of academic research" by 2010. The AUCC and CIDA introduced a new small-scale competition in 2010 entitled "Strengthening Higher Education Stakeholder Relations in Africa" that is specifically aimed at developing "case studies of successful African university-industry linkages" and reinforcing "strategic plans for improved outreach to external stakeholders" (AUCC 2010:1).

[12] In the author's 2007–2009 HED/AUCC database study, none of the CIDA-supported projects indicated that a private corporation had contributed to the development initiative and only 8.6 % of the USAID-funded projects mentioned one or more for-profit enterprises as a funding partner. Further, analysis in 2009 of the APLU database showed that only 5 of 98 USAID-supported university projects (5.1 %) involved a corporate partner. In a 2009 study that included "flagship" universities in seven African countries, Cloete et al. (2011:xvi) found "virtually no evidence of university engagement in research and development with or for industry" – mainly because the industrial sector is underdeveloped and there is little private sector R&D (also Johnson and Hirt 2010).

Table 1 THEP process responsibility: African and U.S. Universities awarded HED pilot grants in 2009

	Division of responsibility					
	U.S. University			African University		
Process	Lead	Support	Joint	Lead	Support	Joint
ID project & research objectives	3	3	10	3	3	10
Manage project	4	2	9	2	4	9
Project monitoring & evaluation	4	1	9	1	4	9

Griffiths/Koehn 2010/2011 survey of project directors; 22 of HED's 33 pilot awards reported

director ranked "revenue generation" as the principal project objective and only one respondent selected "enhanced institutional reputation."

Although these results are consistent with a decentralized governance trajectory that privileges capacity building and direct sustainable-development initiatives over objectives that primarily benefit Northern higher-education institutions, symmetrical partnerships are complex, messy, and volatile. Since multiple inputs come from diverse and autonomous stakeholders with differing roles, norms, and relational efforts to exercise power on behalf of goals, even contradictory objectives are possible. Negotiations over objectives often are chaotic and fragmented. In one of the first evidence-based studies of the symmetrical THEP trajectory, Barrett and colleagues (2011:39) found that lead researchers in both North and South had a sense of ownership due to symmetrical engagement in the whole process of conceptualizing the partnership, setting the research agenda, and participating in decision making. However, "tensions between process and product goals arose, as the delivery of outputs slipped against deadlines set on repeatedly revised activity plans."

Murky predictions

In the analysis of THEPs devoted to research and sustainable development, the lens of institutionalized chaos is helpful even though observations are not sharply defined. Processes with directionality, but limited predictability (Prigogine 1996:3–4,189), are in motion that appear as shadow patterns subject to partial interpretation. Transnational research and development governance systems exhibit properties that allow for limited short-term prediction even though relationships between cause and effect are not proportional and difficult to discern, a wide array of outcomes from the changing interactions of variables emerge (Elliott and Kiel 1996:1–2, 6), and accidental events and serendipitous interactions set latent forces in motion (Mayntz 1997:301). Farazmand (2003:351) alerts us to the possibility that transformative change can be considered a healthy process. In the unstable environment that engulfs THEPs lies potential for mutual gain. Turning points arise that offer opportunities to amplify symmetrical faculty-initiated projects. Building on Farazmand's insight regarding the positive possibilities of transformative change, the focus here is on opportunities to advance the emerging symmetrical trajectory in transnational

research and development governance. This analytic interest involves anticipating process and outcome dynamics through the murky lens of institutionalized chaos.

Process dynamics

The symmetrical governance path is overlaid with multiple process dynamics. The anticipatory framework applied here specifically considers decentralized and autonomous management, collective knowledge generation, and shared management.

Decentralization & autonomy

In a governance arena permeated by multiple and diverse stakeholders, linked faculty members who are independent of Post-Washington-Consensus institutions (see Beeson 2010:88) and committed to advancing symmetry in objective setting, project management, and monitoring and evaluation will play decisive roles in transnational governance. In this complex and dynamic world, faculty autonomy does not imply independence, but means "being free to select the ways in which interdependence" is established with selected partners (Rosenau 1992:3). Increasingly, therefore, we expect THEPs to embrace "both autonomous and interdependent relationships" (Rosenau 1992:3) that advance mutual benefits among partners.

