

The weakness of the strong: re-examining power in transboundary water dynamics

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Abstract This article proposes a re-examination of how power is conceptualized within transboundary hydro-politics by arguing that power has been misrepresented in the water resources literature. Overemphasis on the factors of a country's relative power, riparian position, and technological potential to exploit the resource has led to assumptions that the non-hegemon(s) is often unable to achieve their own positive outcomes and that the outcomes of interactions between hegemon and non-hegemon are predictable and detrimental. However, it appears that there are many examples that run counter to the power narrative that employs these factors. This study argues that this overemphasis neglects hegemonic vulnerabilities, which, when included with hegemonic capacities, are much more instructive in explaining transboundary water dynamics. The sources of the weakness of the strong of the alleged hegemon originates from several sources, including interlinkages between water and non-water issues, internal and external expectations, and consideration of whether the water-related issue at hand is crucial to each party's survival or whether the party has the luxury to survive the outcome of the resolution. These factors allow for non-hegemon to achieve more favorable outcomes and, when incorporated in analysis, provide a fuller picture of the true power balance in each transboundary water interaction. We therefore call for a reconceptualization of power dynamics in transboundary waters that accounts for structural weaknesses present within all parties.

Keywords Transboundary water · Conflict and cooperation · Hegemony · Hydro-hegemony

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1 Introduction

Power dynamics in transboundary waters has been debated for at least half of a century over who gets how much water through which manners (e.g., Wittfogel 1956; Sprout and Sprout 1957; Cooley 1984; Starr 1991; Gleick 1993; Wolf 1997; Zeitoun and Warner 2006). While the early literature includes elaborations on the interlinkages between the environment and politics (Wittfogel 1956; Sprout and Sprout 1957), or on the threat of “water wars” and how water scarcity might (e.g., Cooley 1984; Starr 1991; Homer-Dixon 1994) or might not (e.g., Wolf 1997) lead to future warfare, a more recent group of studies have focused on how countries may take advantage of power dynamics to ensure more favorable outcomes in transboundary water interactions (e.g., Turton 2005; Zeitoun and Warner 2006; Zeitoun and Mirumachi 2008; Wegerich 2008). Favorable outcomes can include controlling water data (Wegerich 2008), building dams (Zeitoun and Warner 2006), and building water diversion projects (Turton 2005) that favor the more powerful riparian state.

Earlier discussions of power manifesting in transboundary waters assume that the presence of certain geographic and military factors determines transboundary interactions (Frey 1984; 1993; Elhance 1999; LeMarquand 1977; Link et al. 2016). Factors including military power (Frey 1993), riparian position (LeMarquand 1977; Frey 1993; Meijerink 1999; Elhance 1999), and a state’s technological potential to exploit the resource (Zeitoun and Warner 2006) are often used within the literature to explain favorable outcomes in transboundary water interactions. The more recent approach to power relations in transboundary waters has been implemented through the theoretical framework of “hydro-hegemony,” which has also been often based on these three deterministic factors (Turton 2005; Zeitoun and Warner 2006; Cascão 2008; Wegerich 2008; Daoudy 2009; Warner and Zawahri 2012; Thomas and Warner 2015). These factors became so prevalent in the water literature that they have been often translated into practice by various organizations such as the World Bank (Dinar et al. 2014) when engaging in conflict risk assessment analyses (e.g., Gleick 1993; Yoffe et al. 2003; Dinar 2009; Bernauer and Böhmelt 2014).

Accepting these factors implies that the non-hegemon(s) is unlikely to be able to achieve their own positive outcomes and that the outcomes of interactions between hegemon and non-hegemon are predictable and pre-determined. However, it appears that there are many examples that run counter to the power narrative described above (e.g., Dinar 2006; Thomas and Warner 2015). In many cases, outcomes are not easily explained by which riparian possesses greater shares of military power, riparian position, and technological potential to exploit the resource. Previous literature focusing on transboundary riparian power dynamics, while acknowledging the limitations of stronger riparians (e.g., Ingram 1973; LeMarquand 1977; Frey 1993; Pitman 1998; Meijerink 1999; Daoudy 2009), does not discuss the origins of limits on riparian power, when limits on riparian power become more significant, and how weaker riparians exploit these limits.

Also, significantly, it appears that many conceptualizations of power in transboundary river basins are rooted by using selected river basins (e.g., Jordan, Nile, and Tigris–Euphrates) where water scarcity supports their theories, suggesting that these conceptualizations have roots in environmental determinism.

This study introduces the concept of the “weakness of the strong,” which declares that hegemon suffer from inherent structural weaknesses, similar to those of non-hegemon. Thus, this study aims to explore the drivers and mechanisms of how the “weakness of the strong” manifests in transboundary river basins. It should be clarified that this study does not come to replace a traditional positivistic study based on a detailed case study but rather

to set an agenda for further research dedicated to the “weakness of the strong” around shared water.

We begin by tracing how power and hegemony are conceptualized, followed by how hegemony inherently leads to significant weaknesses. Next, we explain how weaknesses in hegemony is expressed and strategically used in transboundary water resources dynamics. We then discuss how power has been misrepresented in the water resources literature, followed by setting a new agenda for analyzing power dynamics in transboundary water resources.

