

THE GEOPOLITICS OF INFRASTRUCTURE: DEVELOPMENT, EXPERTISE, AND  
NATION ON THE INDUS RIVERS

by

**Majed Akhter**

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As members of the Dissertation Committee, we certify that we have read the dissertation prepared by Majed Akhter, titled The Geopolitics of Infrastructure: Development, Expertise, and Nation on the Indus Rivers and recommend that it be accepted as fulfilling the dissertation requirement for the Degree of Doctor of Philosophy.

\_\_\_\_\_ Date: May 17, 2013  
Paul Robbins

\_\_\_\_\_ Date: May 17, 2013  
Carl J. Bauer

\_\_\_\_\_ Date: May 17, 2013  
Elizabeth Oglesby

\_\_\_\_\_ Date: May 17, 2013  
Richard Eaton

Final approval and acceptance of this dissertation is contingent upon the candidate's submission of the final copies of the dissertation to the Graduate College.

I hereby certify that I have read this dissertation prepared under my direction and recommend that it be accepted as fulfilling the dissertation requirement.

\_\_\_\_\_ Date: May 17, 2013  
Dissertation Director: Paul Robbins

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SIGNED: Majed Akhter

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## DEDICATION

For all those who are planning, informing, discussing, and implementing the project of a progressive Pakistan.

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## INTRODUCTION

The geopolitics of water, and specifically transboundary rivers, has become enormously important in the past several decades. The Indus Rivers<sup>1</sup> in northwest South Asia are especially volatile because they are shared by the rival states of India and Pakistan<sup>2</sup> (Chellaney 2011; Senate Committee on Foreign Relations 2011; Wirsing et al. 2013). But the geopolitics of the Indus is not limited to relations between sovereign states. Within Pakistan, tensions between upstream Punjab and downstream Sindh in Pakistan are particularly pronounced (Mustafa et al. 2013). The perception of a fragile state in Pakistan beset by a burgeoning population rate has led to predictions of destructive water wars. Scholars have countered alarmist discourses of impending “water wars” on the Indus by pointing to the Indus Waters Treaty of 1960<sup>3</sup> between Pakistan and India, which provides an outstanding example of how shared rivers can serve as an unexpected catalyst for cooperation, not conflict, between states (Alam 2002, 2009; Ali 2008; Zawahiri 2008, 2009). Indeed, some analysts matter-of-factly claim that “the Indus dispute was solved with the conclusion of the Indus Treaty...” (Rai and Patnaik 2012, p. 107).

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<sup>1</sup> I use “the Indus Rivers” and “the Indus” interchangeably to refer to the main-stem Indus *and* its five eastern tributaries; the Jhelum, the Chenab, the Ravi, the Beas, and the Sutlej. I will specify in the text when I am referring exclusively to the Indus main-stem.

<sup>2</sup> I use “Pakistan” to refer to the area that today constitutes the state of Pakistan. Before 1971, Pakistan was split into West Pakistan (current-day Pakistan) and East Pakistan (current-day Bangladesh). For the sake of brevity, when I say “Pakistan”, even when talking about a pre-1971 situation, it should be assumed I am talking about the territory that is today Pakistan, unless otherwise noted.

<sup>3</sup> I use “the Indus Waters Treaty”, “the Treaty”, and “the IWT” interchangeably to refer to the Indus Waters Treaty of 1960.



**Figure 1: The Western Rivers (#1, 2, 3) and Eastern Rivers (#4, 5, 6). Note that India is upstream to Pakistan, Punjab is upstream to Sindh within Pakistan, and that several rivers pass through Kashmir before entering Pakistan (Image source: [www.stratfor.com](http://www.stratfor.com))**

There has never been a war between Pakistan and India over the Indus Rivers. And experts have celebrated the Indus Waters Treaty as a model of international river governance. But these facts do not adequately convey the complexity of the geopolitics of rivers (Furlong 2006; Wirsing et al. 2013). Rather than focusing my analysis around the dichotomy of war/peace, or conflict/cooperation, in this dissertation I analyze the geopolitics of the Indus Rivers through the history and evolution of physical infrastructure and expert discourses. For over a century, states have engineered the Indus Basin by constructing a variety of infrastructures across the rivers: canals, weirs, barrages and dams. The British imperial state, and the Pakistani

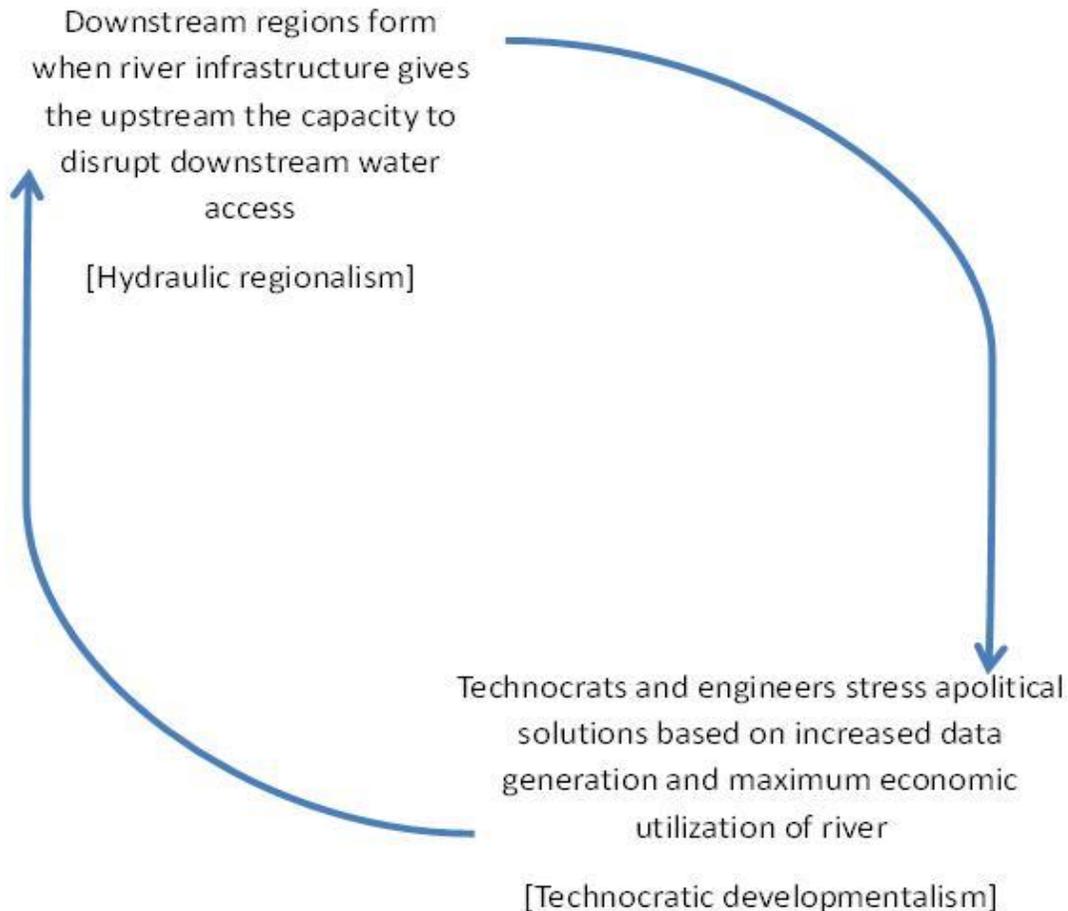
and Indian states after 1947, produced the Indus Rivers as an “organic machine” (cf. White 1995). The engineered Indus irrigates some of the most fertile and densely populated farmland in the world. In addition to this physical transformation, social scientists and technical experts have contributed to the management and governance of the Indus Rivers, from the British imperial era to the current day (Gilmartin 1994; Wescoat et al. 2000).

My approach to the hydro-politics of the Indus Rivers incorporates a historical exploration of physical, infrastructural transformation into a structural analysis of how experts have shaped socio-natural interaction. I analyze the international and subnational geopolitics of water around themes of inquiry that operate at multiple scales. I ask: How and why do large-scale infrastructure projects heighten geopolitical rivalry? How do engineers and technocrats attempt to address these tensions, and why do their attempts fail?

I argue that large-scale infrastructure projects on the Indus heighten geopolitical rivalry between upstream and downstream riparian regions because river infrastructure enhances the upstream riparian region’s capacity to restrict the downstream riparian regions’ access to river water. Infrastructure can have uneven effects across space, with upstream regions gaining more power over downstream regions. “Downstream” is not only a “natural” matter of topographical difference between controlling regions at higher elevations and vulnerable regions at lower elevations. Downstream regions also become downstream through the virulent contestation and opposition of infrastructure projects by regional elites. This process of disputation, a form of what Erik Swyngedouw (2013) has called “hydraulic regionalism”, has been occurring at the international and subnational scales on the Indus Rivers for over a century and is rooted in a relatively stable, but not static, structure of historically and geographically specific social relationships: water-intensive irrigation economies, uneven geographical development, and the

location of political and administrative boundaries. In short, infrastructure projects on the Indus Rivers have stoked geopolitical rivalry by serving as a node for the articulation of downstream regional vulnerability.

Furthermore, I argue that engineers and technocrats have attempted, and still attempt, to counter the geopolitical effects of downstream vulnerability through the ideal of maximum development at the watershed scale. The notion that a river basin, or watershed, constitutes a natural unit for political and administrative action is not limited to the imaginations of engineers. Integrated basin development is an extremely powerful and widespread idea. As I will argue in detail below, state-led infrastructure projects are often implemented with the intent of materializing integrated basin development in some form. In the history and present of the Indus, engineers and technocrats attempt to resolve region-based downstream politics by promoting river development and management plans that pave over geopolitical tensions between politically constituted regions within a watershed. As a resolution to downstream hydraulic regionalism engineers and technocrats emphasize the maximum development of river resources, sophisticated measurement of water flow, and sharing of water flow data, or what I call “technocratic developmentalism”. My objective is not to deny or evaluate the utilitarian appeal of integrated basin development, but rather to focus on the discourse of integrated basin development as a geopolitical process. The dialectic between potentially opposed tendencies, hydraulic regionalism and technocratic developmentalism, forms a relatively stable structure with which we can understand the geopolitics of river infrastructure on the Indus over the past century. A schematic of this dialectic can be seen in Figure 2. The epistemological status of this structure is discussed in more depth below.



