

...implementar u...
...de una cultura del encuentro en tot...
...derechos universales. La ciencia, la cultura, la...
...contribuir al logro de sociedades más justas, so...
...comprometidas con el cuidado de la casa común.

Francisco

PONENCIAS

SEMINARIO DERECHO HUMANO AL AGUA

PONENCIAS

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23 al 24 de febrero de 2017
Casina Pio IV | Ciudad del Vaticano



PONENCIAS

SEMINARIO

DERECHO HUMANO AL AGUA

APORTES Y PERSPECTIVAS INTERDISCIPLINARIAS SOBRE
LA CENTRALIDAD DE LAS POLÍTICAS PÚBLICAS EN LA
GESTIÓN DE LOS SERVICIOS DE AGUA Y SANEAMIENTO

23 y 24 de febrero de 2017

Casina Pio IV | Ciudad del Vaticano



CÁTEDRA DEL DIÁLOGO Y
LA CULTURA
DEL
ENCUENTRO





“En realidad, el acceso al agua potable y segura es un derecho humano básico, fundamental y universal, porque determina la sobrevivencia de las personas, y, por lo tanto, es condición para el ejercicio de los demás derechos humanos.”

(Laudato Si', 30)

EJE 2

LA CENTRALIDAD DE LAS POLÍTICAS PÚBLICAS EN LA CONSTRUCCIÓN DEL BIEN COMÚN



Panel 4

**GEOPOLÍTICA DEL AGUA: EL
IMPACTO DEL CAMBIO CLIMÁTICO
EN LOS SISTEMAS HÍDRICOS.
ABORDAJES Y ESTRATEGIAS**

INTERNATIONAL WATERS: CONFLICT, COOPERATION, AND TRANSFORMATION

AARON T. WOLF⁴¹

ABSTRACT

Conflict resolution has, in the West, been presented as a rational process: people will agree when it's in their interest to agree. And yet, those who have been involved in any conflict with any depth, as well as an increasing number of mediators and facilitators, speak more in terms of transformational moments or "shaping the energy in the room." The post-"enlightenment" West has little experience in working with such constructs, entrenched as we are in the 'Enlightenment Rift' – the process by which the global West/North has separated the worlds of rationality and spirituality. This discussion begins with a description of this rift and its impact on conflict and cooperation, particularly in relationship to our shared natural resources. We continue with a discussion of the current clash of world views, and conclude with a section describing how the two world views might gently be interwoven, for example within a fairly universal construct of four worlds of perception, and how this construct might be employed within the framework of more effective conflict management and transformation.

Water⁴² management is, by definition, conflict management; water, unlike other scarce, consumable resources, is used to fuel all facets of society, from biology to economies to aesthetics and spiritual practice. Moreover, it fluctuates wildly in space and time; its management is usually fragmented; and it is often subject to vague, arcane, and/or contradictory legal principles. As such, there is no such thing as managing water for a single purpose – all water management is multi-objective and based on navigating competing interests. Within a nation these interests include domestic users, agriculturalists, hydropower generators, recreationalists, and environmentalists, any two of which are regularly at odds, and the complexity of finding mutually acceptable solutions increases exponentially as more stakeholders are involved. Add international boundaries, and the difficulty again increases substantially.

While press reports of international waters often focus on conflict, what has been more encouraging is that, throughout the world, water also induces cooperation, even in particularly hostile basins and even as disputes rage over other issues. This has been true from the Jordan (Arabs and Israelis) to the Indus (Indians and Pakistanis) to the Kura-Araks (Georgians,

41 Professor of geography in the College of Earth, Ocean, and Atmospheric Sciences at Oregon State University. His research and teaching focus is on the interaction between water science and water policy, particularly as related to conflict prevention and resolution. He has acted as consultant to US Government agencies, the World Bank, and several governments on various aspects of transboundary water resources and dispute resolution. All told, he is (co-) author or (co-) editor of seven books, including *Core and Periphery: A Comprehensive Approach to Middle Eastern Water*, (Oxford University Press, 1997), *Transboundary Freshwater Dispute Resolution*, (United Nations University Press, 2000), *Managing and Transforming Water Conflicts* (Cambridge University Press, 2009), and close to fifty journal articles, book chapters, and professional reports on various aspects of transboundary waters, from the local scale to the international. A trained mediator/facilitator, he directs the Program in Water Conflict Management and Transformation, through which he has offered workshops, facilitations, and mediation in basins throughout the world (www.transboundarywaters.orst.edu).

42 This paper draws from: Wolf, A. "International Waters: Conflict, Cooperation, and Transformation." In Strong, B., L. Babin, M. Zbylut, and L. Roan (eds.) *Sociocultural Systems: The Next Step in Army Cultural Capability*. US Army Research Institute for the Behavioral and Social Sciences Research Product 2013-02, September 2013.