2 Conception of power

The debate of how power is exerted beyond that of coercion or law can be traced historically through the field of political science (e.g., Smart 2001; Katz 2006). Power can be conceptualized in numerous ways—the first commonly used conceptualization is the “*balance of power*” theory, which assumes that various elements of national power (e.g., states’ possessions of resources, military might) could be aggregated to calculate the distribution of power among different nations (Baldwin 2012). The “*relational power*” approach presents a second, commonly used conceptualization of power that challenges the notion that power is merely a possession or an accumulation of resources by states, as presented in the “balance of power” theory. The “relational power” approach defines power as how *A* causes (or can cause) *B* to do something *B* would otherwise not do (Dahl 1957). The relational power approach differs from the “balance of power” theory in that it conceives of power as a relationship in which the behavior of *A* at least partially causes a change in the behavior of *B*, instead of viewing power as a property (Baldwin 2012).

Yet these two conceptualizations of power described above do not recognize the other, third “face” of power, which can be defined as *A* getting *B* to do something *B* would not otherwise do by affecting *B*’s preferences, wants, or thoughts rather than using coercion or payments (Bachrach and Baratz 1962; Lukes 1975; Barnett and Duvall 2005). This lack of recognition of how *A* can get *B* to do something it would not otherwise do through “softer” means by affecting *B*’s preferences, wants, or thoughts through framing the agenda, eliciting positive attraction, and persuasion leads to a third conceptualization of power, “*hegemony*.” Italian thinker Antonio Gramsci’s concept of hegemony attempts to explain how actors with power, otherwise known as hegemons, can maintain control through “soft power” as opposed to power as conceived by the first two conceptualizations of power where parties would exert power through repression and imposing will (Jones 2006).

Hegemonic stability theory contends that hegemonic structures of power, dominated by a single actor (in this case, a country), are most favorable to developing strong international regimes that have relatively precise and well-obeyed rules (Keohane 1980). The framework of hegemonic stability theory has been used widely to explain successes and failures in international cooperation (e.g., McKeown 1983; Stein 1984; Snidal 1985; Mansfield 1992).

In the following section, we describe how “balance of power” theory, “relational power” theory, and hegemonic stability theory have been used as a theoretical framework to explain transboundary water dynamics and explain how certain deterministic factors have been used by these theories to predict favorable outcomes for dominant hegemons.

2.1 Sources of hegemonic power in transboundary water

All three conceptualizations of power have been used to explain power dynamics in transboundary waters through which outcomes of transboundary interactions can be predicted. The balance of power theory has been used to predict future potentials of conflict in the Nile, Tigris–Euphrates, and Jordan basins (Frey 1993). Relational power has been used as a framework with which to predict outcomes of riparians in the Tigris–Euphrates Basin (Swatuk 2005; Daoudy 2009). Hegemonic stability has been applied regarding the utilization and division of a variety of transboundary natural resources such as minerals (Klare 2001), oil reserves (Denoon and Brams 2001), fisheries (Bailey 1997), timber (Klare 2001), and water (Turton 2005; Zeitoun and Warner 2006; Cascão 2008; Wegerich 2008; Daoudy 2009; Warner and Zawahri 2012; Thomas and Warner 2015). In the water realm, hegemonic stability theory has been cited to explain how dominant basin powers will lead in creating and maintaining a cooperative regime as long as they benefit (e.g., Egypt and Sudan in the Nile basin) and will have no interest in cooperating if its superior power coincides with a superior riparian position (e.g., Turkey in the Tigris–Euphrates basin) (Lowi 1993). In more recent years, hegemonic stability theory has been utilized most predominantly through the framework of “hydro-hegemony.” The term “hydro-hegemony” has been used to describe this behavior of dominant water powers to ensure control of shared water resources (Williams 2002; Zeitoun and Warner 2006). Zeitoun and Warner’s (2006) framework of hydro-hegemony combined the concepts of Lukes’ (1975) three faces of power, hegemonic stability theory, and scales of conflict intensity to make the important contribution of showing how transboundary water conflicts are not always bad, as conflict can be the method for addressing disputes and power imbalances. The hydro-hegemony framework also demonstrates how not all cooperation is good in that power imbalances may be further strengthened through agreements.

Often the three conceptualizations of power have used similar factors to predict future potentials of conflict: riparian position, relative power of each actor, and technological potential to exploit the resource. For example, Frey’s (1993) work on predicting future conflict measured the balance of power by aggregating the factors of riparian position, relative power of each actor (i.e., military power), and the importance of water to each actor. Daoudy (2009)’s examination of the role of power in negotiations in the Tigris–Euphrates Basin used relative power to predict outcomes by examining how the riparians’ position, comparative military power, and exploitation potential (referred in the article as economic power) are used to change riparian behavior through altering bargaining positions and the structures of interaction (Daoudy 2009). And, Zeitoun and Warner (2006) employed hegemonic stability theory, through the framework of hydro-hegemony, by using the factors of riparian position, relative power, and exploitation potential as the three “pillars” of hydro-hegemony.

Next, we define and describe the three deterministic factors identified and employed by the three conceptions of power within the literature.

2.2 Deterministic power factors in transboundary river basins

As stated above, these three main deterministic factors utilized within the three conceptions of power appear within the literature to set the source of power for transboundary water interactions:

Relative power advantages, the first factor of power for the dominant water hegemon, refers mostly to comparative advantages of each riparian's military power and is composed of the nation's ability to defend its own water resources against the use of force by others or to obtain its water goals using force against others (Naff and Matson 1984; Zeitoun and Warner 2006). Hydro-hegemon can use force (or threats of direct force), such as when Brazil, frustrated at the pace of negotiations with Paraguay on developing the Itaipu Dam site, amassed troops on the border area (Elhance 1999). This form of power can also be expressed through "reputational power," where the weaker actor acts in anticipation of the stronger's actions (or reactions) (Zeitoun et al. 2013). An example of this is the Lebanese government's development of the Wazzani Pumping Station. Although the station's construction challenged the hegemonic order of the Jordan Basin, the authors speculated that Lebanese authorities obtained tacit consent to not further develop the station due to the fear of developments being halted by Israel (Zeitoun et al. 2013).