**Figure 2: The dialectics of the geopolitics of infrastructure on the Indus**

Attempts to resolve or displace hydraulic regionalism fail because technocratic developmentalism is actually not apolitical. More importantly, plans developed by technocrats are not recognized as apolitical and objective by downstream regional elites. I argue that development guided by technical expertise never exists in a “pure” state outside of politics. Rather, these plans always are produced within ongoing political conflicts, and benefit classes and regions unevenly. In this introduction, I lay out the theoretical engagements and contributions of the dissertation, explain my sources and methodology, and provide a synoptic

political history of the Indus basin, with a focus on the Indus basin within the territory of current-day Pakistan.

### Theoretical Engagements

The central theoretical engagements of this research are three distinct but related conversations between geographers, historians, and other social scientists. First, this research advances theories that explore the role of **science and technology in state formation**, especially postcolonial state formation. Timothy Mitchell's (2002) study of technical assistance and development in colonial and postcolonial Egypt forms a cornerstone of this literature. Mitchell argues that the imbrication of Cold War geopolitics, international development, and the application of expertise is crucial to understanding the political, environmental, and economic evolution of Egypt. Mitchell's approach to development, strongly influenced by the network approach of Bruno Latour (1993) and Foucault's methodology of analyzing discourses as structures of knowledge/power, has proved a fertile node for further research by many scholars in the humanities and social sciences.

Patrick Carroll (2006, 2012) and Chandra Mukerji (2009) have focused their attentions on the ways that states construct physical infrastructure to expand their power and transform land into state territory. Others, including those involved in reinvigorating diplomatic history (Cullather 2010; Ekbladh 2010), have focused on the role of geopolitical factors, and especially the Cold War, in the development process in the second half of the 20<sup>th</sup> century (Alatout 2011; Hecht 2011; Sneddon and Fox 2011; Sneddon 2012;). Throughout the dissertation, I put these discussions on the technology/politics nexus in conversation with Langdon Winner's (1978, 1980, 1988) theories of the technological imperative, technocracy, and reverse adaptation

(Robbins 2008; Robbins and Miller 2013). I discuss the theories of Winner in more depth in the body of the dissertation.

My second major theoretical engagement is with the literature on **environmental knowledges and imaginaries** (Robbins 2004). This branch of human/environment geography unpacks the complex and crucial relationship between the environment, on the one hand, and the way people talk about the environment, on the other (Harvey 1974). A cornerstone of this conversation is James C. Scott's book *Seeing Like a State* (1999), which describes the danger and unintended effects of the simplified ways in which the "high modern state" represents nature through devices like surveys, plans, and censuses. Scott (1998) posits a dichotomy between the simplified, abstract environmental knowledge produced by the state and the deep, textured and everyday knowledge of the environment produced by those whose existence puts them in daily contact and negotiation with the environment.

The study of environmental knowledges has deepened and opened many new avenues for human/environment research since the publication of *Seeing Like a State*. Post-structural approaches identify the crucial task of human/environment analysis as describing how the analytical dichotomy of humans and non-humans is maintained through everyday practices and discourses (Mitchell 2002, 2011). This approach is in contradistinction to environmental positivism, which argues that scientific environmental knowledge mirrors reality. It is also in contrast to social constructivist approaches, which in their extreme versions hold that the development of knowledge about the environment, or non-humans more generally, is limited to examining how humans talk about the non-human.

Paul Robbins has added nuance to Scott's dichotomy of state and "local" knowledges. He argues that the state is not a monolith that approaches locales from the outside, and that in

practice the line between “local producer” and “state bureaucrat” is often not so clear (2001a, 2001b). Moreover, drawing on ethnographic research from forestry sector in Rajasthan, Robbins argues that the production of environmental knowledges is closely linked to the political economic position of the people who are producing them (Robbins 2000b). While the study of environmental knowledge is focused on scientists and technocrats, environmental narrative and imaginaries are also important to understanding socio-environmental outcomes (Robbins 2004; Alatout 2011; Harris 2011; Mitchell 2011).

A key subfield of geography for this dissertation is “critical hydropolitics”, which examines how transboundary rivers are discursively constructed and the geopolitical effects of these discursive constructions. Thus scholars argue (from empirical studies of rivers in Europe, Southeast Asia, South Asia, and the Middle East) that technocratic arguments regarding the benefits of integrated basin development are an example of the attempted naturalization of particular scale as part of a political project, often geared towards centralizing state authority (Swyngedow 1999, 2004, 2013; Sneddon 2003; Mustafa 2007, 2013; Alatout 2009, 2011; Molle 2009; Harris and Alatout 2010; Sneddon and Fox 2011, 2012). This dissertation engages with this literature by arguing that environmental knowledges are produced in the context of the political economy and geopolitics of uneven development at multiple scales.

Finally, this dissertation engages the theoretical and methodological insights of **Marxist political economy and geopolitics**. Neil Smith’s (2008) theory of the “production of nature” is foundational to my research. Smith argues that the ongoing and always incomplete transformation of nature should be understood as part of the expansion and deepening of capitalist social relations. In a nutshell, society increasingly transforms nature with the goal of increasing exchange-value (worth in money) over use-value (worth in utility or pleasure). Not

only is nature “produced” by capitalist society, but it is also produced through state strategies of region-formation that may not be reducible to capitalist expansion (Whitehead et al. 2006).

Inextricably tied to Smith’s theory of the production nature is his theory of uneven geographical development.

Drawing from his research into the processes of gentrification, Smith (1979, 2008) describes how transformations of “nature”, or the non-human, are inevitably also transformations of spatial relationships. For example, gentrification in urban environments proceeds like a “see-saw”, with regions taking turns between being valued as “nice places to live” and be de-valued as “ghettos”. Smith argues that under capitalism, neighborhoods go through cycles: property owners construct new houses with high value, those houses fall into disrepair and tend to lose value if property owners are not also residents, and then property owners “gentrify”, or reinvest, houses once the low rental value warrants redevelopment. Smith’s notion of uneven development as an ongoing spatial process with identifiable patterns guides my analysis in this dissertation.

I also engage with Marxists logical-structural analyses of the contradictions of infrastructure in capitalist economies (O’Connor 1997; Harvey 2006, 2007; Desai and Loftus 2012). The provision of infrastructure often requires large amounts of capital in a single time and place. Furthermore, the benefits of large-scale infrastructure are risky and are hard for one firm to monopolize. These features of large-scale infrastructure make them unattractive projects for individual capitalists, who are interested in private profit. However, large-scale physical infrastructure like roads, ports, sewage systems, irrigation systems, and the like are necessary for expanding the scope and capability of capitalist production. This contradiction can be resolved by the entry of state authority and/or a financial system of credit, factors I am closely attuned to in this dissertation.

Marxist scholars have also articulated categories for the logical and historical analysis of the interaction of capitalist and state agents in international politics (Harvey 2003; Wood 2003; Mercille 2008a, 2008b, Cowen and Smith 2009). One strand of Marxist geopolitics is keen to point out the causal influence of “the international” in the analysis of state formation and state interaction (Wood 2006; Morton 2007; Teschke and Lachner 2007; Gestenberger 2011). The strand of international political economy from within the Marxist theory I rely on the most in this dissertation is the method of passive revolution (Gramsci et al. 1971; Gramsci 1995; Morton 2007, 2010, 2013; Gray 2011). The passive revolution, especially as it has been reformulated by Adam Morton, presents a way to link discussion of uneven geographical development with processes of state formation in the capitalist periphery.

In the broad context of scholarly geographical thought, the theoretical contribution of this dissertation lies in demonstrating an effective integration of political geography with political ecology (Robbins 2003, 2008; Whitehead et al. 2006). This task could also be described as understanding socio-environmental change through a nuanced theory of the state. I rely on Marxist approaches, and particularly Gramscian historical-geographical materialism (Mann 2009) to form a bridge between political geography and political ecology.

The inter-disciplinary contributions of this dissertation are in the nascent study of “the downstream”. There is no defined group of scholars who talk specifically about understanding the downstream riparian condition systematically and rigorously. But several studies by environmental historians have pointed to the complexities of understanding downstream vulnerability as determined by technology, physical geography, and political boundaries (Mikhail 2011; Jones 2011). While these environmental historians provide an excellent analysis of particular historical-geographical conjunctures, I attempt to provide a historically and

geographically grounded analysis of the socio-spatial structure of downstream vulnerability which scholars of other regions may find useful as a methodological guide. This effort to theorize downstream is inspired by institutional economist Daniel Bromley (2000), although my theoretical orientation is rooted in Marxist political economy and political ecology, rather than analytical institutional economics.

This dissertation also contributes to the historical and area studies literature on **the political economy and history of Pakistan**. Hamza Alavi has written influential theories based on empirical and historical research in the Pakistani context. These include his theories of: the overdeveloped postcolonial state, the role of the “salarial” in the Pakistan Movement, the politics of ethnicity and region in Pakistan, and the uneven geographical effects of the Green Revolution in Pakistan (Alavi 1972, 1973, 1988). I draw on and extend a number of Alavi’s theories in this dissertation. These theories have influenced much of the historical and sociological literature on Pakistan, especially Punjab within Pakistan. Finally, this research continues the ongoing research project of understanding the complex historical evolution of state power, social inequality and economic development around irrigation and agriculture in Pakistan and especially Punjab (Michel 1967; Ali 1988; Talbot 1988; Gilmartin 1988, 1994, 1999; Mustafa 2002b; Gazdar 2011; Javid 2011; Rahman 2012).

### Sources and methodological approach

The main source materials for this research were archival and ethnographic. During the course of the research, I consulted the negotiation records of the Indus Waters Treaty at the World Bank<sup>4</sup> archives in Washington D.C., the South Asia archives of the British Foreign Office (accessed

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<sup>4</sup> I use “Bank”, “the Bank”, or “the World Bank” interchangeably throughout the dissertation to refer to the International Bank for Reconstruction and Development.

through an online database), and the administrative library/archive of the Water and Power Development Authority (or WAPDA) in Lahore, Pakistan. I conducted a total of nine months of field work in Pakistan, in the summer of 2010 and the first half of 2012. During the course of my fieldwork I conducted twenty-two interviews with engineers and water bureaucrats of varying rank. These interviewees included a number of prominent Pakistani engineers, including the retired head of the premier federal water development agency, the retired chief of the federal authority that allocates Indus waters between the provinces of Pakistan, and the acting head of the bi-national commission that oversees the Indus Waters Treaty between Pakistan and India.