Armenians, and Azeris). Despite research that finds repeatedly and empirically that water-related cooperation overwhelms conflict over the last fifty years (see Gerlak, Heikkila, & Wolf, 2010), prevailing theories fail to explain this phenomenon. Certainly, there is a long history of conflicts over, or related to, shared freshwater resources. But there is also a long, and in many ways deeper, history of water-related cooperation. (See Conca & Dabelko, 2002; Carius, Dabelko, & Wolf, 2004; and Wolf, Kramer, Carius, & Dabelko, 2005, for complete discussions of the relationship between water and security.)

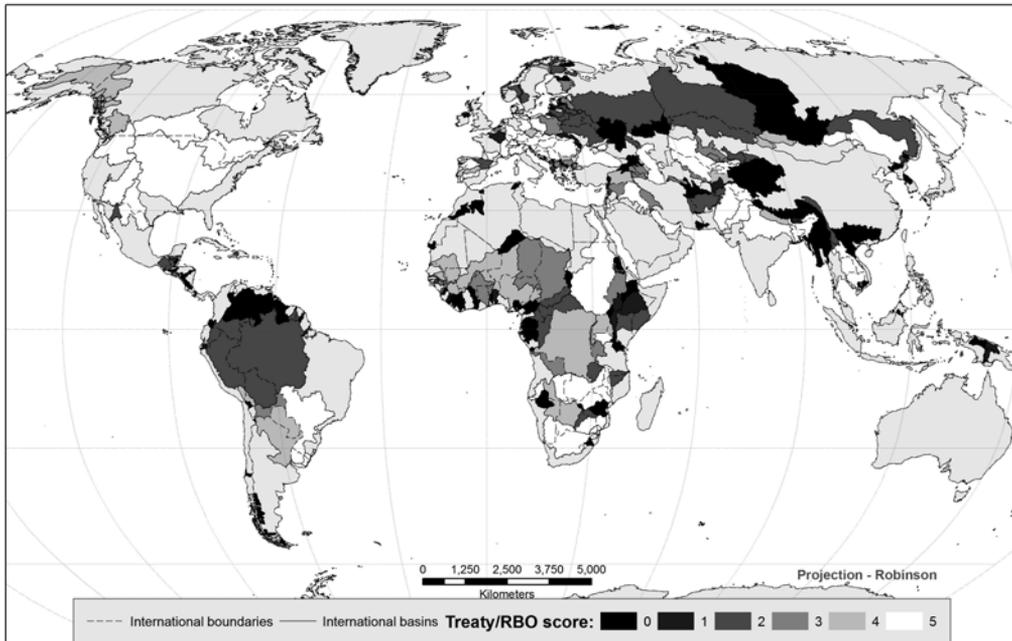
This historical record suggests that international water disputes do get resolved, even among enemies, and even as conflicts erupt over other issues. Some of the world's most vociferous enemies have negotiated water agreements or are in the process of doing so, and the institutions they have created often prove to be resilient, even when relations are strained.

It is not a matter of whether water leads to conflict or cooperation – both are true, and often in the same place (see Zeitoun & Warner, 2006). Shared water often leads to tensions between nations, which in turn offer a vehicle for dialogue and, regularly, some form of joint management. In fact, a general pattern has emerged for international basins over time which exemplifies both conflict and cooperation. Riparians of an international basin implement water development projects unilaterally first on water within their territory, in attempts to avoid the political intricacies of the shared resource. At some point, one of the riparians, generally the regional power, will implement a project that impacts at least one of its neighbors. This project can, in the absence of relations or institutions conducive to conflict resolution, become a flashpoint, heightening tensions and regional instability, and this in turn leads to negotiations, treaties, and/or collaborative river basin organizations and mechanisms for future conflict management.

The economic and engineering benefits of cooperation between riparian states within the world's international basins can be clearly demonstrated. Through greater efficiencies, unit costs generally come down, and economies of scale offer greater development opportunities. In addition to those above, case studies from rivers from the Senegal to the Columbia support the theory.

Nonetheless, there are basins all over the world where cooperation between co-riparians is often lacking or even obstructed by one party or another. Of the world's 276 international basins, 166 are covered by no treaty provisions whatsoever. Moreover, multilateral basins are, almost without exception, governed by bilateral treaties – only one third of multilateral basins are entirely covered by treaty provisions, and most of those are bilateral – precluding the integrated basin management long-advocated by water managers. Eight major multilateral basins include at least one pair of countries with comprehensive agreements, while at least one other pair has no coverage whatsoever. These basins are the Amur, Aral Sea, Elbe, Ganges-Brahmaputra-Meghan, Garonne, Indus, Rhine, and Tigris-Euphrates/Shatt al Arab basins. Together, these basins encompass 1.45 billion people and 7.24 million km² (DeStefano, Duncan, Dinar, Stahl, Strzepek, & Wolf, 2012).

Figure 1. Distribution of treaty/RBOs; basin-country units in red have no treaty or RBO coverage.