Relative power is used in part to determine the "balance of power" through aggregating relative power with two main dimensions—defensive power and projectable power—citing Israel as a prime example (Frey 1993). Relative power advantages through military assets is cited as one aspect from which power is derived in transboundary river basins (Daoudy 2009). Military power is argued to be as an effective advantage in the framework of hydro-hegemony, which cites Israeli attacks on Syrian water development projects in that they permanently stopped their construction (Zeitoun and Warner 2006). Military power can also be used to target water infrastructure, such as when the Islamic State captured Iraq's Mosul Dam, stoking fears of the dam being used to disrupt energy or downstream water supplies (Collard 2014).

Riparian position is the second dominant factor. This factor is perhaps the most static form of power as borders do not generally change without armed conflict. An upstream riparian has inherent geographic advantages due to being able to obtain benefits yet pass on the costs of use downstream (Giordano 2003). Therefore, it is argued that a state that exploits its favorable riparian position has no real economic incentive to alter its behavior and that downstream riparians have no reciprocal power (LeMarquand 1977). Balance of power theory (Frey 1993), relational power theory (Daoudy 2009), and hegemonic stability theory (Lowi 1993) has been used to explain Turkey's past non-cooperative behavior in the Tigris–Euphrates Basin through its upstream riparian position. Often this source of power aligns with the Harmon Doctrine, which holds for a country absolutely sovereign over the portion of an international watercourse within its borders (McCaffrey 1996); therefore, an upstream riparian may freely utilize its portion of waters as it sees fit within its own territory, regardless of downstream impacts.¹

A state's potential to exploit the resource is the third dominant factor. This factor, which discusses a riparian's potential to exploit the resource by possessing the resources and technical capacity to build dams or water diversions, is another form of power (Zeitoun and Warner 2006). Although this factor often manifests when a riparian exploits its upstream position as a source of control, *the potential to exploit the resource* also originates from other sources including technological (e.g., level of education and technological availability) and economic (e.g., strength of national economy and availability of international funding) capacities (Zeitoun and Warner 2006). Hence, a state could be relatively more powerful and have a favorable, upstream position, but unable to exploit its advantages

¹ Indeed, the Harmon Doctrine was utilized in response to Mexico's complaints of withdrawals in the USA from the upstream portions of the Rio Grande, leaving Mexico with diminished water resources and violating the 1848 Treaty of Guadalupe Hidalgo signed between the two nations (McCaffrey 1996).

because of its lack of capacity, e.g., China in the Mekong Basin before its period of prolific dam building (see McNally et al. 2009).

The literature uses this factor to explain how building water infrastructure will alter the power balance in transboundary basins, as in the Aral Sea basin with upstream Tajikistan's proposed Rogun Dam (Bekchanov et al. 2015). The balance of power theory was used through describing how Turkey's shift in prioritizing utilization of the Tigris and Euphrates rivers changed the power balance once Turkey started the exploitation of those rivers by building the Southeast Anatolia Project (Frey 1993).

Relational power theory was also used to partially explain Turkey's advantages through its economic assets, which allowed Turkey to build dams on the Tigris and Euphrates rivers (Daoudy 2009). Examples in the framework of hydro-hegemony to support this claim include arguing how Israel's National Water Carrier and Egypt's Aswan Dam changed hydropolitical dynamics in the Jordan and Nile basins, respectively (Zeitoun and Warner 2006).

These three factors can influence actors to be afraid of opposing the dominant water power in other areas for fear of repercussions over essential water resources (Frey 1993), and/or influence whether cooperative regimes arise. This fear of repercussions purportedly influenced Ethiopia in the past to avoid confrontations with Egypt over the Nile due to its worries of its national interests being at stake (Waterbury 2002), and seemingly has halted any further infrastructure construction on the Hasbani basin by the Lebanese government due to unofficial Israeli threats of war (Zeitoun et al. 2013).

The next section, instead of further focusing on the three deterministic power factors discussed above, moves the spotlight to the *vulnerabilities* of the strong, focusing on the sources for the "weakness of the strong."

3 Sources for the "weakness of the strong"

3.1 Curtailment of power in large states

It seems that riparian states possessing the three determinant factors are not always dominant in transboundary water interactions, not always being able to "establish the form of intera[c]tion over transboundary waters that it prefers" (Zeitoun and Warner 2006: p. 455). Stronger riparian nations have limitations, despite (and because of) their greater power (Ingram 1973; LeMarquand 1977; Frey 1993; Pitman 1998; Meijerink 1999; Daoudy 2009). Great powers are more concerned than small states about the impact of their actions on a systemic level, thereby constraining their own power (Keohane and Nye 1973). Paraguay's refusal to change the frequency of electricity produced by its generators at the Brazilian-Paraguayan Itaipu Dam, despite the hegemon, Brazil, intensively pressuring is one example (Nickson 1982). Other examples include Syria (the non-hegemon) securing water from Turkey (the hegemon) by allowing the Kurdistan Workers' Party (PKK) to base themselves within Syria's borders (MacQuarrie 2004); Afghanistan (the non-hegemon) unilaterally capturing water resources in the Harirud Basin shared with Iran (the hegemon) (Thomas and Warner 2015); Ethiopia (the non-hegemon) building the Grand Ethiopian Renaissance Dam despite Egypt's (the hegemon) downstream objections (Oestigaard 2012); and upstream riparians in the Nile basin pursuing ratification of a Cooperative Framework Agreement, again despite downstream objections of hegemon Egypt (Heuler 2013). Examples of stronger riparian nations being limited because of their

greater power include countries who are afraid of being seen as “bullies” by the international community, like China in the Mekong Basin (Liebman 2005) and the USA in the Rio Grande and Colorado basins (LeMarquand 1977; Barrett 2003).