During the course of my fieldwork in 2012, I also observed and participated in four forums in Lahore devoted to the discussion of water politics. Two of these forums were hosted by leftist political parties, one by the Public Policy department of a major university, and one by a nationalist civil society association of engineers. These experiences, as well as numerous conversations with activists, scholars, and engineers inform my ethnographic analysis in this dissertation. I also draw upon the “gray literature” produced by advocacy groups, intergovernmental associations like the World Bank, and NGOs concerning water management and water security in Pakistan. Finally, I analyze two recent legal decisions by international arbiters addressing the legality under the Indus Waters Treaty of river infrastructures proposed by the Indian government.

My analytical strategy balances historical contextualization with an appreciation of structural relationships that stand relatively stable across a specified range of spatial and temporal variation. This method of analysis draws upon the Marxist tradition of simultaneously examining structure and history (Harvey 2012). Most Marxist analysis stays on one side of the fence of history/structure. For example, David Harvey (2004, 2006) and Neil Smith’s (2008)

most influential theories are largely ahistorical and limited to logically deriving contradictions between abstract theoretical categories. In contrast, the historical categories produced by Antonio Gramsci (1971) are explicitly created out of and for the purposes of understanding specific historical conjunctures. I resolve the tension between these two types of historical inquiry through a nuanced understanding of “structure” and “determination”.

The key to combining historical and structural analysis is to understand determination as it was proposed by cultural and historical Marxists, such as Raymond Williams (1978, 1980) and E.P. Thompson (1978, cf. also Hall 1986, Glassman 2003). Determination is, quite simply, the identification of factors that “set limits” and “exert pressure” on historical processes. Determination is the identification of the *capacity* to structure social behavior in certain ways and towards certain results – it is not necessarily the realization of these capacities in actual history.

Structures exert pressure and set limits to historical movement – but do not necessarily and always determine outcomes. Tendencies, as Marx was careful to explain and demonstrate, are continually beset and interrupted by counter-tendencies (Marx 1993, 2004; Harvey 2007, 2012). By definition abstractions and theoretical structures cannot explain historical processes, this is so because history and geography are precisely what is being abstracted away *from* (Eaton 2000). Abstractions merely provide us with hypotheses about the major determining factors shaping historical outcomes and trajectories. Engagement with history does not preclude the use, generation or refinement of theory – rather, it requires a sensitive and flexible awareness of how theoretical categories should be modified to respect concrete historical-geographical conjunctures.

This dissertation is inspired by the historical method and epistemology of Antonio Gramsci. Gramsci was an Italian communist and political theorist. His writings demonstrate a nuanced approach to history, theory, abstraction, and structure (Jessop 2005; Mann 2009; Ekers et al. 2013; Morton 2010; Wainwright 2010; Loftus 2012); especially with regard to the articulation of international and national uneven development around the role of the state (Morton 2013). Gramsci's thought and writings are notoriously scattered and fragmented. And, of course, many of his most compelling works were written in moments of extreme duress, as his health ailed in a Fascist prison. During an engagement with Karl Marx's historical works, like *The Eighteenth Brumaire of Louis Napoleon* (Gramsci 1971, p. 404), Gramsci notes Marx struggle with

The difficulty of identifying at any given time, statically (like an instantaneous photographic image) the structure. Politics in fact is at any given time the reflection of the tendencies of development in the structure, but it is not necessarily the case that these tendencies must be realized. A structural phase can be concretely studied and analyzed only after it has gone through its whole process of development, and not during the process itself, except hypothetically...

Like Marx, Gramsci was careful to emphasize that positing a structural dynamic in the evolution of societies is not the same as making a prediction about the future. Indeed, Gramsci explicitly opposed any social theory that claimed to make predictions about how humans would act, or that subscribed to a "mechanical" understanding of causality (ibid, p. 438). To do so would be to deny revolutionary agency to the very humans under study. Gramsci was especially opposed to more "orthodox" Marxists on the Italian political scene who insisted that humans were ultimately mere bearers of the power of economic structures. He argued that this did not leave room for the very real differences in individual of temperament and experience, nor did it

leave room for the impetus to social change that develops out of organizational cultures (ibid, p. 408). Gramsci's concept of theory, structure and causality were less about laws and predictions, and more about patterns and tendencies;

It is not a question of 'discovering' a metaphysical law of 'determinism', or even of establishing a 'general' law of causality. It is a question of bringing out in historical evolution relatively permanent forces are constituted which operate with a certain regularity and automatism (ibid, p. 412).

For Gramsci, the challenge for the historian lay in parsing the deep (or "organic") levels of causation that operated in society from the surface (or "conjunctural") movements of political struggle and negotiation. Thus while Gramsci's often turned his attention to understanding key political conjunctures and shifts in power (in the spirit of Machiavelli and Lenin, both of whom he admired), he was always conscious that some of these shifts in power were more important than others.

Meanwhile, in studying a structure, it is necessary to distinguish organic movements (relatively permanent) from movements which may be termed 'conjunctural' (and which appear as occasional, immediate, almost accidental). Conjunctural phenomenon too depend on organic movements to be sure, but they do not have any very far-reaching historical significance; they give rise to political criticism of a minor, day-to-day character, which has as its subject top political leaders and personalities with direct government responsibilities. Organic phenomenon on the other hand give rise to socio-historical criticism, whose subject is wider social groupings - beyond the public figures and beyond the top leaders (ibid, pp. 177-178).

In Gramscian language, then, the objective of this dissertation is to produce "socio-historical criticism" which identifies and examines the socio-spatial structures and conjunctures in the geopolitical history of the Indus. I have discussed Gramsci's theoretical and methodological approach through key fragments of his writing. But it is useful to approach

Gramsci through a holistic understanding of one of his (relatively more) complete works. Key features of Gramsci's nuanced method can be gleaned from an examination of his essay *The Southern Question*, the last essay he wrote before being sent to jail for his communist activities (Morton 2007; Jessop 2005).

*The Southern Question* was written in response to an editorial in a leftist journal that complained about the formulaic approach of the Turin Communists, Gramsci's party, to involve poor peasants from southern Italy in the communist struggle. This was a version of the "peasant question," which stimulated much debate amongst communists, especially in the works of Vladimir Lenin, Karl Kautsky, and agronomist Alexander Chayanov (cf. Akram-Lodhi and Kay 2009; Bernstein 2009). Instead of mechanically applying the considerable insight produced from these eminent Marxist theorists, Gramsci warns that:

"the peasant question in Italy is historically determined, it is not the 'peasant and agrarian question in general.' In Italy the peasant question has, given its specific Italian tradition, for the historical specifics of Italian history, assumed two particularly typical and peculiar forms, the Southern Question and the Vatican question," (Gramsci 1995, pp. 19-20)

The "peasant question" was (and is) a political and analytical problem encountered in many places. Gramsci is interested in historicizing the structural dynamic of "the peasant question" in a particular context. He goes on to describe what he considers the successful policies of the Turin Communists in handling the peasant question in Italy: essentially, to overcome regional stereotypes and form a trans-regional block of proletarians and peasants to capture the Italian state and maintain it against both the feudal and bourgeois classes. But Gramsci recognizes that the uneven development of Italy, with the rapidly industrializing north and the agrarian south, presents a serious obstacle to this strategy.

The role played by ideology and intellectuals is crucial to recognizing these obstacles. By recognizing this, Gramsci departs from the economic reductionism of the base/superstructure model of Marxist historiography. He argues that the incorporation of liberal and idealist southern intellectuals into the central Italian state helped to perpetuate the reactionary rule of a southern “agrarian bloc” composed of peasants, petty rural bourgeoisie, large landlords and southern intellectuals. Gramsci highlights the crucial role of the “intellectuals”, which included groups like the rural clergy, in the maintenance of the southern agrarian bloc.

Near the end of the essay, Gramsci argues that the function of progressive intellectuals in the class struggle in the Italian context was to build alliances with southern intellectuals to challenge the ideological clout of the agrarian bloc, not to eschew all those who did not espouse the rigid Communist party line. Gramsci believed that until the agrarian block was shaken the necessary alliance between the northern proletariat and the southern peasantry could not be realized. Thus, in *The Southern Question*, Gramsci displays a nuanced understanding of history and theory, state formation, uneven development and class politics.

To put this epistemological and methodological discussion in terms of the overarching arguments of this dissertation, both a downstream hydraulic regionalism and an apolitical technocratic developmentalism are structural tendencies, or organic movements, of the geopolitics of the Indus. These tendencies can conflict. This contradiction can be expressed through contested infrastructure projects at particular political conjunctures. This dissertation examines cases over the past hundred years when this has happened, primarily through the voices and words of technocratic developmentalists: technocrats, engineers, politicians, development officials and lawyers. This dialectic interaction hydraulic regionalism and technocratic developmentalism has remained relatively stable over the past hundred years in the

Indus Basin, and is rooted in the intensive use and modification of rivers flows based on modern infrastructure, as well as the urge of state functionaries to manage and control natural resources in a technocratic and apolitical way.

If the tendency towards an expression of downstream hydraulic regionalism were to exist in isolation, we would see an endless proliferation of downstream regions at multiple scales engaged in endless geopolitical conflict. But the power and persistence of technocratic developmentalism, that naturalizes the watershed and the objective of maximum utilization of natural resources, continually interrupts the tendency towards hydraulic regionalism. The interaction of these two tendencies provides the underlying structure through which I interpret the geopolitics of river infrastructure in the Indus Basin.

The purpose of the dialectic structure I have proposed is not to provide a theory that can be applied mechanically to any river basin in the world. Rather, following Gramsci's take on the possibility of making theory "travel", (Morton 2013; see also Said 1983), it is a theory arrived at through historical and theoretical engagement with a specific region (the Indus Basin, especially within Pakistan) over a specific period of time (from roughly 1920 – 2013), and through a specific vantage point (technical, professional and political elites). Other researchers interested in the geopolitics of water and infrastructure, especially in the postcolonial context, would benefit more by observing how I use this structure to understand my questions, rather than the structure itself. This is a method that is deeply historical, political economic, and attuned to the politics of technology and technocrats. Before turning to an overview of the remainder of the dissertation, it is important to briefly review the modern political history of the Indus Rivers.

Synoptic political history of the Indus

In 1947, two successor states to British India came into existence: India and Pakistan. Pakistan was to be composed of the Muslim majority provinces in the northwest and the northeast of the subcontinent, and India was to be composed of the non-Muslim majority provinces. The provinces of Punjab and Bengal, in the northwest and northeast corners of the South Asian peninsula, presented a special case. These provinces were to be partitioned themselves because the non-Muslim minorities in these provinces were too numerous and geographically concentrated for their wholesale incorporation into Pakistan.