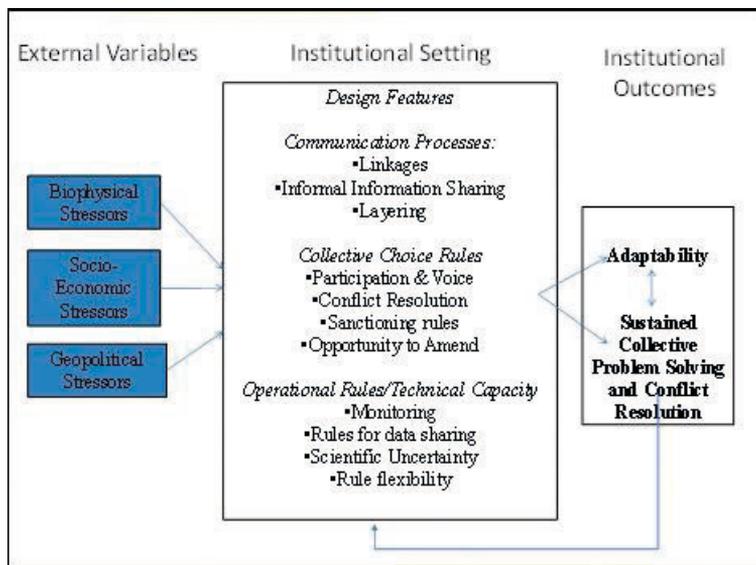
HYDROPOLITICAL RESILIENCE AND VULNERABILITY

In general, the concepts of “resilience” and “vulnerability” as related to water resources are often assessed within the framework of “sustainability”, and relate to the ability of bio-physical systems to adapt to change (Gunderson & Pritchard, 2002). As the sustainability discourse has broadened in recent years to include human systems, research too has been increasingly geared toward identifying indicators of resilience and vulnerability within this broader context (Bolte, Hulse, Gregory, & Smith, 2004; Lonergan, Gustavson, & Carter, 2000; Turner et al., 2003). In parallel, dialogue on “security” has migrated from traditional issues of war and peace to begin incorporating the human-environment relationship in the relatively new field of “environmental security” (see UNEP, 2004; Vogel & O’Brien, 2004).

As the potential for conflict and violence to erupt over international waters became increasingly apparent, the term “hydropolitics” emerged as a way to describe the ability of geopolitical institutions to manage shared water resources in a politically sustainable manner, meaning without tensions or conflict between political entities. “Hydropolitical resilience”, then, is defined as the complex human-environmental system’s ability to adapt to permutations and change within these systems, and “hydropolitical vulnerability” is defined as the risk of political dispute over shared water systems. Wolf, Yoffe, and Giordano (2003, p. 43) suggested the following relationship between change, institutions, and hydropolitical vulnerability: “The likelihood of conflict rises as the rate of change within the basin exceeds the institutional capacity to absorb that change” (p. 43).

This suggests that there are two sides to the dispute setting: the rate of change in the system and the institutional capacity (see Figure 2 for a conceptual model).

Figure 2. A model of institutional robustness in transboundary resource settings (Source: Gerlak, Heikkela, & Wolf, 2010).



In general, most of the parameters commonly identified as indicators of water conflict are only weakly linked to dispute in reality. Institutional capacity within a basin – whether defined as water management bodies or treaties, or generally positive international relations – is as important, if not more important, than the physical aspects of a system. That said, rapid changes in either institutions or the physical system, when they outpace the institutional capacity to absorb those changes, are at the root of most water conflict. For example, the rapid institutional change in “internationalized” basins – basins that include the management structures of newly independent states – has resulted in disputes in areas formerly under British administration (e.g., the Nile, Jordan, Tigris-Euphrates, Indus, and Ganges-Brahmaputra), as well as in the former Soviet Union (the Aral tributaries and the Kura-Araks). On the physical side, rapid change most detrimentally outpaces institutional capacity in basins that include unilateral development projects *and* the absence of cooperative regimes, such as treaties, river basin organizations (RBOs), or technical working groups, or when relations are especially tenuous over other issues (Wolf et al., 2003).

The general assumption of this relationship, then, is that rapid change tends to indicate vulnerability while institutional capacity tends to indicate resilience, and that the two sides need to be assessed in conjunction with each other for a more accurate gauge of hydropolitical sustainability. Building on these relationships, the characteristics of a basin that would tend toward resilience to change include:

- International agreements and institutions, such as River Basin Organizations (RBOs)
- A history of collaborative projects
- Generally positive political relations
- Higher levels of economic development

In contrast, characteristics that tend toward vulnerability would include:

- Rapid environmental change

- Increased hydrologic variability
- Rapid population growth or asymmetric economic growth
- Major unilateral development projects
- The absence of institutional capacity
- The potential for “internationalization” of a basin
- Generally hostile relations

When these characteristics are assessed in combination, the settings most likely to be conflictive become apparent. These would include locations where major water projects such as dams, diversions, or development schemes are being planned *in the absence* of agreements or collaborative organizations that can mitigate the transboundary impacts of these projects.

CHANGE, CAPACITY, AND SCALE: THE EMPIRICAL EVIDENCE

Many researchers have been compiling global datasets of various aspects of political conflict, and adding substantive knowledge to trends in shared waterways.⁴³ A number of studies have been able to draw on these datasets to report on global trends in water conflict and cooperation. What follows is a summary of those findings, with an important caveat: global studies, by nature, are generalizations, based often on incomplete or inaccurate data. Moreover, studies based on general datasets (rather than those based on water resources), only report statistical significance, and should not be used to assume causality. All statistical findings should only be used as intended, to point out *possible* sets of relations and likely directions for more focused case-study approaches.