Collective knowledge generation

The benefits of boundary-spanning learning will attract increased attention in North–South research and development collaborations. "Fields from medicine to agriculture," Vessuri (2008:128) alerts us, "have begun to recognize that the modern world has paid a high price for rejecting traditional practices and the knowledge, however expressed, that underpins them." Transnational research partnerships that "emphasize the process of collective knowledge generation … have the extra advantage of bringing comparative and cross-cultural perspectives to bear on local situations" (Crossley and Holmes 2001:399). Thus, we can anticipate further tilts toward emphasis on "knowledge as something to be produced rather than simply transferred" (i.e., local and contextual discovery) and increasing "recognition of and even support to indigenous knowledge and national knowledge systems in the South" (King and McGrath 2004:135, 140).

Shared management

In the current transforming context of transnational partnerships, organizational participants will experience liberating disorder, uncertainty, surprises, and positive fluctuations as they learn new roles, embrace multiple perspectives and serendipitous opportunities, and explore creative means of service provision and problem solving (Kiel 1994:2,44–45,151,154). Among THEPs, the asymmetrical rules that previously governed research and development-project relationships are being obliterated and replaced with more complex and turbulent symmetrical norms and requirements.

Symmetrical THEP managerial responses include building trust through face-to-face cooperative experiences that facilitate addressing arising asymmetries and

conflicts (Holm and Malete 2010a:5,11; Eckel and Hartley 2011:216); ensuring that partners are involved in all aspects of project formulation—topic, objectives, methodology, budget, site identification, personnel selection (Holm and Malete 2010a:4,9; Gore and Odell 2009a:53; Samoff and Carrol 2004:153)—as well as in project analysis and evaluation; committing to transparency in issues of funding ("sources, amounts, requirements governing, and all intended uses of funds obtained in the names of partners") and issues of power ("differing roles of leaders and stakeholders and the differing authority and power in the relationship") (Samoff and Carrol 2004:177); focusing on building competencies and capabilities that will unlock obstacles to local development (Holm and Malete 2010a:11) and educate professionals for sustainable-development responsibilities and advocacy (McGrath 2010:248); attracting diaspora institution builders to contribute insights and expertise through short-term assignments in sending countries or by "tapping their skills" from where they are situated (Ackah 2008:6–7; Tettey 2009:115); and demonstrating partner transnational competence by ensuring that local actors "progressively take the lead while external partners back their efforts to assume greater responsibility for their own development" (DAC 1996:13).

Outcome dynamics

Global economic crisis coupled with overstretched university resource bases suggest the possibility of amplification in the symmetrical trajectory of transnational research and development governance. New and expanding challenges in a temporal context of resource limitations highlight the "opportunity for a new imagination" that is focused on sustainable development and public engagement and realized through mutually beneficial THEPs that are "freed from the stifling neo-liberal orthodoxy of the past decades" (Badat 2010:136–137). The following discussions apply the chaos-informed anticipatory framework to sustainable-development and capacity-building objectives.

Community engagement and sustainable development

As symmetrical processes are extended and further embedded in THEPs, the appeal of the trajectory that frames the need to strengthen higher-education institutions exclusively via economic-growth and "human-capital" (individual earnings) narratives (Naidoo 2010:66,81; Walker 2010:219) will further diminish. The involvement of Northern and Southern higher-education institutions in jointly articulating and addressing societal needs will receive increasing attention. The transforming trajectory emphasizes the curriculum-liberating, human-potential-fulfilling, change-initiating role of the university as integral to its development mission (Samoff and Carrol 2004:137–140; Wang 2008:235). In Africa, for instance, the often-assumed role of higher education in developing "public-good-professional capabilities" (McLean and Walker 2011:8) and promoting social change (Moja 2008:163) increasingly will become explicit and the university's community-engagement mission will be proactively framed. Technological and informational imbalance, marginalization, and dependence can only be redressed when scholars in the South possess in-depth understanding of change processes and awareness of mobilizable resources that

enable innovative and contextually appropriate breakthroughs. Contextual insights based on Southern scholarship will play a critical role in evidence-based policy making aimed at advancing sustainable-development objectives such as reducing poverty and hunger, alleviating suffering, protecting life-support systems, and enhancing human capabilities, as well as responding quickly and effectively to new economic opportunities (Moja 2003:168; Crossley and Holmes 2001:396; Colclough 2010:824).

Capacity building

Building human capabilities by empowering people to realize their full potential and enlarge their range of choices (Sen 2009) stimulates innovation and resilience, enhances the ability of representatives of Southern countries to negotiate effectively and steer governance arenas (McGrath and Badroodien 2006:490; Little and Green 2009:168), and facilitates the realization of glocal development objectives (Moja 2008:165–167; Little and Green 2009:168). While THEPs carry transaction costs, they pool and share assembled essential resources, spread risks, apply complementary core competencies, enhance the bridging social capital of participants, and facilitate the leveraging of contributions and support from non-academic sources (Hamann and Boulogne 2008:55). Transnational THEPs bring "additionality" to human-capability and institutional-capacity building initiatives both in the South and in the North (e.g., G20, 2009) and offer Northern as well as Southern universities one cost-effective way to respond to demands for increased higher-education capacity without diminishing quality (Johnstone and Marcucci 2010:26; Koehn and Demment 2010:4–5).