The partition of Punjab into two politically sovereign states threatened the smooth operation of the irrigated agrarian economy developed by the British in the Indus Basin since the 1880s, (Gilmartin 1994; Ali 1988). By 1947 the region served as the premier breadbasket of South Asia, if not all of Asia. Sir Cyril Radcliffe, the man assigned to finalize the borders of the new states, was well aware of this fact. Writing decades after the independence of India and Pakistan, he remarked “I was deeply impressed – as anyone concerned would be – by the great importance of not allowing the physical division of territory to sterilize the workings of an interrelated irrigation system” (quoted in Michel 1967, p. 164). Radcliffe tried, but failed, to work out some system of co-management of the basin. The border which split Punjab in two was announced on August 17, 1947.

Amidst the chaos of partition, Pakistan and India signed a Standstill Agreement on December 18, 1947, which posited that the pre-partition shares of water in the Indus Basin would be maintained. On April 1, 1948, Indian Punjab cut off water to Pakistani Punjab by diverting flows from river control structures on the Ravi and Sutlej Rivers. The consequences in Pakistan were harsh: the city of Lahore was deprived of its main source of water, and prime fields were left waterless at a crucial time in the agrarian production cycle. Although panicked negotiations

resulted in the resumption of flows to Pakistan a couple of weeks later, the damage had been done. The contradiction between religious and fluvial geography had been laid bare. Muslim nationalism demanded a separate sovereign territory for Pakistan, but the irrigated economy of the Punjab demanded insulation from downstream vulnerability (Michel 1967; Chapman 2003; Gazdar 2005).

This volatile situation caught the attention of the world community. In 1951 David Lilienthal, of Tennessee Valley Authority fame, penned an article in Collier’s magazine entitled “Another Korea in the Making?”. Lilienthal argued that the water conflict in India and Pakistan should be seen primarily as an engineering and financial issue, not a geopolitical one. He suggested the involvement of an institution with expertise at its disposal, like the World Bank (WB, or the Bank), to mediate the dispute on purely “technical” grounds. Eugene Black, president of the Bank, agreed. So did the governments of Pakistan and India. After almost a decade of torturous negotiation, the Indus Waters Treaty was signed in Karachi on September 19, 1960.

|                  | <b>Management principle</b>                     |
|------------------|-------------------------------------------------|
| <b>1951-1954</b> | <b>integrated watershed management</b>          |
| <b>1954-1956</b> | <b>“division of waters”</b>                     |
| <b>1956-1960</b> | <b>“division of waters” with qualifications</b> |

**Table 1: The Indus Waters Treaty negotiations, 1951-1960**

Three general periods of the negotiation process can be identified between 1951 and 1960 (Table 1). These periods are based on shifts in the understanding of the Pakistani, Indian, and

World Bank representatives as to what constituted the best principle on which to develop and distribute the waters of the Indus main stem and its five eastern tributaries. In the first phase, from 1951-1954, the basic principle officially guiding the negotiations was the joint development and management of the Indus Rivers by India and Pakistan. The role of engineers and technocrats in the negotiation, especially on the Pakistani side, was strongest in this period (see Chapter 2). From 1954 to 1956, the strongest policy guiding discussions was that of the “division of waters”, which depended on the operational autonomy of Pakistan and India as regarding both the development and access to the Indus Rivers. Thus India and Pakistan would be awarded river water not according to volume, but in terms of streams. Thus Pakistan was to have use of the Indus main-stem and the two westernmost tributaries, and India was to have exclusive use of the three easternmost tributaries. Contrary to the integrated basin principles, this division phase did not require any cooperation between the parties in the development and management of the river system at all (Gazdar 2005). Finally, the third phase represented some qualifications to the principle of the “division of waters”. Most importantly, India was given limited rights of construction on and use of the rivers awarded to Pakistan. As we will see, this qualification has had enormous consequences for the way the legal geopolitics of the Indus Rivers have occurred, especially in the years since 2005 (see Chapter 6).

The IWT is unique because it is the only transboundary water treaty to be co-signed by a third party (the World Bank), and because the allocation of the waters of the Indus are based on geography, rather than volume (Salman 2008). There are several important features of the IWT that should be noted. First, the Treaty makes a geographical “division of waters”, with the unrestricted flows of the three “Western Rivers” (rivers 1, 2, and 3 in Figure 2) allocated to Pakistan and the unrestricted flows of the three “Eastern Rivers” (rivers 4, 5, and 6 in Figure 2)

allocated to India. There are important exceptions to this rule whose importance will be made clear by the discussion of the Baglihar case below. Second, the IWT called for the creation of an Indus Permanent Commission to facilitate communication and dispute resolution. In specific types of disputes, the Bank was called on to help in the selection of international arbiters. Finally, a supplementary agreement was signed on the same day as the Indus Waters Treaty which established the Indus Basin Development Fund (IBDF). The purpose of this fund was to mobilize finances to construct “replacement works” in Pakistan, and to compensate it for the loss of water from the three eastern rivers (see Chapters 3 and 4).

Pakistan’s first decade after independence was a rocky one, with numerous governments failing to draft a constitution until 1956 (which was scrapped in 1958) and continually deferring elections. The power of governance was in the hands of the military-bureaucratic elite, which was composed of migrants from India and people from the province of Pakistani Punjab. The rule of this elite class was especially clear after the dismissal of a uncooperative political government in 1953, and was formalized by a two-stage bureaucratic-military coup in 1958. Ayub Khan ruled as a military dictator for the next decade and is remembered by many as a presiding over a prosperous “decade of development” in Pakistani economic history.

Ayub Khan, a powerful man even before he staged a coup, strongly pushed the One Unit administrative reform in 1955, which consolidated the diverse and long-standing political units of West Pakistan (current day Pakistan, not including East Pakistan, which is today Bangladesh) into a unitary government. One Unit was disbanded in 1971, after sustained political agitation and an existential, political, and geographic rupture in the state of Pakistan after the Bangladeshi war of independence. Throughout this period the tendency of downstream hydraulic regionalism

interacted with the tendency towards technocratic developmentalism, both in the case of Pakistan/India and Punjab/Sindh within the territory of Pakistan.

Since 1971, Pakistan has been ruled by two more military governments (Zia-ul-Haq from 1977-1988 and Pervez Musharraf from 1999-2008). Hydropolitical tension between Pakistan and India has heightened since 2005. The legality of two Indian structures, at Baglihar and Kishenganga on the Western Rivers, was adjudicated by international legal and technical experts. On the national scale the dynamic interaction of hydraulic regionalism and technocratic developmentalism continues, especially around a planned dam on the Indus main-stem at Kalabagh and the operation of the Indus River System Authority (IRSA).

The layout of the dissertation is as follows. Chapter 1 is an introduction to the Indus Rivers themselves, as well as a critique of the dominant security-centric mode of analyzing them. Chapters 2 argues that the logic of technocratic developmentalism, the officially shared position of all parties in the early years of the Indus negotiations between Pakistan and India, was continually interrupted by the politics of hydraulic regionalism. Chapter 3 explores the international political economic context in which the Indus Basin Development Fund was financed, and argues that political and economic considerations were fused in the world of Cold War development in the 1950s. Chapter 4 transitions to a political history of Pakistan during the 1950s, and argues that the transformation of state and basin in the 1960s constitutes a Gramscian “passive revolution” that constituted the height of technocratic developmentalism in Pakistan. Chapter 5 fleshes out the structured interaction between hydraulic regionalism and technocratic developmentalism by focusing on three infrastructure-related geopolitical controversies, spanning roughly the past century. Chapters 6 and 7 draw on legal sources to analyze the contemporary international legal geopolitics of arbitration of the Indus Waters Treaty. Finally,

Chapters 8 and 9 draw primarily on ethnographic sources to discuss the politics of regionalism, nationalism, and technocracy in contemporary Pakistan. The latter chapters, especially Chapters 6, 8 and 9, engage more closely with the theories of Langdon Winner on “technological politics” to understand the role of infrastructure, and technology in general, on the evolution of politics, law, and civil society in contemporary Pakistan.

## CHAPTER 1: WATER SCARCITY AND SECURITY

The Pakistani state is increasingly associated with a vague feeling of a security threat. In May 2011 it was revealed that arch-enemy of the United States security establishment, Osama bin Laden, had been hiding out in Pakistan. This revelation cemented an already-existing conception of Pakistan as a security threat. Consider, for example, the headlines screaming from the front pages of popular [English language] international newsmagazines from 2007 and 2008.

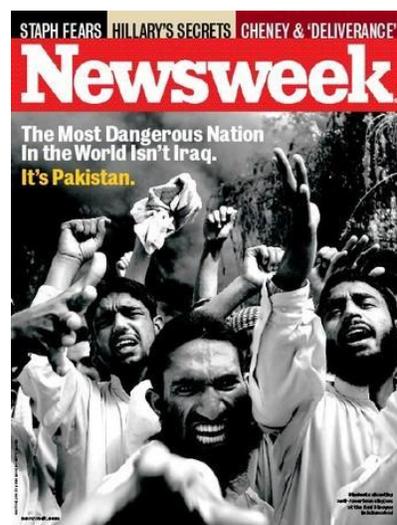


Figure 3: Covers of *The Economist* (January, 2008) and *Newsweek* (October, 2007)

The January 2008 cover of *The Economist* magazine proclaims: “The World’s Most Dangerous Place”. Pictured below the headline is a grenade, emblazoned with the word “Pakistan,” along with the crescent and star representing Pakistan’s national flag. In October, 2007 the cover of *Newsweek*, read: “The Most Dangerous Nation in the World isn’t Iraq. It’s Pakistan”. Below the headline is pictured a swarm of snarling young bearded men pumping their fists angrily into the air. Images and associations like these dominate mainstream U.S. media

representations of Pakistan. The buzzwords and phrases that routinely accompany these images include: rogue state, failed state, harboring terrorists, nuclear arsenal, rabid anti-Americanism, anti-modernity. Underlying the ubiquitous media framings of Pakistan as “dangerous” is the assumption that the region should be understood primarily through the lens of security.

When presented with images like these many scholars (or people who simply know Pakistan beyond the headlines) might shake their heads in disbelief, cluck disapprovingly, and blame the drive to sensationalize on the need for media conglomerates to generate profits, or on a deep-seated Orientalist fear of the Muslim Other. And indeed, they would be correct. But the link between security analysis and Pakistan is not an invention of the media. As one South Asia scholar reflected, “for better or worse, the strategic concerns of American foreign policy have been a major determinant in shaping...studies [of Pakistan],” (Ainslee 2007, p. 1).