3.2 Powers of the weak

Weaker parties should also be recognized for the powers they possess. Weaker parties often emerge with significant, even better than expected, results in negotiations with stronger parties (Zartman and Rubin 2000). Zartman (1971) found that weak states have three principal sources of power: (1) they can provoke encounters by raising points and influencing agendas, (2) they can bring forth their needs, thus placing moral obligations on stronger states, and (3) weak states have the power to agree (or withhold agreement). These sources of power were implemented by the African states in their negotiations with the European Economic Community in the 1960s and can relate to the weakness of the strong identified below. The powers of the weak also depend on the issue at hand. While weaker states may be weaker in aggregate power, one state may be in a stronger position in a subject area due to interdependencies with other states. At this issue-specific level, the power balance is determined by asymmetries in alternatives-commitment, and control, not natural resources and capabilities, and is the most critical component of asymmetrical negotiation (Habeeb 1988). Conceptualizations of power as a possession fail to account for control of the resources through will and skill (Zartman and Rubin 2000).

The three principal sources of power of the weak reinforce our proposed sources of the “weakness of the strong.” Hence, this study suggests three factors that can be a source of vulnerability to the allegedly hegemonic riparian and be even utilized by the other riparians to change the power of balance within a basin, thereby countering the three deterministic factors that have been argued to set hegemonic power listed above. In this study, we organize the concept of “weaknesses of the strong” into three sources: (1) interlinkages between water and non-water issues; (2) internal and external expectations; and (3) survival versus luxury.

3.3 Interlinkages between water and non-water issues

To maintain comprehensive control in transboundary water dynamics, hegemony often concedes on issues not directly related to the issue at hand. For instance, if a hegemon wants a concession on a water issue from the non-hegemon, it might need to be prepared to concede on a separate water issue or a non-water issue to the non-hegemon to ensure compliance. This is often due to the interdependencies that neighboring countries often have, which will always involve costs due to the restrictions that relationship will have on each country’s autonomy (Keohane and Nye 1973) through accountability and other mechanisms (Grant and Keohane 2005). Globalization’s rise has arguably diminished the power of sovereign states as other actors, including international organizations, multinational corporations, non-governmental organizations, and individuals exercise increased influence in the international arena (Hollis 2005). Concessions can be accomplished through issue linkages, which are possible because states give different weights to different problems. Assigning different weights allows states to concede on less important issues in exchange for gains on matters that they consider of greater political or economic importance (Alt and Eichengreen 1989; Sebenius 1983; Tollison and Willett 1979). This can be done by linking both water and non-water issues, as well as linking different spatial areas (Fischhendler et al. 2004).

This issue-linkage between water and non-water issues manifested in the Tigris–Euphrates Basin when downstream Syria and Iraq were successful in getting Turkey to agree to a treaty guaranteeing quantities sent downstream after the two countries (along with outside actor Saudi Arabia) were successful in persuading the World Bank to not finance upstream Turkey’s Southeastern Anatolia Project (Carkoglu and Eder 2001). Perhaps most significantly, Turkey was susceptible to Syria’s allowance of Turkey’s anti-government Kurdish PKK organization (and other anti-Turkey dissident factions and liberation movements) to base themselves within Syria’s borders to use it as bargaining chips in negotiations to secure water from Turkey (MacQuarrie 2004).

Issue linkages can be seen as used in two dimensions in the Colorado River Basin negotiations: between water and non-water issues, where “weaker” Mexico leveraged its superior riparian position in the Rio Grande Basin to link with water management issues in the Colorado Basin and the “strong” USA curbed its behavior on shared water resources to obtain Mexican support on other issues, and between two discrete water issues in different spatial areas (Fischhendler and Feitelson 2003). The first dimension of linking water and non-water issues happened when the USA considered cooperation with Mexico over the water issues of the Colorado River Basin as a form of gaining Mexico’s support and cooperation on issues of drug trafficking and migration (LeMarquand 1977; Barrett 2003). The second dimension of linking two discrete water issues occurred when the USA was incentivized to cooperate on the Colorado due to Mexico’s upstream advantages of providing 70% of the Rio Grande flows and Texas’ dependence on this water (Hearing 1945).

3.4 Internal and external expectations

The second source of the “weakness of the strong” involves expectations placed on actors that effectively limit their behaviors, both from within their own jurisdictions (*Internal expectations*) and from outside agencies (*External expectations*) often using other riparian countries, international donor agencies, and international law.

Internal expectations: Domestic politics can sometimes influence international relations, and vice versa (Putnam 1988). Internal expectations of how an actor should behave lead to the curtailment of hegemonic behavior, such as building dams or water diversions without prior notification. These expectations often occur due to internal politics or opposition that recognizes the detrimental implications of using geographical advantages against other riparians. For example, in late 2003, China Reform Forum Chairman Zheng Bijian proposed to Chinese President Hu Jintao that China’s foreign policy direction should curtail its hegemonic behavior and live up to its own expectations by trying to promote a “peaceful rise” (Glaser and Medeiros 2007), aiming to reassure anxieties that smaller neighboring states would react negatively to growing Chinese economic and military power (Liebman 2005). The Chinese governmental policy of not appearing as a threat effectively limits its hegemony, and arguably creates an incentive for cooperation; for instance, while China has been selective about which Mekong institutions it joins, it has actively participated and cooperated in joint plans in navigation and infrastructure development for the basin (Ho 2014).