As mentioned, the Transboundary Freshwater Dispute Database, or TFDD (2010), has been tapped extensively for lessons learned in hydrogeopolitics, described above and in more detail in Wolf et al. (2003) and Yoffe, Wolf, and Giordano (2003). The use of “event data”—interactions between countries or entities that are coded along a conflict-cooperation continuum – has helped identify empirical indicators of conflict and, through timelines of conflict and cooperation, also helped provide nuanced understandings of temporal relations.

Other general relationships (or lack of relationships) noted from the Wolf et al. (2003) Oregon State University study include:

- Countries that cooperate in general cooperate about water; countries that dispute in general dispute over water
- Higher GDPs are not statistically correlated with greater cooperation
- Regardless of how it is measured, water stress is not a statistically significant indicator of water dispute
- Neither government type nor average climate show any patterns of impact on water disputes

43 These include Azar’s Conflict and Peace Data Bank (COPDAB) (Azar, 1980), 1948-1978; Davies’ Global Event Data System (GEDS) Project, 1979-1994; the International Crisis Behavior (ICB) dataset, collected by Jonathan Wilkenfeld and Michael Brecher (1997); Penn State’s Correlates of War (Correlates of War Project 2006), and sources dedicated to water resources and hydrogeopolitics (see especially the African Transboundary Water Law Page; the International Water Law Project; International Water Law Research Institute).

In reference to the above point, it is worth mentioning that the data in Wolf et al. challenges prevailing wisdom: democracies seem not to be more cooperative than other types of government – in fact, autocratic countries are only barely less cooperative than the strongest democracies. With regard to average climate, there is little perceptible difference between most climate types, with the notable exception of humid meso-thermal, apparently the most cooperative climate (Wolf et al., 2003).

Yoffe et al. (2004) reported on subsequent findings from TFDD, including:

- Work by Meredith Giordano, Mark Giordano, and Wolf (2002), which quantitatively explored the linkages between internal and international water and non-water events for three specific regions (the Middle East, southern Africa, and Southeast Asia), and found generally synchronous chronologies (i.e., similar periods identified as conflictive and cooperative, for both internal and international relations) for the Middle East and Southeast Asia, but not for southern Africa.
- Work by Stahl and Wolf (2003), which refined the question of climate, and looked specifically at the relationship between variability and conflict. The research found that historically, extreme events of conflict were more frequent in marginal climates with highly variable hydrologic conditions, while the riparians of rivers with less extreme natural conditions have been more moderate in their conflict/cooperation relationship. The entire causal relationship between hydroclimatology and water-related political relations also depends on socioeconomic conditions and institutional capacity, as well as the timing and occurrence of changes and extremes in a country and basin.
- Within nations, too, there are many examples of internal water conflicts, ranging from interstate violence and death along the Cauvery River in India (Baviskar, 1995; Anand, 2004); to the U.S., where Oregon ranchers sabotaged an intake meant to keep Klamath River water from being diverted to ranchers during a drought; to intertribal bloodshed between Maasai herdsman and Kikuyu farmers in Kenya (BBC News Africa, 2005). Recent research on internal disputes suggests that as geographical scale drops, the likelihood and intensity of violence rises (see Giordano et al., 2002).

Nils Petter Gleditsch of the Center for the Study of Civil War, International Peace Research Institute, Oslo (PRIO), leads another group of researchers who have conducted “large-n” studies relating water to conflict. This group relates issues of hydropolitics to the Correlates of War dataset, and their findings to date include the following:

- Toset, Gleditsch, and Hegre (2001) show that two countries that share a river statistically, but moderately, have an increased probability of a militarized interstate dispute over and above mere contiguity. They also find that the upstream-downstream relationship appears to be the shared river situation most frequently associated with conflict, in contrast to adjacent streams.
- Furlong, Gleditsch, and Hegre (2006) find that these relationships hold even when controlling for the length of the land boundary between countries, using a new dataset on boundary length developed by Furlong and Gleditsch in 2003.
- Gleditsch, Furlong, Hegre, Lacina, and Owen (2006) confirm that the relationship between shared rivers and militarized disputes holds for an improved database on shared rivers, derived from the database on river basins developed by Wolf et al. (2003). They find little support for the idea that “fuzzy” river boundaries provide a source of conflict, limited support for the upstream-downstream scenario, and more support for the importance of the size of the basin.

- Gleditsch and Hamner (2001) found, on the basis of events data for the period 1948-92, that shared rivers and water scarcity were associated with increased cooperation between countries, as well as conflict. A similar finding is recorded by Brochmann (2006) using data for trade and joint membership in international organizations as indicators in cooperation.