The discourse around the Indus Rivers in Pakistan reflects this concern with security – especially in the past decade and half, where fears of population growth, drought, resource scarcity, and climate change have been especially prominent. In this chapter, I interpret these discourses around “hydro-security” in the context of infrastructure failure. Stephen Graham (2010) argues that infrastructure failure or interruption reveals much about the “normal” working of infrastructure systems. Furthermore, he argues that the securitization of infrastructure, or the reduction of infrastructures to their vulnerabilities, has become increasingly common and is usually accompanied by a narrative of crisis. In this chapter, I draw upon Graham (2010) to examine the discourse of crisis and the securitized analysis of the Indus (see also Dalby 2009; Linton 2010).

With thousands of miles of canals diverting its waters to millions of farms, the Indus River (and its tributaries) is one of the world’s most engineered river systems. The Indus River

irrigation system is the world's largest contiguous irrigation system and forms the bedrock of the Pakistani economy. As argued in this chapter and throughout this dissertation, the widespread perception that the "Indus machine" is failing (or likely to fail) due to population pressure and climate change has given rise to a particular discursive construction of crisis that obfuscates the deeply political issues of allocation, distribution, and entitlement. In particular, the ways in which infrastructure reflects and reproduces inequality is hidden by the security-centered focus on infrastructure failure (McFarlane 2010). The bulk of the chapter presents empirical information on the Indus River to critique of the narrative of absolute physical scarcity that underlies the security analysis of infrastructure failure.

One strand of geographic inquiry that follows from, but to some degree overcomes, the tradition of security analysis is the so-called "water wars" or transboundary river management literature (Wolf 2007). The dominant thread linking these analyses is that state actors are foregrounded and the overarching research objective is to determine conditions that are conducive to international cooperation (Furlong 2006). In the case of water in Pakistan, the main focus of the water wars literature has been explaining the remarkable success of the Indus Waters Treaty (IWT) of 1960 in facilitating cooperation between the rival Indian and Pakistani states.

Undala Alam (2002) offers the leading explanation of the Indus Waters Treaty from this angle. Alam introduces the concept of "water rationality" to explain why the IWT has not fallen apart over the past half-decade of wars and belligerence in South Asia. "Water rationality is any action taken by a state to secure its water supply in the long term...this implies that, nationally, a state manages its water prudently, and internationally, it maintains relationships with its co-riparian countries that are conducive to ensuring long-term access to the shared water," (Alam 2002, p. 347). In other words, states conduct cost-benefit analyses of the long-term benefits and

costs of securing water supplies. When this calculus demands cooperation, states cooperate (Alam 2009). Variations on this theme emphasize the importance of the institutional design of the Permanent Indus Commission (Zawahiri 2008; 2009), the “technocratic spirit of the agreement,” (Ali 2008, p. 169), and the involvement of third-party mediation (Mehta 1988; Birch et al. 2006).

Another strand of the security literature draws connections between water security and international development. Recent reports issued by the World Bank (Subramanian et al. 2012), and the United Nations (UN Water 2008) make a two-pronged argument about water and security. First, they argue that while transboundary (or international) rivers might be considered sites of potential conflict, these rivers actually present a great opportunity for international cooperation. Second, they argue that the best way to achieve river cooperation is to ensure that the rivers are sufficiently and efficiently developed (in the economic sense of being utilized maximally). If the metaphoric pie is continually expanding, the argument goes, we will be less likely to fight over it. What is missing in the “water wars” and the security/development explanations, however, is the question of uneven structures of power that may or may not be altered or overcome through the “success” of the IWT or other programs of economic development.

There are two further issues to note with regards to the water security literature. The first is that the state-centeredness of this literature biases it towards an analysis that favors the status-quo. The policy recommendations of this literature are to improve river sharing between states and are always directed at foreign policy elites. The directives are usually the same: better institutions, more technology, and more and better data collection and sharing. Although they cover up the complexity of downstream politics, these are not, of course, unreasonable

recommendations – but one must ask: to whom and to what end are these recommendations being made? For example, although the Indus Waters Treaty is virtually unanimously celebrated by foreign policy analysts and scholars, it is also true that the treaty has helped to suppress Kashmiri sovereignty by the Pakistani and Indian states for over sixty years. The second issue is the concept of absolute physical scarcity that underlies much of the literature on water security, and especially of water security and development. Much of the dissertation, implicitly or explicitly, critically engages with my first point. The rest of this chapter turns to address the second point, regarding absolute physical scarcity, in the context of water in Pakistan.

The link between security and development is part of a wider observed trend in the politics of aid in a neoliberal, post-9/11 international climate. Critics note that this development-security nexus in practice means that poor regions of the world are construed as potential security threats, and then awarded aid on the basis of how far states claiming sovereignty in the region are going to meet the regional economic and military needs of the U.S. (Essex 2008). Furthermore, the narrative of crisis that accompanies security analysis is often used to justify pre-existing political and economic projects that centralize power in the hands of states, corporations and experts (Linton 2010; Dalby 2009).

Another problem with the security/development mode of analysis is that it relies on a very specific, and highly ideological, notion of scarcity. This notion of absolute physical scarcity holds that the capacity of natural resources to provide for human needs and desires is fundamentally fixed and limited. The Malthusian formulation of the geometrically increasing human population outstripping the arithmetically growing food supply is the classic exposition of this type of world-view. In Pakistan, where virtually all food is grown by using irrigation water

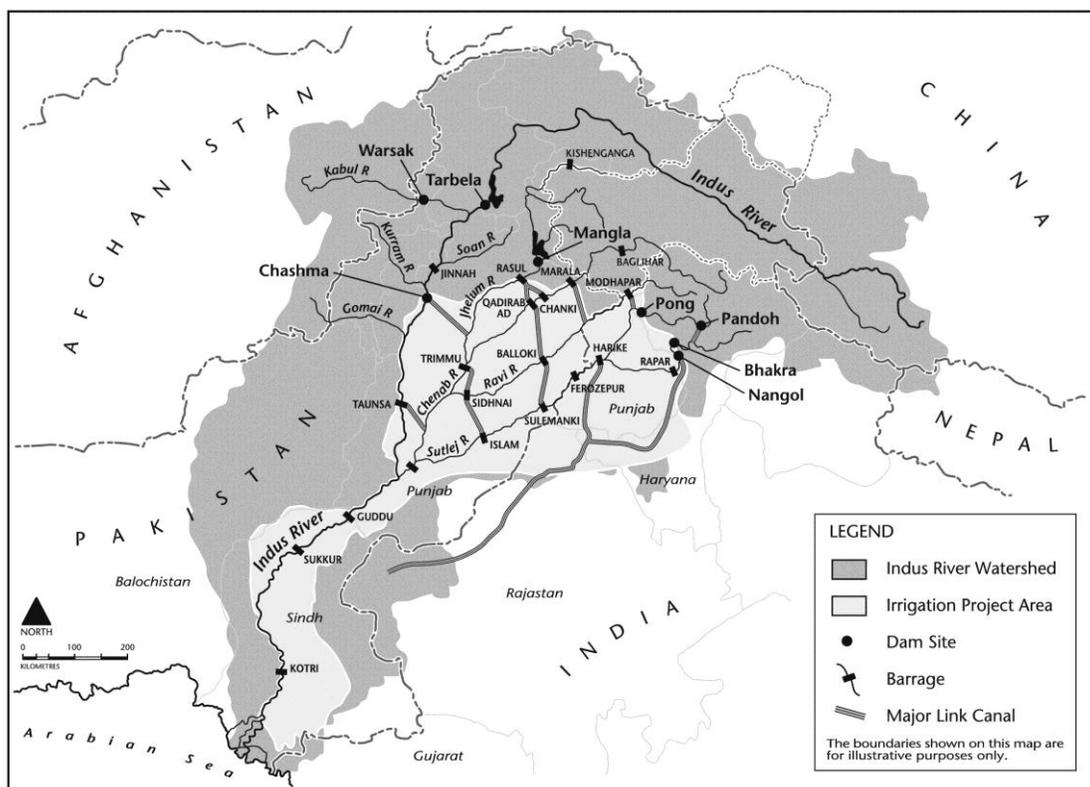
drawn from the Indus, it is not hard to connect the dots between water supply, food supply and security. The doomsday scenario unfolds as follows: population in the Indus Basin keeps growing, which outstrips the capacity of people to grow the crops they need to subsist, which leads to desperation, pillage, and ultimately war. One need only glance through coverage of Asian and African issues in any mainstream newspaper of the United States to catch a glimpse of this Malthusian narrative at work.

My argument is not that human use of natural resources is limitless. I do not argue that all natural limits are merely “socially constructed” or that some essentially human spirit of innovation and resilience will overcome any and all obstacles placed in its way. However, I find the implications of both of the arguments above hard to ignore. Natural resources do not exist as “natural resources” before society perceives them as such. We must take context, that is, history and geography, seriously. To evaluate the likelihood of encountering absolute physical scarcity of resources that Pakistani society needs, we must examine the best data available regarding the availability and uses of Indus waters in Pakistan. The dual purpose of this chapter is to challenge the dominant discourse that links together water scarcity/security/development and to give the reader some idea about the Indus River System as a physical and historical entity. My argument is that in the case of water in Pakistan, the politics of unequal distribution and access to natural resources is more important than absolute physical scarcity.

### Water supply and demand in Pakistan

Most of Pakistan’s water is supplied from a single source, the Indus River System, which is composed of six major tributaries. Only one of the major tributaries enters the main stem of the Indus River from the west – the other five enter from the east through the region of Punjab. The

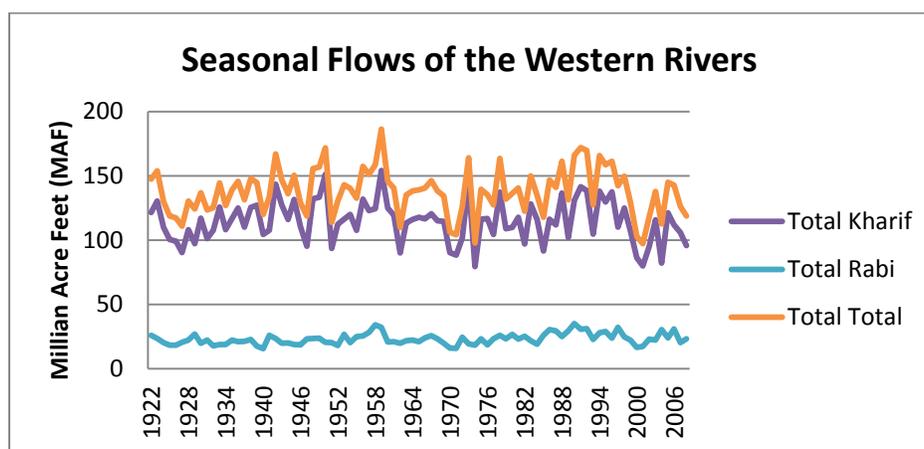
five western tributaries are, from east to west, the Jhelum, the Chenab, the Ravi, the Sutlej and the Beas. There is an estimated long term basin-wide surface water availability of 239-258 cubic km (194-209 million acre-feet, or MAF) in the Indus Basin, of which roughly 179 cubic km (145 MAF) is extracted in Pakistan (Laghari et al. 2012, p. 1065).