International expectations: External bodies, including other countries and world organizations, can also limit a hegemon’s choices, particularly when entering international legal frameworks with other actors (Abbott and Snidal 2000). External expectations may come from riparian countries that expect certain rights afforded to them from upstream countries (e.g., sufficient quality and quantity of water delivered downstream), or from non-riparian countries or world organizations that do not approve “hegemonic” behaviors.

For instance, the upstream hegemon, the USA, effectively limited its behavior by not only entering into an agreement with Mexico regarding the Colorado River, but also paying for desalinating the Colorado's waters flowing into Mexico (Dinar 2009). This was partly due to the USA's worries about being considered a bully by Mexico and the rest of Latin America (LeMarquand 1977; Barrett 2003). External actors can also alter the balance of power in basins by financial, technological, and military support (see Warner et al. 2017). The Chinese government has financially and technologically supported non-hegemon Ethiopia's hydropower production and irrigation within the Nile basin (Swain 2011), while the North Atlantic Treaty Organization has provided financial and military support for resource capture in the Harirud basin for non-hegemon Afghanistan (Thomas and Warner 2015).

External expectations may also pressure hegemon to concede in negotiation frameworks due to fears of unfavorable outcomes in international legal arenas through international arbitration. In the 1994 peace agreement with Jordan, Israel, the hegemon favored an arrangement where both sides would share water deficiencies in times of shortage and where disputes would be resolved amicably through negotiations instead of arbitration (Fischhendler 2004). Israel particularly favored this arrangement since it had lost out in previous arbitrations and feared any international tribunal that could potentially impinge on its sovereignty (Fischhendler 2004). International water law and legal frameworks are also often discussed as a potential arena (that creates external expectations) in which hegemony can be countered, where weaker actors can enhance their bargaining margins by backing their claims on legal principles (Daoudy 2008; Zeitoun et al. 2017). These expectations come from the international community through their adoption of and accession to international legal principles. The customary rule of "equitable and reasonable utilization" of transboundary waters is perhaps the most well-known expectation that can limit hegemonic behavior by expectations of countries to accede to this rule. The rule's principle, established as Article 5 in the 1997 UN Convention of the Law of Non-Navigational Use of International Watercourses, is that states must use an international watercourse in such a manner that is equitable and reasonable vis-à-vis other riparians (McCaffrey 1998).

This previously customary rule of "equitable and reasonable utilization," now formally adopted within the UN Convention, has been enforced through international law via a 2006 ruling by the International Court of Justice in the *Pulp Mills (Argentina v. Uruguay)* case. The case held that the duty to notify, and the related duty to conduct environmental impact assessments that take transboundary impacts into account, exists in customary international law and thus applies to all states, not just those that have concluded international agreements that contain such obligations (McIntyre 2011)—effectively limiting hegemonic actions of upstream riparians.

3.5 Survival versus luxury

The third source of the "weaknesses of the strong" comes from an asymmetry of priorities; the higher an actor's interests in the issues at stake, the less vulnerable it will be to being forced to abandon a fight. Actors become more vulnerable as their interests lower (Arreguin-Toft 2005). Once actors have fewer choices and failure cannot be afforded, actors may be more willing to be flexible as their best alternatives to a negotiated agreement, or "BATNA," decrease (see Fisher et al. 2011). Within a relationship between interdependent states, the less dependent state may be able to manipulate the relationship to achieve its own goals, through both the issue at hand and in other issues through side-payments (Keohane and Nye 1973). Survival versus luxury relates to Frey (1993)'s deterministic

factor in setting the source of power for the hegemon, “the importance of water for each actor.” The difference between Frey’s conception and ours is, however, that non-hegemons will achieve outcomes beyond what is seemed as possible given the non-hegemonic actor’s perceived amount of power (i.e., relatively less compared to the hegemon) when it identifies that its survival is at stake, and hegemons will be more likely to concede to non-hegemons when their survival is threatened. It is also possible that weaker countries can focus their attention on the hegemon more effectively than the reverse (Keohane and Nye 1973).

Entering into institutions consists of symbiotic interests; the dominant state wants to reduce compliance costs and weaker states want to reduce the costs incurred trying to protect their interests against the actions of a dominating lead state (Ikenberry 2001); because of the benefit for lowering compliance costs for the dominant states, weaker states should be able to achieve greater outcomes in institutional arrangements. Hegemons have fewer choices (and therefore more vulnerability) when entering institutions, through the forms of treaties and river basin organizations, with non-hegemons. Entering into institutional arrangements is especially favored by non-hegemons, and greater power asymmetries lead to greater incentives for weaker states to establish institutions to reduce the risks of domination or abandonment (Ikenberry 2001). Yet, by ceding decision-making authority to the dominant actor, the subordinate actor gives up freedom; however, the costs of subjugation are borne not by the subordinate but by the dominant actor, with greater costs as dominance increases (Lake 1993). These costs include constraints on the dominant actor’s own freedom of action, limits on the actor’s potential for opportunism, the expenditure of resources to monitor and enforce their writs on their subordinate partners, and compensation for lost autonomy (Lake 1993).