Of course, not all “large-n” empirical studies come from research groups; individual researchers have also been applying their analytical skills to these global datasets. Some advances include:

- Song and Whittington (2004) developed a typology of international rivers that relates pairs of co-riparians by their “power” (as measured by per capita GDP), their “size” (population), and their “upstream-downstream” relationship. The authors then drew out preliminary findings about the likelihoods of treaty development based on their typology, finding that basins with countervailing riparians, one with large size and one with high GDP, were marginally more likely to enter into treaties than those in other settings.
- Dinar (2004) did an extensive assessment connecting river geography, water scarcity, and treaty cooperation, and suggests that, counter to the “water scarcity leads to conflict” claim, long-term water scarcity has a significant influence on levels of cooperation. Additional variables that are considered in explaining cooperation patterns include trade, level of governance among the basin countries, and the geography of the basin.

OVERCOMING THE COSTS OF NON-COOPERATION: FROM RIGHTS TO NEEDS TO INTERESTS

How are agreements actually achieved? On what basis do parties overcome the costs of non-cooperation? Generally a shift in measures of success is required, from rights to needs to interests. Parties generally base their initial positions in terms of rights – the sense that a riparian is entitled to a certain allocation based on how the water flows or chronology of use. Upstream riparians often invoke some variation of the Harmon Doctrine, claiming that water rights originate where the water falls. India claimed absolute sovereignty in the early phases of negotiations over the Indus Waters Treaty, as did France in the Lac Lanoux case, and Palestine over the West Bank aquifer. Downstream riparians often claim absolute river integrity, claiming rights to an undisturbed system or, if on an exotic stream, historic rights based on their history of use. Spain insisted on absolute integrity regarding the Lac Lanoux project, while Egypt claimed historic rights against first Sudan, and later Ethiopia, on the Nile.

In almost all of the disputes which have been resolved, however, particularly on arid or exotic streams, the paradigms used for negotiations have not been rights-based at all – neither on relative hydrography nor chronology of use – but rather have been needs-based. *Needs* are defined by irrigable land, population, or the requirements of a specific project.⁴⁴ (See Table 1.) In agreements between Egypt and Sudan signed in 1929 and in 1959, for example, allocations were arrived at on the basis of local needs, primarily of agriculture. Egypt argued for a greater share of the Nile because of its larger population and extensive irrigation works. In 1959, Sudan and Egypt then divided future water from development equally between the two.

44 Here we distinguish between “rights” in terms of a sense of entitlement, and legal rights. Obviously, once negotiations lead to allocations, regardless of how they are determined, each riparian has legal “rights” to that water, even if the allocations were determined by “needs.” The point is that it is generally easier to come to a joint definition of “needs” than it is of “rights.”

Current allocations of 55.5 BCM/yr for Egypt and 18.5 BCM/yr for Sudan reflect these relative needs (Waterbury, 1979).⁴⁵

Table 1. Examples of Needs-based Criteria

Treaty	Criteria for Allocations
Egypt/Sudan (1929, 1959, Nile)	"Acquired" rights from existing uses, plus even division of any additional water resulting from development projects
Johnston Accord (1956, Jordan)	Amount of irrigable land within the watershed in each state
India/Pakistan (1960, Indus)	Historic and planned use (for Pakistan) plus geographic allocations (western vs. eastern rivers)
South Africa (Southwest Africa)/ Portugal (Angola) (1969, Kunene)	Allocations for human and animal needs, and initial irrigation
Israel-Palestinian Interim Agreement (1995, shared aquifers)	Population patterns and irrigation needs

Likewise along the Jordan River, the only water agreement for that basin ever negotiated (although not ratified) until very recently, the Johnston Accord, emphasized the needs rather than the inherent rights of each of the riparians. Johnston's approach, based on a report performed under the direction of the Tennessee Valley Authority, was to estimate, without regard to political boundaries, the water needs for all irrigable land within the Jordan Valley basin which could be irrigated by gravity flow (Main, 1953). National allocations were then based on these in-basin agricultural needs, with the understanding that each country could then use the water as it wished, including to divert it out of basin. This was not only an acceptable formula to the parties at the time, but it allowed for a breakthrough in negotiations when a land survey of Jordan concluded that its future water needs were lower than previously thought. Years later, Israel and Palestine came back to needs in the Interim Agreement of 1995, where Israel first recognized Palestinian water rights on the West Bank; a formula for agriculture and per capita consumption determined future Palestinian water needs at 70-80 MCM/yr and Israel agreed to provide 28.6 MCM/yr toward those needs.

Needs are the most prevalent criteria for allocations along arid or exotic streams outside of the Middle East as well. Allocations of the Rio Grande/Rio Bravo and the Colorado between Mexico and the U.S. are based on Mexican irrigation requirements. Bangladeshi requirements determined the allocations of the Ganges, and Indus negotiations deferred to Pakistani projects (although estimates of needs are still disputed and changing, particularly in these latter two examples).