**Figure 4: The Indus Rivers (Image source: Mustafa et al forthcoming)**

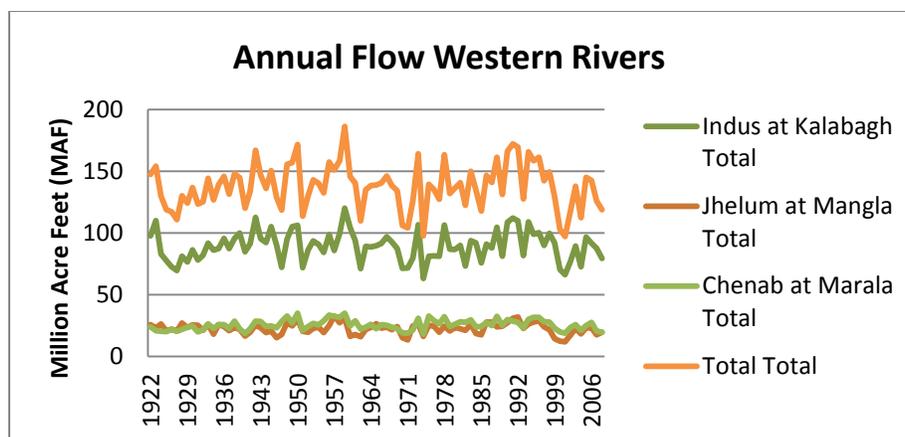
The Indus Waters Treaty of 1960 divides the Indus River System into the “Western Rivers”, composed of the main stem of the Indus, the Jhelum and the Chenab, and the “Eastern Rivers”, the Ravi, the Beas and the Sutlej. For reasons discussed in greater detail below, the vast majority of Pakistan’s surface water extractions are made from the Western Rivers. The flows of the Western Rivers are measured by “rim stations” – at Kalabagh for the Indus, Mangla for the

Jhelum, and Marala for the Chenab. It is important to note that Kalabagh rim station is downstream to Attock, where a Western tributary, the Kabul River, joins up with the main stem of the Indus. The chart below shows the annual recorded flows of the Western Rivers from March 1922 to August 2008. It is based on data available in the Handbook on Water Statistics of Pakistan (available at [www.wspakistan.com](http://www.wspakistan.com)).



**Figure 5: Seasonal flows of the Western Rivers**

The chart makes clear the difference between flows in the Kharif (summer, or April-September) and Rabi (winter, or October-March) seasons. In the 86-year period for which there is data available, more than 80% of the annual flow of the Western Rivers occurs in the Kharif period. The average total flow of the Western Rivers since 1922 is 137.8 MAF, ranging from a low of 97.13 MAF in 2001 to a high of 186.26 MAF in 1959. The average flow for the last ten years of recorded data in the Western Rivers is 125.5 MAF. It is also important to note the relative contribution of each of the Western Rivers to the total flow. This is illustrated in the chart below:

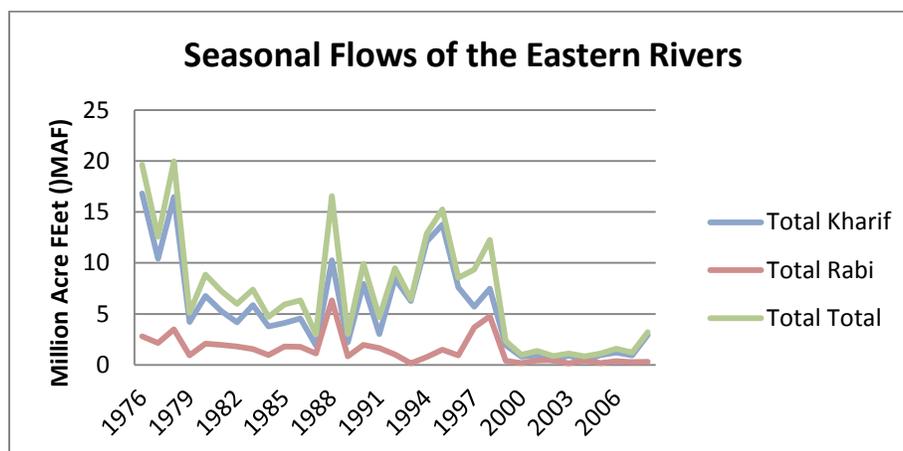


**Figure 6: Annual flows of the Western Rivers**

As illustrated in the chart above, the Indus contributes the lion's share to the flow of the Western Rivers – about an average of 65% (or almost 90 MAF) over the past 86 years, ranging from a low of 57% in 1957 to a high of 72% in 1960. The Jhelum and the Chenab respectively contribute an average of 16% (22.7 MAF) and 19% (25.6 MAF) to the flow of the Western Rivers over the past 86 years. The average contribution of the Indus main stem to the total flow of the Western Rivers for the last ten years of recorded data is 67%, or about 84 MAF. For the Jhelum and the Chenab, the respective average contributions over the last ten years of recorded data are 15% (18.5 MAF) and 18% (23 MAF).

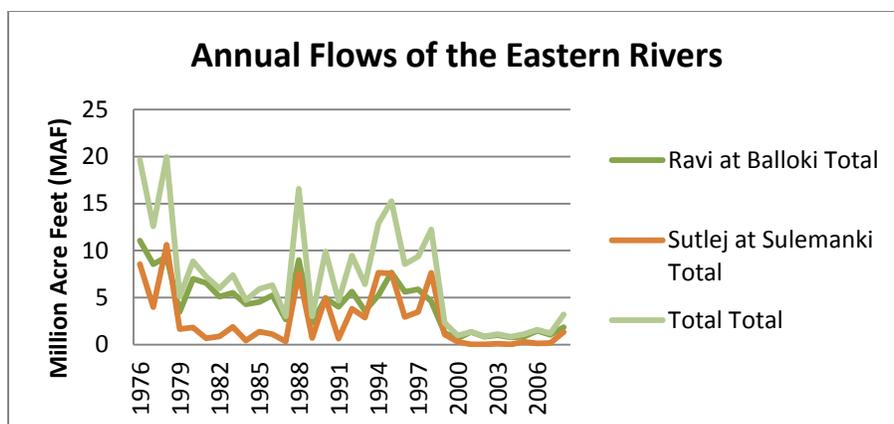
An average of about 138 MAF flows annually into Pakistan in the Western Rivers, and that the bulk of this flow is delivered in the summer time and through the main stem Indus River. The charts below present similar information for the Eastern Rivers, taking measurements from rim station at Balloki for the Ravi River, and at Suleimanke for the Sutlej-Beas (Beas flows into the Sutlej River before the combined stream enters Pakistan). Although the rights to the flows of the Eastern Rivers are allocated to India as per the Indus Waters Treaty of 1960 (discussed in more detail below), it is still important to note the recorded flows on these rivers to ascertain the

physical water supply in Pakistan. The data for the Eastern Rivers is from the 32 year period from July 1976 to August 2008, and is also from the Handbook of Water Statistics of Pakistan.



**Figure 7: Seasonal flows of the Eastern Rivers**

Similar to the pattern for the Western Rivers, most of the water flowing in the Eastern Rivers flows in the summer, or Kharif, season. An average of 7 MAF flows annually from the Eastern Rivers into Pakistan. However, a distinct drop in the amount of water flowing into Pakistan from the Eastern Rivers since 1999 should be noted. For the last ten years of recorded data, only slightly more than 2 MAF have flowed in to Pakistan from the Eastern Rivers. The chart below displays the water in the streams of the Ravi and the Sutlej-Beas separately. The chart clearly shows that in most years more water flows into Pakistan through the Ravi than the Sutlej-Beas.



**Figure 8: Annual flows of the Eastern Rivers**

Surface water supply is supplemented by another important source. Below the rim of the Himalayas, the northern edge of the transborder Indo-Gangetic plains, lies one of the largest freshwater aquifers in the world, spanning about 15 million acres of subsurface area. Although farmers now depend on groundwater to supply about 40% of their irrigation water demands, the ultimate source for much of this groundwater is recharge from surface water that has leaked from canals. Rates of groundwater exploitation have increased rapidly in the past several decades, especially in Pakistani and Indian Punjab, and some areas are mining aquifers beyond their capacity for natural replenishment (Shah 2008; Briscoe and Qamar 2006). Currently, replenishable groundwater resources in Pakistan are estimated at 63 cubic km (51 MAF) (Leghari et al. 2012, p. 1065). The table below takes the average surface flows of the past ten years and the estimated replenishable groundwater supply as a guide to expected water availability in the years to come. Rainfall is not included to avoid double-counting. The estimate below should therefore be considered conservative.

| Source | MAF |
|--------|-----|
|--------|-----|

|                                  |       |
|----------------------------------|-------|
| Western Rivers (86 year average) | 137.8 |
| Eastern Rivers (32 year average) | 7     |
| Replenishable Groundwater        | 51    |
| Total                            | 178.5 |

**Table 2: Estimated Annual Water Supply in Pakistan**

Recent tree-ring reconstruction research in the Upper Indus Basin area (around Swat, Pakistan) presents a deeper temporal perspective on the annual variability of flows in main-stem Indus (as distinct from the entire Indus River System, which is the Indus plus its tributaries). Tree-ring reconstructions are useful for the study of inter-annual variability of river flows. This is because they permit the construction of an average figure for flows over a much longer temporal scale, allowing one to evaluate with greater certainty whether an observed deviation is statistically aberrant or not. Cook et al. (2013) examine tree-ring data from several tree species near the Partab Bridge gauging station, selecting the actual recorded flows from 1975-2004 as a calibration period. The streamflows they reconstruct are for the 556 year period between 1452 and 2008. It does not make sense to compare Cook et al.'s numbers with the recorded flows I have already presented, since they refer only to flows of the Indus main-stem. Nevertheless, the results of the tree-ring reconstruction are presented here in the spirit of making the latest data available. What is relevant for our purposes is not the level of discharge, as this chart only represents a fraction of the total flow of the Indus River System, but the annual variation around the mean flow.