This limit on hegemonic power through institutions is present through asymmetry of priorities between survival and luxury. This asymmetry of priorities can particularly be brought to the fore in the construction of dams. Dams can help to legitimize those in power, particularly in contributing toward the creation of a national identity, but can also exacerbate existing international tensions and challenge the legitimacy of leadership (Menga 2016a). This manifested during the construction of the Itaipu Dam, spanning the Paraná River that separated Brazil (the hegemon) and Paraguay (the non-hegemon). The structure of the agreement between Brazil and Paraguay led to such strong criticism inside Paraguay (Nickson 1982) that Paraguay’s president had to bow to domestic pressures for his political survival by announcing, 4 years after the treaty’s initial signing, that Paraguay would not change the electrical frequency of its Itaipu turbines to the Brazilian frequency despite Brazil’s pressure and offers to pay for the conversion. This forced Brazil to install costly frequency converters and created more opportunities for Paraguay’s domestic utilization of the electricity (Ibid.). For the Itaipu Accord (and Paraguay’s leadership) to survive, Brazil had the luxury of accepting this development. The dam was seen as crucial for Brazil’s economic future (Nickson 1982), allowing for Paraguayan leadership to seize an opportunity to achieve a preferred outcome.

The motivation for survival can also limit a hegemon’s power if the hegemon is dependent on a shared resource, particularly if the hegemon is downstream. This is most obviously seen through Egypt’s behavior in the Nile Basin. Egypt depends on the Nile for its survival, as the Nile supplies 97% of its water (Butts 1997). Therefore, anything that could potentially disrupt its water supply is especially controversial within Egypt. Ethiopia is currently constructing the Grand Ethiopian Renaissance Dam upstream of Egypt’s reaches of the Nile. During its filling, Nile River flows are projected to be reduced by between 20 and 30% (Natsios 2013). In response to the dam’s proposed construction,

Egypt's former leader Mohamed Morsi reportedly said, "If [Egypt's] share of Nile Water decreases, our blood will be the alternative" (El-Behairy 2013). This violent rhetoric implies Egypt's willingness to use its greater military power to intimidate Ethiopia into not building the dam. Despite this threat, Ethiopia proceeded with the dam's construction. Since then, Egypt has been willing to participate in tripartite meetings with Sudan and Ethiopia, eventually leading to the signing of an agreement regarding the Grand Ethiopian Renaissance Dam in 2015 (Salman 2016). Additionally, the infeasibility of attacking the construction site effectively limited Egypt's power. Egypt's dependence on the Nile for its survival has also effectively allowed more parity to occur within the realm of Nile basin negotiation dynamics, despite its hegemonic advantages (see Zeitoun et al. 2017). In the early 1990s, riparians and third parties proposed establishing the Nile Basin Initiative. Ethiopia and other upstream riparians joined, marking the first time they had joined any basin-wide cooperative effort; Egypt saw cooperation as its best chance of ensuring water security (Cascão and Zeitoun 2010). This is a marked difference from previous agreements that were designed without any input from upstream riparians (e.g., the 1959 Nile Waters Treaty between Egypt and Sudan). This resulted in the riparians entering negotiations on a more level playing field and allowed upstream countries to propose alternative wordings and promote trade-offs (Cascão and Zeitoun 2010). Another example of the limits of hegemonic power is in the Jordan Basin, where the Lebanese government constructed the Wazzani Pumping station in 2002, despite unofficial threats of war by the Israelis (Zeitoun et al. 2013). Both threats of Egyptian and Israeli violence (through reputational power) could be argued as empty threats due to not being able to be fulfilled. Regarding the Wazzani, the Lebanese government had approval of the project from Syria, Iran, the USA, and United Nations Interim Forces in Lebanon. The Lebanese even notified the Israeli government of their plans through intermediaries (Amery 2002). One could also argue that Israel had the luxury to overlook the Wazzani as the quantity of withdrawn water ($\sim 4 \text{ Mm}^3/\text{year}$), combined with other uses within Lebanon's share in the Jordan basin, is about one-third of shares agreed to by Israel informally during the 1955 Johnston negotiations (Zeitoun et al. 2013).

4 Misrepresentation of power

For many years, the prospect of conflict over natural resources has been debated in academic and international policy arenas (Lipschutz 1997). These arguments of predicting where conflict over natural resources will occur have roots in environmental determinism. Environmental determinism was often used to legitimize European imperialism (e.g., Peet 1985) as it was assumed that certain natural resources are indispensable to the survival of states and hence should be fought over. More broadly, the framework of environmental determinism has been used to link physical characteristics of the environment to things such as culture, political organization, and the rise and fall of civilizations (see Huntington 1915). Environmental determinism has more recently been used to attribute causal determinacy of human behaviors to the "natural" environment (Judkins et al. 2008). Influences of environmental determinism has spilled over into the water literature, particularly with neo-Malthusian notions of water depletion due to reduced supply, increased demand, or uneven distribution being a driver of violent conflict (e.g., Cooley 1984; Starr 1991; Homer-Dixon 1994). Indeed, there is a vast literature on how water variability and

water scarcity, due to climate change, exacerbate tensions (see Ansink and Ruijs 2008; Link et al. 2016).

Against the environmental determinism, a new wave of scholars emerged, arguing that while the effects of scarcity (often due to climate change) could exacerbate tensions between riparians, other factors, including political and economic factors, are more likely to determine whether violent conflict breaks out, including over water (Raleigh and Urdal 2007; Tir and Stinnett 2012; Bernauer and Siegfried 2012), and that, based on past evidence, claims to future wars over water have been greatly exaggerated (e.g., Wolf 1997; Yoffe et al. 2003). Scholars have even gone further arguing that the many attempts to predict power dynamics in transboundary waters have been using factors that are irrelevant for water resources. These predictions, while assuming that power is connected to water, to military, and to security, ignored cases that countries negotiated water strictly as a standby itself channel, as in the case of water negotiations between India and Pakistan over the Indus River Basin that have occurred against the backdrop of aggressive statements and deteriorating state relations (Alam 2002). These counterexamples argue that parties cannot always bring heavy artillery of traditional power to the water negotiations what may explain counter-intuitive outcomes in transboundary waters where the “non-hegemon” actually achieves its goals. These counter-intuitive outcomes drive scholars to argue that the environment-conflict thesis is theoretically, not empirically, driven (e.g., Barnett 2000) and is also often discredited as it relates to water (e.g., Hartmann 2002).