From the global experience in determining needs, no one criterion seems to be necessarily more effective than any other; a measure which is determined in dialogue between riparians generates more buy-in than one imposed from outside (although neutral third parties have often provided the technology to help quantify needs). Moreover, once the needs-based allocations are determined, it is not generally required that water actually be applied to those

⁴⁵ It should be pointed out that not everyone's needs were considered in the Nile Agreements, which included only two of the ten riparian states: Egypt and Sudan, both minor contributors to the river's flow. The notable exception to the treaty, and the one which might argue most adamantly for greater sovereignty, is Ethiopia, which contributes between 75-85% of the Nile's flow.

needs, and even beyond this, specific allocations are generally *not* readjusted, despite the fact that needs change drastically over time. For example, the Johnston Accord determined allocations based on potential gravity-fed irrigated agriculture *within* the Jordan basin. Once the numbers were derived, and Jordan and Israel implicitly agreed, Israel applied most of its allocation to other uses entirely, many of them outside of the basin. Jordan and Israel adhere to the Johnston allocations to this day, despite all of the dramatic changes to all water-related parameters within the basin over the last 50 years.

One might speculate as to why negotiations move from rights-based to needs-based criteria for allocation. The first reason may have something to do with the psychology of negotiations. Rothman (1995), among others, points out that negotiations ideally move along three stages: the adversarial stage, where each side defines its positions or rights; the reflexive stage, where the needs of each side determining their positions is addressed; and finally, the integrative stage, where negotiators brainstorm together to address each side's underlying interests. The negotiations here seem to follow this pattern from rights to needs and, occasionally, to interests. While each negotiator may initially see him- or herself as Egyptian or Israeli or Indian, where the rights of one's own country are paramount, over time one must realize to some degree that even one's enemy, be he or she Sudanese, Palestinian, or Pakistani, requires the same amount of water for the same use with the same methods as oneself.

The second reason for the shift from rights to needs may simply be that rights are not quantifiable and needs are. We have seen the vague guidance that the 1997 Convention provides for allocations – a series of occasionally conflicting parameters which are to be considered as a whole. If two nations insist on their respective rights of upstream versus down, for example, there is no spectrum along which to bargain, no common frame of reference. One can much more readily determine a needs-based criterion – irrigable land or population, for example – and quantify each nation's needs. Even with differing interpretations, once both sides feel comfortable that their minimum quantitative needs are being met, talks eventually turn to straightforward bargaining over numbers along a common spectrum.

FROM RIGHTS AND NEEDS TO INTERESTS: "BASKETS OF BENEFITS"

One productive approach to the development of transboundary waters has been to transcend rights and needs entirely, and to examine rather the benefits in the basin from a regional approach. This has regularly required the riparians to move past looking at the water as a commodity to be divided – a zero-sum, rights-based approach – and rather to develop an approach which equitably allocates not the water, but the benefits derived therefrom: a positive-sum, integrative approach. The boundary waters agreement between the U.S. and Canada, for example, allocates water according to equal benefits, usually defined by hydropower generation. This results in the seemingly odd arrangement that power may be exported out of basin for gain, but the water itself may not. In the 1964 treaty on the Columbia, an arrangement was worked out where the U.S. paid Canada for the benefits of flood control and Canada was granted rights to divert water between the Columbia and Kootenai for hydropower. Likewise, the 1975 Mekong accord, between Thailand, Vietnam, Cambodia, and Laos, defines "equality of right" not as equal shares of water, but as equal rights to use water on the basis of each riparian's economic and social needs. The relative nature of "beneficial" uses is exhibited in a 1950 agreement on the Niagara, flowing between the U.S and Canada, which provides a greater flow over the famous falls during "show times" of summer daylight hours, when tourist dollars are worth more per cubic meter than the alternate use in hydropower generation (Delli Priscoli & Wolf, 2009).

In many water-related treaties, water issues are dealt with alone, separate from any other political or resource issues between countries – water *qua* water. By separating the two realms of “high” (political) and “low” (resource economical) politics, or by ignoring other resources which might be included in an agreement, some have argued, the process is either likely to fail – as in the case of the 1955 Johnston accords on the Jordan – or more often to achieve a sub-optimum development arrangement, as is currently the case of the Indus agreement, signed in 1960. Increasingly, however, linkages are being made between water and politics, as well as between water and other resources. These multi-resource linkages may offer more opportunities for creative solutions to be generated, allowing for greater economic efficiency through a “basket” of benefits.

THE DISCONNECT BETWEEN RATIONALITY AND TRANSCENDENCE

At the end of the day, negotiations are about people and relationships, not solely about geopolitics and economic interests. Which begs the question: are negotiations rational? Or is something more going on in the room, something connected more to energy and transformation? To gain insight into these questions, it is worth looking at the values and philosophies inherent within the negotiating context.

THE ENLIGHTENMENT RIFT: WHEN NORTH/WEST MEETS SOUTH/EAST⁴⁶

The Enlightenment of the eighteenth century left a profound rift between the worlds of transcendence and of reason, one with intense implications for today’s clash of ideas. In temporal terms, it suggested that day-to-day considerations should be gauged by means of rational, “objective” concepts, while the world’s spiritual dimension should be considered separately, in the evening at home or within one’s Friday, Saturday, or Sunday community (Martin, 2007). Over time, “rationality” dictated the structure of subsequent paradigms, from economics to science to modernity, to where today we in the North/West are consistently satisfied to ask the “what” without the “why”, at least in public discourse. We talk comfortably of economic growth rates, for example, without the accompanying discussion of what simply creating and owning more stuff does to our souls. We regularly turn to benefit-cost analyses as a decision-making tool, where all factors must be reduced to economic value, explicitly excluding often profound, but intangible, considerations.