The outlook for the transformative approach to managing sustainable-development challenges rests on the extent to which symmetrical THEPs succeed in expanding and enhancing the "capacity to build capacity" (Johanson and Saint 2007:51). Movement in this direction can be discerned from analysis of 74 development-partnership projects involving 36 Canadian universities that were principally funded by CIDA and 186 USAID-funded transnational partnership projects involving 123 U.S. universities that were active in 2007–2009. Between 85 % and 90 % of all projects in both datasets include a human-capability-building and/or an institutional-capacity-building objective.[13]

Conclusion: Vulnerability and volatility

At tipping points in systems of vulnerability and volatility, it is possible to anticipate nonlinear changes and proactively respond in a manner carefully timed to influence developments (Murphy 1996:110–111). While the symmetrical path to process and outcome transformations in research and development governance is vulnerable to exhaustion or regression, there are ample opportunities for amplification of its emerging features. Here we have considered possibilities for advancing the symmetrical process trajectory through decentralized and autonomous management,

[13] Specific examples of institutional-capacity enhancement projects undertaken through HED-funded partnerships can be found in Gore and Odell (2009a:30–39; 44–48) and in Gore and Odell (2009b:3).

collective and contextual knowledge generation, and shared management along with possibilities for amplifying the parallel outcome trajectory through commitment to community engagement and capacity building.

Thus far, the emerging symmetrical THEP trajectory has produced fragmented rather than unifying results. Although "traces of universal standards that attach value to whole system needs can be discerned in the turbulent flow" (Rosenau 1992:16) of symmetrical THEP activity, institutional-capacity and human-capability-building projects typically remain protected "islands of excellence" (King 2009:45; Wangenge-Ouma 2011:181). THEPs share another path vulnerability. Partnership roles and influence demand constant vigilance when funding sources are asymmetrical (Barrett et al. 2011). There are real risks, for instance, that the research gap between North and South could widen and deepen even further (Zeleza 2005; Court 2008). Of greater import than each actor's bases of power, however, "are the ways in which the parties to a relationship perceive the intentions and powers of the others and, accordingly, respond to each other" (Rosenau 1990:183). In a symmetrical North–South THEP relationship, *power* need not be symmetrical because the Northern university "may have a variety of reasons for not employing all the power resources at its command …" (Rosenau 1990:184). However, participant, especially managerial, *responses* must be symmetrical and reconcile discontinuous change pulses (see Kiel 1994:39).

The expansion of THEPs increases prospects of cascading changes generated by the cumulative linkage effect of micro choices among faculty members. The intensity of cascades determines the pace at which capacity-building initiatives will move through interconnected research and development systems and subsystems. Volatile, elaborated, and augmented transformational outcomes are likely since THEP cascades tend to be high-intensity ("participants are committed, vigorous, and tenacious with respect to the outcomes they desire") rather than low-intensity ("actors' commitments are … less fixed on particular outcomes") (Rosenau 1990:301). In sum, THEPs are "fraught with instabilities which are likely to produce conflict …" while embedded with possibility for becoming "very productive" (Pryor et al. 2009:780–781; also Eckel and Hartley 2011:215). In the vulnerable glocal governance context of complexity and turbulence, the management of THEPs requires keen anticipatory skills and functional and emotional transnational-competence-capability building (Farazmand 2003:363, 366; Koehn and Rosenau 2010:16; Pryor et al. 2009:781).

The bifurcation break with center-directed and asymmetrical research and development initiatives in the South is rich with possibilities for improved transnational management processes and rewarding outcomes. However, there is no guarantee that symmetry-guided THEPs dedicated to building capacity for undertaking sustainable-development activity will reduce poverty and inequalities, advance national competitiveness and social transformation, eliminate dependency, or even realize envisioned mutual benefits (Samoff and Carrol 2004:84,150; Bonal 2007:88–90,98; McGrath 2010:249–250). Partnership symmetry remains an incomplete, vulnerable, and volatile governance path given the structural forces of global capitalism and local political constraints (Tarabini 2010:206–207,210; Little and Green 2009:170). In the wake of bifurcation, the range of symmetrical process- and outcome-path possibilities for THEPs is now bounded by the strange attractors of resource inequalities and collaborative decision making.

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