In the water arena, most of the literature addressing power seemed to fall into the determinism trap until a few decades ago by subscribing variables such as military means, riparian position in the basin, and resource exploitation potential to predict a conflict outcome. These three factors, when presented within the water conflict literature, appear to be discussed mostly within context of the same three basins: the Nile, the Jordan, and the Tigris–Euphrates; while often ignoring the many anomalies in other basins or even within these three cases. While these techniques of assessing economic, political, environmental, and geographic factors (and often operationalizing them) might be useful in assessing the overall balance of power in transboundary waters, reality teaches us that each of these “factors” might not be as fortified as they appear as the outcome in a basin is difficult to predict (see Yoffe et al. 2004). Due to that, present-day scholars argue that *upstream-downstream dependencies* have a very small to insignificant effect on international water cooperation or conflict (Beck et al. 2014; Munia et al. 2016).

Against these backdrops, the hegemony literature seems to evolve. Nowadays, its focus has shifted to the use of a variety of tactics and strategies (Zeitoun and Warner 2006; p. 436; Dinar 2009; Zeitoun et al. 2017) explaining how control of water is achieved. Based on the new approach, much of the literature subscribes a variety of strategies and mechanisms on how to challenge the hegemonic status quo through counter-hydro-hegemony. These mechanisms can include the utilization of international water law (Cascão 2008; Warner 2008; Dinar 2009; Zeitoun et al. 2017), contesting hegemonic legitimacy (Cascão 2008) and addressing power asymmetries (Zeitoun et al. 2017).

Similarly, scholars like Dinar (2009) describe types of power that can be used for parties to gain outcomes: “aggregate structural power,” which concerns an actor’s capabilities and positions regarding the external environment as a whole; “issue-specific structural power,” which concerns an actor’s capabilities and positions with another actor regarding a specific issue. Using ideational power is another way to level the playing field through addressing power asymmetries (Zeitoun et al. 2017). Each of these tacks fall into “soft” forms of power that can be implemented by non-hegemons to their advantage (see Zeitoun et al. 2011).

Instead of non-hegemons needing to “level the playing field” through conflict (see Zeitoun and Warner 2006) or other means, we argue that the playing field is much more levelled than assumed. For instance, in the case of Lebanon’s Wazzani Pumping Station, we argue that the station was not constructed in fear of the strong (in this case, Israel). Instead, we see the ability to construct the station as an indicator of the power of the weak. We concur with Zartman (1971): power is relative and situational.

The counter-hydro-hegemony concept, though having a better explanatory power, seems to still hold the assumption that power dynamics between riparians in each trans-boundary water arena, whether hydrologically, politically, and/or militarily, is static in any interaction, although available tactics can momentarily change the outcome. In other words, the weak will stay weak and the strong riparian remains the hegemon (see Daoudy 2008; Zeitoun et al. 2017). For instance: “...a weaker upstream country...cannot exploit its hydroelectric potential...This is because even if they are upstream, the status quo is such that they cannot take advantage of their position, since the downstream countries successfully impede their hydraulic ambitions” (Menga 2016b, pp. 411–412). There is some acknowledgement of the case-specific complexities embedded within each transboundary water arrangements in recent discussions of hydro-hegemony and counter-hydro-hegemony (see Sneddon et al. 2013; Zeitoun et al. 2017). Changeability of power dynamics are also recognized (see Cascão and Zeitoun 2010). But these acknowledgements still frame dynamics within clear identifications of who is the hegemon and non-hegemon in analysis.

The study argues that often it is not necessarily the calculation and comparison of the traditional power variables nor the counter-hegemonic strategies used but the hegemon’s *vulnerability* that matters in transboundary water dynamics. Because of the vulnerabilities, or weaknesses, of the “strong,” there are some cases where the hegemon becomes the non-hegemon and vice versa. We therefore call for a shift of the debate from how to change vast power asymmetries to a more natural playing field where all players suffer from structural weaknesses and can switch hegemonic roles. The “weakness of the strong,” by tracing the sources of weakness, explains how power is limited for hegemons, and how “non-hegemons” end up in a stronger negotiating position under certain circumstances.

5 A call for a new research agenda: an indicator-based perspective for power

Throughout this paper, we have argued that previous conceptions of power in trans-boundary waters have been too deterministic. Previous analyses have assumed that whichever riparian possesses the strongest combination of riparian position, relative power, and technical capacity to exploit the resource will ensure the best outcome for themselves and that the status quo will benefit the strong. We do not disagree with the presence of compliance, resistance, and counter-hegemony in transboundary waters. Instead, we challenge the assumption that the so-called strong is intransigently strong while the so-called weak is stochastically weak. We argue that the very nature of being the most powerful state, or hegemon, exposes that country to inherent vulnerabilities while being weak can provide leverage over the strong.

Indeed, we know that smaller, or “weaker,” states bear none of costs of providing the “good” of a stable international regime and yet fully share the benefits alongside the dominant power (Snidal 1985); that is, the “small exploit the large,” (Olson 1965) or the “weak exploit the strong.” Greater powers need to be more concerned about the effects of

their actions within the relationship between greater and lesser powers compared to smaller states, effectively constraining its own power (Keohane and Nye 1973). In the realm of water, new technologies in repurposing water could also change the hegemonic balance of power in transboundary basins. Desalination can contribute toward neutralizing or significantly lessening the inherent upstream advantages that some riparians have, creating a smaller dependency for downstream riparians (Aviram et al. 2014).