But the idea of separating out rationality from spirituality is a fundamentally North/West construct. As Smith (1992) eloquently puts it, “The modern West is the first society to view the physical world as a closed system” (p. 96), whereas much of the thinking in the global South and East often retains its integration of rationality and spirituality, balancing between self and community, between justice and mercy, and between boundaries and expanse.

This balanced construct exists fairly universally, and can influence quite a lot with respect to approaches to resource allocation, negotiations, and understanding of relationships. The unity of a balance of self and other, light and dark, can be seen in the *Taijitu*, the traditional Taoist symbol for yin and yang, as well as in the Kabbalistic divine spheres of Justice (*din*) and Mercy (*chesed*). In a Christian construct, the triad of justice, loving-kindness, and compassion has been described through the Trinity of Father, Son, and Holy Spirit, and some Christian

⁴⁶ I acknowledge the wild over-generalization involved in dividing up the world between the global North/West and the South/East. This construct should be understood to be infinitely more porous and ephemeral than dichotomous, but roughly follows the geography of Hall’s (1976) “high context” and “low context” cultures (though the model has been critiqued). In very general terms, the former includes Europe and much of the non-indigenous Americas, while the latter includes most of Asia, Africa, and the Middle East.

Kabbalists make these comparisons explicit. In Islam, *Al-Hakam*, the Judge, *Ar-Rahman*, the Merciful, and *Ar-Rahim*, the Compassionate, are three more common of the 99 names of Allah, and Abou El Fadl (2004) describes Islamic processes for “institutionalizing mercy and compassion in social interaction” (p. 5).

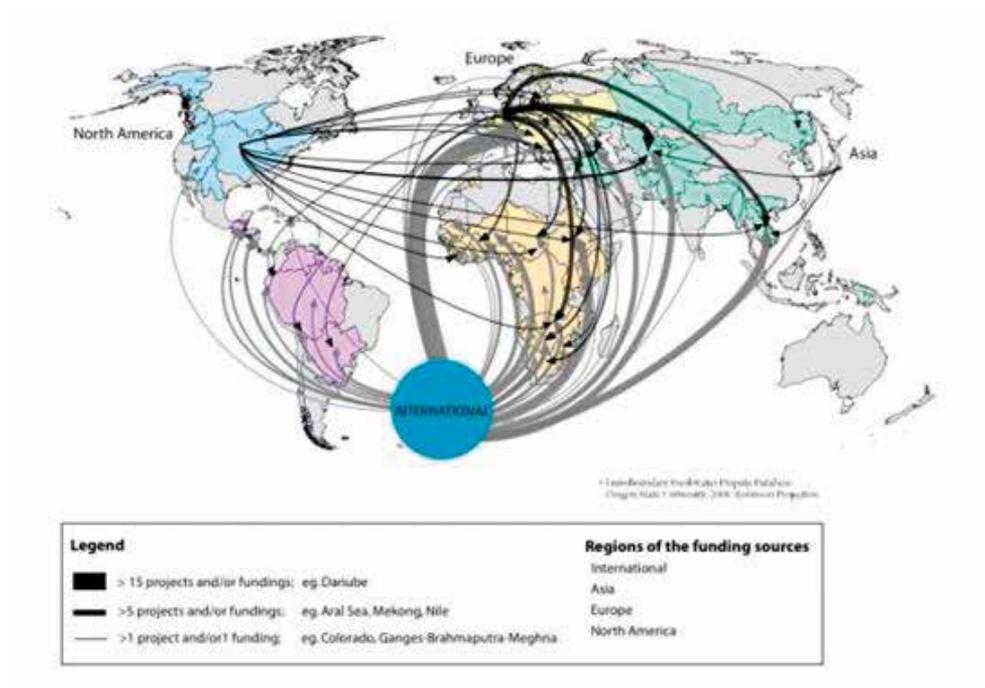
So, to generalize, the heavy (over-) emphasis on rationality and the rights of the individual as opposed to inclusion of spirit and the needs of the community is disproportionately a North/West phenomenon, associated primarily with the non-Asian developed world. The global South and East often retain a more integrated view of issues of the individual with the community or one’s spirituality with one’s rationality. These two profoundly contradictory worldviews – the North/West’s dichotomous views of rationality and spirituality, justice and mercy, in stark contrast to the South/East’s holistic, integrated balance – clash regularly and intensely across the world stage, from foreign policies to expectations of immigrant communities to dynamics in the United Nations. One might note the implication this geography has on the current “clash of civilizations”, but one can use water as a microcosm of these larger issues.

Water and the Economics of Cooperation

The geography of this post-Enlightenment rift is, well, enlightening.

Figure 4 shows the flow of water-related foreign assistance, primarily from the developed to the developing worlds. What this figure illustrates is the extensive interface between very different value structures.