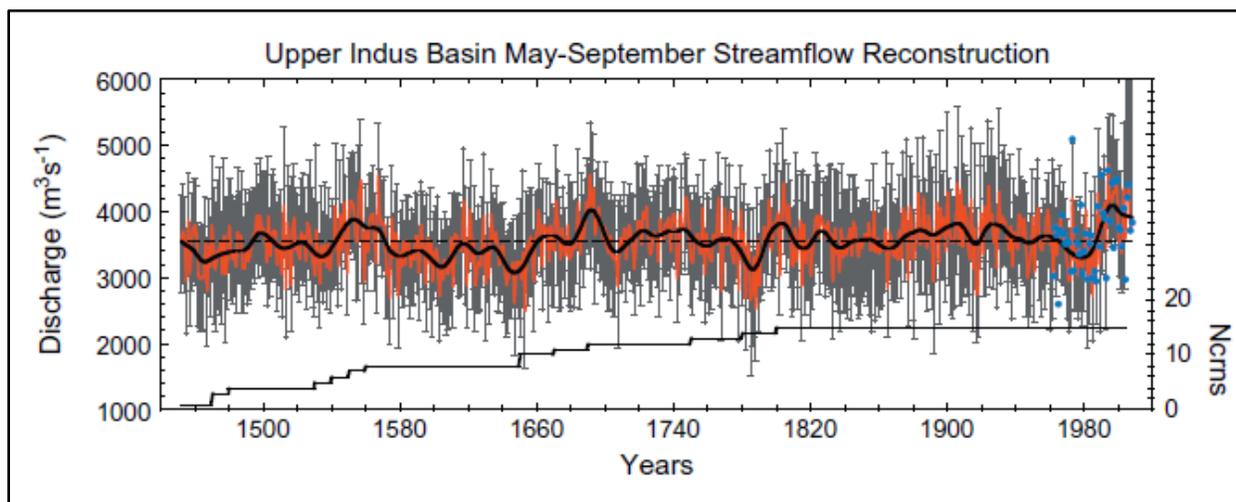


Figure 9: Upper Indus Basin Streamflow Reconstruction from Cook et al. 2013, p. 7

Cook et al. make a critical observation about long periods of sustained low flow on the Indus main-stem. For example, flow during the 112 year period (1572-1683) is on average 8% lower, and during a smaller 27 year period (1637-1663) the flow is on average 11% lower, than the 556 year average. The authors warn “should either of these low-flow periods repeat in the future, the resulting cumulative deficit could seriously reduce Pakistan’s capacity for irrigation and hydroelectric power generation provided by the Tarbela Reservoir and Dam,” (Cook et al. 2013, p.9). It is important to note that both of these low-flow periods occurred before human industrial activity could have had anthropogenic impacts on climatic change.

In addition to the traditional water sources considered above, reused wastewater is increasingly used as a source of water for agricultural production in Pakistan. Pakistan annually produces 3.76 MAF of wastewater, largely from the municipal and industrial sectors (Ministry of Water and Power 2003, p. 4). Wastewater has become a source of water for farmers living on the peripheries of large urban centers. A survey conducted by the International Water Management

Institute found that 80% of all communities with more than 10,000 inhabitants reported some use of wastewater for irrigation. According to the reported results of this survey, 19,250 households across the nation are using wastewater to irrigate 32,500 hectares of land. Wastewater is primarily used for growing vegetables, which have short intervals between application of irrigation water and consumption (unlike other major crops like wheat, cotton or sugar). If we assume that all or most of the crops irrigated by wastewater are vegetables, then more than a quarter of Pakistan's vegetables are grown using wastewater irrigation (Ensink 2004a, 2004b).

Although wastewater irrigation is a growing phenomenon around the world, with a reported 200 million farmers using it to water their crops (Weckenbrock et al. 2011, p. 523), there are concerns that it could lead to health and crop productivity issues. While reusing wastewater evokes many reactions, visceral disgust being one of them, studies from different contexts argue that water users are well aware of the risks they are taking, and their reactions to wastewater are reasonable. Indeed, Weckenbrock et al. (2011) argue that attempts to restrict wastewater use in Pakistan are likely to be counter-productive and farmers already use wastewater in a way that minimizes costs and health risks. The future of this resource, which is the only source of water that increases with increased consumption of water, is still in question in Pakistan. But as water becomes increasingly physically scarce, the reuse of treated wastewater for irrigation purposes might gain in feasibility as a water management strategy.

The total amount of water available in the Indus system depends ultimately on levels of precipitation, but the timing of the availability of this precipitation depends on other factors – such as the amount of precipitation that is captured by glaciers in the winter months and how much is released as melt water in the summer months. Although glaciers cover only 20,324 square km, or 1.78% of the total area of the Indus River System basin (Kaser et al. 2010, p.

20226), they serve an important function in storing water during the winter months and releasing it in the summer. This dependence on the regulative aspects of glaciers is shared by the Indus basin and other arid regions (Kaser et al. 2010). While scientists agree on the crucial contribution of glacier melt water in the Indus, the question of what we can expect from this source of water in the context of global climate change is a subject of debate. Some analysts argue that deglaciation in the western Himalayas and the Karakoram Mountains in the north of Pakistan has already started, and the eventual outcome will be reduced river runoff (Briscoe and Qamar 2006, p.27). Analysts also argue that before average annual river runoff decreases, however, there might be a period of increased peak flooding in the summer months, which could be interpreted as both hazard and opportunity (Immerzeel et al. 2010; Akhtar et al. 2008). However, as Archer et al. point out (2010, p. 1674), studies that predict deglaciation in the Indus Basin make two questionable assumptions; first, that rising temperatures that cause increased glacial melt is the primary factor effecting water availability, and second, that temperatures in the upper Indus will rise in line with model-based climate projections (Cogley 2012).

The Indus basin receives an average of 405 mm (17.9 in) of mean annual precipitation, which, for the most part, ultimately either percolates to the aquifer or runs to the sea as surface runoff. Rainfall in the Indus basin is highly concentrated temporally, falling largely in monsoon summer months. There is less controversy over how climate affects monsoonal patterns than over glacial melt, but this is likely because there is not enough data to run Global Circulation Models to account for regional variation, nor are monsoonal dynamics understood well enough at this point to model them. Christensen et al. (2007), writing for the Working Group of the Intergovernmental Panel on Climate Change, forecast an increase in the number of rainy days in South Asia, as well as an increase in the number of extreme events as a result of climate change.

More precipitation seems like an antidote to the threat of water scarcity, but it might not have the same implications for water security. More extreme precipitation events could lead to more severe hazards in Pakistan (Planning Commission of Pakistan 2010; Briscoe and Qamar 2006). Indeed, while much of the water in the Indus comes from glacial melt, the contributions of rainfall are more intensely concentrated into a shorter period of time. This leads to the danger of flooding. Interannual variability in the monsoon, even if it means more rainfall some years, is also the chronic scourge of farmers in South Asia, especially in the arid northwest (Hewitt 1983). Others, however, stress that at this point we do not have enough regional information to meaningfully forecast monsoonal changes in Pakistan (Archer et al. 2010). While the impacts of climate change on water resources will be most significant and visible in the way climate interacts with glacial melt and monsoonal patterns, other sources of water supply, such as groundwater, will also be impacted.

After ascertaining annual expected supply of water in Pakistan based on the latest data available, a consideration of aggregate demand is necessary to evaluate water scarcity and security. Average total water withdrawals in Pakistan sum to 176.5 cubic kilometers (143.1 MAF). 71%, or 125.5 cubic kilometers (101.8 MAF) of withdrawals are from surface water, and 29%, or 51 cubic kilometers (41.3 MAF) are from groundwater. Withdrawals from surface water account for 73% of the total surface water available, and withdrawals from groundwater account for 83% of total replenishable ground water available (Laghari et al. 2012, p. 1066; Sharma et al. 2010, p. 496).

Pakistan is often categorized as a “hydraulic economy” (Briscoe and Qamar 2006; Ali 1988), because of its vast economic dependence on irrigated agriculture, which accounts for a quarter of

the country's GDP and directly or indirectly provides 60% of the population with their livelihood. The table below illustrates the dominance of irrigated agriculture in overall water demand in Pakistan.

| <b>Sector</b>          | <b>Water Use<br/>MAF</b> | <b>Percent of<br/>Total Use</b> |
|------------------------|--------------------------|---------------------------------|
| Irrigation             | 109.84 <sup>5</sup>      | 95.5%                           |
| Domestic               | 4.2                      | 3.5%                            |
| Industrial             | 1.1                      | 1%                              |
| <b>Total Water Use</b> | <b>114.94</b>            | <b>100%</b>                     |
| “Escaped” to the sea   | 38.01                    | 33.1%                           |
| System Losses          | 9.9                      | 8.6%                            |

**Table 3: Annual Sectoral Composition of Water Demand in Pakistan (Ministry of Water and Power 2003).**

### Relative scarcity, security and development

The data on physical water supply and demand in Pakistan can be interpreted in several ways. At first glance, it seems hard to understand why water is considered scarce. After all, a large amount, 33.1% on average, escapes to the sea (Figure 5). This “escapage” to the sea peaks in the summer seasons, when the rivers swell with monsoon rains and glacier melt, or during flooding events (Mustafa and Wrathall 2011). Many in Pakistan have interpreted this to mean that the real water issue is one of storage. Indeed, there is a very vocal pro-dam lobby in Pakistan, especially amongst “water experts” with training as engineers, whether they have associations with the

<sup>5</sup> This figure includes 6 MAF outside Indus Basin, and 41.6 MAF from groundwater

Pakistani bureaucracy or not (e.g., Malik 2011; Briscoe and Qamar 2006). This proposition that increased storage capacity is the way out of “water crisis” is part of a very important debate that polarizes opinion across regions in Pakistan; I return to this topic later in the chapter. For now it is important to note that this proposed solution is focused on effectively increasing available supply by controlling its variation over time.