This study calls for a refocusing on the vulnerability of the strong, showing how the status quo sometimes advantages the weak through examining interlinkages between water and non-water resources issues, internal and external expectations of the hegemon, and examining each issue through the lens of “survival versus luxury.” With this in mind, we call for a reconceptualization in analyzing power in transboundary waters. While predicting future outcomes on measurable proxies, like riparian geographical position on the basin, is undoubtedly convenient, there is a need to address how and why while a hegemonic power gets stronger; it becomes inherently vulnerable in certain facets. Conversely, the non-hegemon can shift some aspects of their relationship with the hegemon to their advantage.

Quantifications of vulnerability and sensitivity are completed throughout the field of natural resources to measure relative weaknesses and strengths (Diniz et al. 2015; Homer-Dixon et al. 2015; Metcalf et al. 2015; Wang et al. 2016). Sensitivity captures how one country’s rate of change brings costly changes in another, as well as the amplitude of the costly effects, before policies are altered to try to change the situation; vulnerability dependence is the country’s liability to suffer costs imposed by external events even after alterations of policies (Keohane and Nye 2012). For instance, energy dependency can be measured by the ratio of net energy imports to total energy consumption, while energy vulnerability can be measured as the ratio of the net import bill in relation to gross domestic product (Percebois 2007). Estimates of metrics such as these could be used to capture the overall vulnerabilities of both the stronger and weaker riparians.

Previous attempts for creating variables that measure vulnerability within power relations often include “relative power,” determined by a ratio of gross domestic product per capita and a ratio of population densities between two countries (Yoffe et al. 2003), “bargaining power,” determined by population size, net contribution to the European Union, and public opinion (Dür and Mateo 2010), and “power capabilities,” which incorporated proxies such military expenditures and military personnel (Geller 1993). Yet these indicators seem to ignore facets of the weakness of the strong or of the power of the weak.

Though any indicator is an incomplete measure of determining outcomes, indicators could be employed to try to capture the three main areas of the weaknesses of the strong. For interlinkages of water and non-water issues, an indicator could capture the degree of interdependencies, like economic indicators measuring globalization as the ratio of trade to gross domestic product or measuring interregional trade by comparing regional imports and exports to total imports and exports (Capannelli et al. 2009). Survival versus luxury can be quantified within the context of water through a measure of water per capita or, e.g., a water poverty index (Sullivan 2002). Internal expectations could be measured by using democracy indices, indicators for domestic opposition, and civil society involvement (see Dür and Mateo 2010). External expectations could be measured by a country’s import and export demand and supply to a target country (Polachek 1997) and participation in international treaties (Azar 1980). Indicators need to be developed that differentiates between the weak actually getting what they want versus only thinking they get what they

want. These proposed indicators need to be further investigated with new research that will verify these ideas.

If indeed that state-centricity is by no means the “key feature” of hydro-hegemony (Warner et al. 2017), it means that the scale of analysis goes way beyond the basin level, avoiding the “territorial trap” (Warner et al. 2017). This is due to linkages transcending issues and scales. Non-hegemons can bring issues to the negotiation table that is not necessarily bounded by hydrologic basin boundaries (Fischhendler and Feitelson 2003). Finally, incorporating the concept of the weakness of the strong into the power balance also necessitates examining the interaction between this source of power to other sources of power, including the deterministic and the counter-hegemonic sources discussed above.

It is true that our critique of environmental determinism joins other previous criticisms within the literature (e.g., Schoenberger 2001; Sneddon et al. 2002; Judkins et al. 2008). In a critique of environmental determinism, environmental possibilism—the possibilities allowed due to spatial, geographic, and geopolitical contexts—has been more recently proposed to explain geographic connections in subject matters such as power relations (Starr 2013). Scholars such as Starr (2013) have argued that certain spatial, geographic, temporal, and/or geopolitical characteristics make outcomes more probable. Yet there is a need to apply environmental possibilism more directly to water resources and/or natural resources. This paper attempts to offer more concrete examples where a perception of power can be applied that is more interpretive, including elements of economic rationality and social constructivism.

Of course, our conceptual framework has a few limits. For instance, it is unknown where in the negotiation process between riparians that the weakness of the strong concept manifests—e.g., when exchanging information, bargaining, or preparation. Another compromising element is our state-centric focus, without addressing other sources of power such as of non-governmental entities engaged in transboundary dynamics. This problem has already been acknowledged (Zeitoun et al. 2017) and can be corrected if the role of polycentric power sources (e.g., international donors, corporations, and other non-basin actors) is further considered in analyses. The challenge remains of properly identifying the true weak and strong riparians because of this polycentricity.

We also fear that some would misuse our concept and pretend to be the weaker party to damage the truly weaker riparian. Some works have stressed that stronger riparians have exaggerated their claims of vulnerability and may also mask what they view as favorable outcomes as more equitable than reality (Selby 2003; Alatout 2007). We are aware of this option and that our work could be overstretched and abused to justify maintaining the status quo. Hence, more work is required on discerning between real and fake weakness of the strong.

With that in mind, by addressing these questions to water and other shared natural resources, non-hegemons may be better equipped to use power in transboundary resource disputes and be able to craft more effective, just, and legitimate institutions within transboundary natural resource governing frameworks. Along the same direction, the “hegemon” riparian will be able to predict and forecast why its traditional power is often stripped off.

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