Figure 4. Sources of funding for water-related projects in international basins.



In recent decades, for example, the global North/West has approached international water management from an increasingly economic framework, most notably through the 1992 Dublin Principles, which state: “Water has an economic value in all its competing uses and

should be recognized as an economic good" (ICWE, 1992, Guiding Principle No. 4). This was the first explicit recognition of water as an economic good, and this principle is often quoted in literature that has been published since its establishment. Agenda 21, which emanated from the Rio Conference on Environment & Development (1992), echoed this theme, and the World Bank and other development banks have increasingly been urging conflict resolution through moving from thinking of water as a zero-sum commodity to negotiating over the benefits of water, seeing it as a positive-sum commodity that can be enhanced and quantified through economic principles (see Delli Priscoli & Wolf, 2009, for a history).

Yet, these economic principles, so prevalent in the global North/West and encouraged through North/West-sponsored development agencies and banks, explicitly contradict local and indigenous practices throughout the developing world. For example, different Islamic legal tenets apply to different water sources, basically divided by whether the water is "provided by God"—i.e., is from a natural surface or groundwater source which is available year-round – or whether it is "provided by man"—i.e., human labor that creates a cistern or an attendant canal system. According to some Islamic interpretations, "God-given" waters may not be bought or sold, and their use is available to all equally. To many, the idea of buying and selling water is both repugnant (like "buying and selling one's children", quoted in Wolf, 2000), and contrary to the tenets of Islam (Faruqui, Biswas, & Bino, 2001). It may well be that much disincentive for coalition-building stems from a deep disconnect in the assumptions and values we are using in our discourse.

MONITORING FOR HYDROPOLITICAL HOT SPOTS

Besides the general degradation in water quantity, quality, and timing, understanding the link between change and institutional capacity allows one to monitor specific indicators for the likelihood of future political tensions between nations. As mentioned, monitoring requires regular assessments of changes within a basin, both on the biophysical and the institutional sides. Our prior work on Basins at Risk and with increased variability brought on by climate change give a sense of how such empirical work might be structured.

Beyond general change, the two most likely sources of rapid change within a basin are unilateral development in the absence of institutional arrangements, and the potential for basins within international boundaries to "internationalize". These indicators allow us to monitor for "red flags", or markers which may suggest new basins at risk as they arise.

TENDERS FOR FUTURE PROJECTS

As mentioned above, major water projects such as dams or diversions *in the absence* of agreements mitigating the transboundary impacts of these projects are the most likely settings for conflict. So, how to monitor for such settings? The best sources for cutting through the rhetoric and wishful thinking inherent in public pronouncements of development projects are the public calls for project tenders. Tenders are not put out until project funding has been ascertained, so countries must be fairly certain that a project will actually be developed. They still can give three to five years lead time (more for large projects) before impact will be felt in neighboring countries – enough time to exercise preventive diplomacy. Good print and web sources for water development tenders include Global Water Intelligence, the Global Water Report, and H2Bid, as well as more general lists of development tenders, such as dgMarket.

Weighed against these tenders should be whether the basin has the institutional capacity to mitigate the impacts of major construction. The Transboundary Freshwater Dispute Database includes listings of all freshwater treaties and river basin organizations (RBOs), broken out by

Basin-Country Units and coded for a variety of parameters.

COUNTRIES WITH ACTIVE NATIONALIST MOVEMENTS

If internationalizing a basin provides a setting of potential dispute, one might monitor the world's nationalist movements and ethnic conflicts and, if one wanted to act proactively, one could assess the potential impacts of a successful drive for independence. One could then map those countries around the world with active nationalist movements drawing from two sources: 1) Armed Self-Determination Conflicts, as identified by Ted Gurr's Minorities at Risk Project, at the University of Maryland's Center for International Development and Conflict Management (<http://www.cidcm.umd.edu/mar/>); and 2) Unrepresented Nations and Peoples Organisations (UNPO). Participation in UNPO is open to all nations and peoples who are inadequately represented as such at the United Nations and who declare adherence to UNPO's Charter. Since these principles espouse non-violence, the conflict level associated with many of these movements is lower. Data on unrepresented nations and peoples can be drawn from the UNPO website (<http://www.unpo.org/>).

Almost all human and ecosystem activity relies on a safe, stable supply of water resources. Since the resource needs to be allocated to its myriad uses, from drinking to agriculture to instream flows to transportation, industry, and spiritual transformation, water management *is* conflict management. There are 276 basins which cross the political boundaries of two or more countries, covering almost half the globe. While the potential for paralyzing disputes is especially high in these basins, history shows that water can catalyze dialogue and cooperation, even between especially contentious countries that share a river. Moreover, as we move from thinking about rights to thinking in terms of equitably sharing "baskets" of benefits, the opportunities of cooperation become palpable. Evidence suggests that the likelihood of political tensions is related to the relationship between rates of variability or change within a basin and the institutional capacity to absorb that change, often exemplified by treaties or international river basin organizations. Beyond the rational, water also brings out the need to incorporate the transcendent in dialogue in order to balance our approach to the intricate relationship between people and their natural resources.

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