Another common response to the data on water supply and demand is to put it in the context of population growth. The most likely increase in future demand for water in Pakistan is going to come from cities. Population growth in Pakistan has been very high, averaging an annual rate of 2.61% from 1961-2011. Most writing on water scarcity and water policy in general in Pakistan begins with the sobering fact that the per capita availability of water in Pakistan has decreased from 5,260 cubic meters in 1951 to about roughly 1,040 cubic meters in 2010 (Government of Pakistan 2005). This is a decline of over 400%. It seems self-evident that “rapid population growth” will usher Pakistan into an “era of absolute water scarcity,” (Briscoe and Qamar 2006, p. 3). The connection between declining water availability and the existential devastation of Pakistan is proclaimed, but not dwelt on, in most analyses. This unspoken connection between population, scarcity, and limited water supplies animates the dominant discourses discussed at the outset of the chapter. It is therefore important to conceptually clarify and empirically verify how a decline in per capita water availability leads to crisis.

Population-based analyses tend to rely on a variety of Malthusian or post-Malthusian assumptions. The basic assumption is that population growth will outstrip the capacity of society to produce enough food for everyone. A limit, an ecological “carrying capacity” of a given region, will inevitably be reached, after which population must decrease for society to be sustainable. Pakistan, as will be recalled, is dependent on irrigated agriculture for virtually all of

its food, and irrigation makes up the bulk of water extracted from the Indus River. Thus the argument about population-fueled water scarcity leading to national crisis depends on the following sequence: increased population rates result in decreased per capita water availability, this results in decreased food production per capita, which could possibly result in starvation, economic collapse, and political conflict. A close look at the data, however, shows that this sequence is not empirically viable.

In fact, there is no clear relation between growing population rates, per capita water availability, and food production. Since the 1960s, growth in agricultural production has on average outpaced population growth. As mentioned above, Pakistan had an average annual population growth rate of 2.61% from 1961-2011. But an average rate of only 1.81% from 2001-2011 indicates a slowing population growth rate. More importantly, total crop production grew by an annual average growth rate of 3.09% for roughly the same time period, 1962-2010 (World Bank Statistics Database). Lest this be mistaken as growth in the production of inedible cash crops, the food production index during the same time period grew at an ever larger average annual rate of 3.43%. Per capita caloric intake has increased from 1,812 calories per person in 1961-1963 to 2,340 calories per person in 2001-2003 (Khan 2006, p. 16). This data suggests that the ability of Pakistan to feed itself is not an issue of the total amount of food produced. It's not even an issue of food available per capita. But as of 2008, however, 25% of the country's population was estimated to be undernourished. Clearly, something is amiss. If absolute scarcity of food or water in the face of a growing population is not the issue, then what is?

The issue, as political ecologists and other critics of scarcity discourses have long held, lies in the politics of distribution, allocation and access, not aggregate supply and demand (Harvey 1974; Watts 1983; Ribot and Peluso 2003; Robbins 2003; Mehta 2010). There is more

than enough to go around – but the social and material infrastructure that distributes food and water across society is exclusionary. The question is not how to increase the supply (or decrease the demand) of water; the question is how to share it. The data on social classes in Pakistan reveals much about the distribution of resources in Pakistani society. For the task at hand, we can reduce the complex idea of “class” to differences in access to income. In 2008, the richest 10% of the country’s population held 56% of the national income share, while the poorest 20% held less than 10% of the national income share. This is virtually unchanged from the situation 20 years earlier (World Bank Statistics Database). To speak of deprivation stemming from absolute water scarcity in Pakistan without taking into account the extreme social (and geographical) differentiation in the Pakistani population is to abstract from how people on the ground actually access the goods they need and want.

Amartya Sen, winner of the 1998 Nobel Memorial Prize for Economic Sciences, has articulated an influential alternative to studies of absolute scarcity that has come to be called the “entitlements framework”. Sen’s argument, in its original formulation, is that “famines can arise from causes other than food availability decline,” (Sen 1977, p. 34). Sen explains that in a market economy, most if not all of the goods, including good necessary for survival, are attained via market exchange. In this situation, it is crucial to look at the capacity of people to engage in useful exchange, or otherwise secure the means of their social reproduction. This capability is not always related to the absolute supply of a desired good; it has as much to with factors such as shifting terms of exchange (if what you produce suddenly loses value and thereby reduces your ability to exchange it for other goods), proximity to essential infrastructure, interventions of the state, and discriminatory exclusion based on factors such as age, gender, nationality, caste, class or race. Sen’s approach productively takes the focus away from physical scarcity, and introduces

an alternate vocabulary to discuss deprivation: social choice, entitlement, capabilities and freedom. Sen, however, has been criticized for his use of the reductive tools of neoclassical economics, which embody an untenable methodological individualism (Fine 2010).

Sen is a relatively recent participant in a long intellectual tradition that challenges dominant scarcity discourses. Karl Marx was an early and virulent critic of Malthus' linking of population growth, absolute physical scarcity and crisis (Harvey 1974; Harvey 2007[1984]). The crux of Marx's critique was not that population growth is irrelevant, but that population growth could not be considered a variable exogenous to social structures of production and distribution. He therefore preferred the concept of "relative surplus population" to "overpopulation" to emphasize that populations were "surplus" only relative to the demands of capitalist social relations. Whether this is a useful or meaningful concept to explain destitution and deprivation is and should be open for debate and elaboration (see Li 2010).

In this chapter I engage Marx's analytical strategy of contextualizing human-environment relations within the social, economic, political and cultural structures that animate them. The underlying ontological assumption is that individual entities do not precede their interactions and relations with each other. In fact, since nothing exists in isolation and everything has an impact on everything else (to varying degrees, of course) individual entities can only be understood through their relations with other entities (Harvey 1997). This view on studying the world is in contrast with the "methodological individualism" used by Sen and others, which takes the atomistic and autonomous human as the starting place of analysis. A mode of analysis that embraces the "relationality" of entities can be combined with a materialist emphasis on social reproduction and an appreciation for the capability of discursive structure to produce social effects. This provides the basis of a sensitive and rigorous approach to develop different ways of

understanding water scarcity. The imperative to contextualize in this mode of inquiry is two-fold; historical-geographic and political economic.

In terms of political economy, we must stay attuned to how a given society reproduces the social relations that characterize it over time. This process of social reproduction cannot and should not be reduced to how biophysical needs like nutrition are satisfied. After all, maintaining a system of social relations over generations is hard to imagine without social institutions like family and faith, or political ideas like legitimate rule. But the material conditions of reproduction hold a special place in political economic analysis, because the reproduction of virtually every kind of society is propelled by its material conditions (Harvey 2012).

Historically and geographically, the conditions that make events possible must be teased out from an examination of the past. It is illogical to think of current-day society as essentially unchanging over time. Events cannot be properly historicized without a simultaneous historicization of the dominant categories used to explain or describe them. Conceptual categories, just like other entities, have meaning only in relation to the social context in which they are operating. Thus, the discourse of Malthusian scarcity has long been criticized as a thinly disguised way for elites to place the blame for environmental degradation on poor people (Harvey 1974; Robbins 2003; Mehta 2010). Discourses that center on the “security” threats of environmental degradation are likewise criticized as a quick way to apply a military logic to what are often social and political issues (Dalby 2009). In the case of water, we must be careful to not jump to the conclusion that water’s importance to biophysical reproduction means it will always be associated with a discourse of scarcity. Samer Alatur (2009) argues that water does not necessarily engender a discourse of scarcity; sometimes, because of the social context that

gives water meaning, actors engaged with water generate a discourse of abundance, as in post-World War II Israel.

In irrigation-dependent agrarian Pakistan and northwest India, where millions of small farmers toil in their nations' respective breadbaskets, water scarcity is closely linked to water security, which is in turn inextricable from food security. The Indus is the lifeblood of the region, a flowing oasis in an otherwise dusty desert, and the distribution of its waters rightly arouses passions and interest. The analyses of water security and scarcity discussed above usually fall in to what political geographer John Agnew (1994) has called the "territorial trap" — mistaking borders on maps for boxes that neatly partition and contain social and economic dynamics within the recognized territory of states. But, like the Indus River, social and political-economic relationships can and do transgress borders, even while being shaped by them. A second, not unrelated, trait of water security (or water security inspired literature) is that it falls into what I term the hydrologic trap - treating water as something separate from the land through which it flows (Linton 2010). A river is not just water; it is the dynamic relationship between water and the land it drains. How does our understanding of the Indus waters dispute change if we steer clear of these territorial and hydrologic traps?

The most striking effect of looking at the distribution of Indus waters sans a state-centric lens is that the issue becomes one not of state rivalry, but of class and access to land. The focus of this dissertation is not food security. However, at the risk of distraction from my main focus, it is worthwhile to make a brief digression to consider the first steps in a research agenda in this direction if it were. If we keep in mind that the vast majority of Indus waters are used for irrigation, it becomes clear that the distributional tussle is between the landed and the landless on either side of the border, not Pakistani and Indian across the border. At least since the Green

Revolution, a technological transformation of agriculture that swept across North India and Pakistan in the 1960s, the rates of landlessness and farm consolidation have been skyrocketing. The seed technology introduced by the Green Revolution to the Indus plains dramatically increased the amount of water needed to produce crops, and in this part of South Asia access to water is closely linked with ownership of land.

Currently, about half of the rural households in Pakistan are landless, while the top five percent of households own more than a third of the cultivated area (Rahman 2012). A recent article on smallholder agriculture in Indian Punjab tells a similar story: about 200,000 small farmers have sold or leased their land to larger farms and have joined the ranks of landless agricultural laborers, migrated to cities, or even taken the desperate recourse of committing suicide (Singh 2012). In other words, the people who need water the most are unable to get it because of uneven property and class relationships. Clearly, this is a very complex issue, and I have not even touched the problems faced by the downstream states of Sindh (in Pakistan), Haryana and Rajasthan (in India), or the proverbial “elephant in the room”, Kashmir, through which the majority of Indus waters pass before reaching Pakistan. But if the Indus dispute matters because of its implications for food security, analyzing the situation in terms of Pakistan versus India is simply insufficient.

As decades of social science research from around the world teaches us (e.g.; Blaike 1985; Ferguson 1994, Mitchell 2002), throwing technology or (ostensibly) apolitical policy solutions at a problem can actually increase insecurity and vulnerability among the poorest. I do not reject water security analyses in their totality: technology, policy and diplomacy are of course very important tools towards achieving some desirable ends. But even the most inspired solution will fall flat on its face, and possibly exacerbate the situation, if our eyes are closed to

political economy, geography and history, and thereby fall prey to the territorial and hydrologic traps.

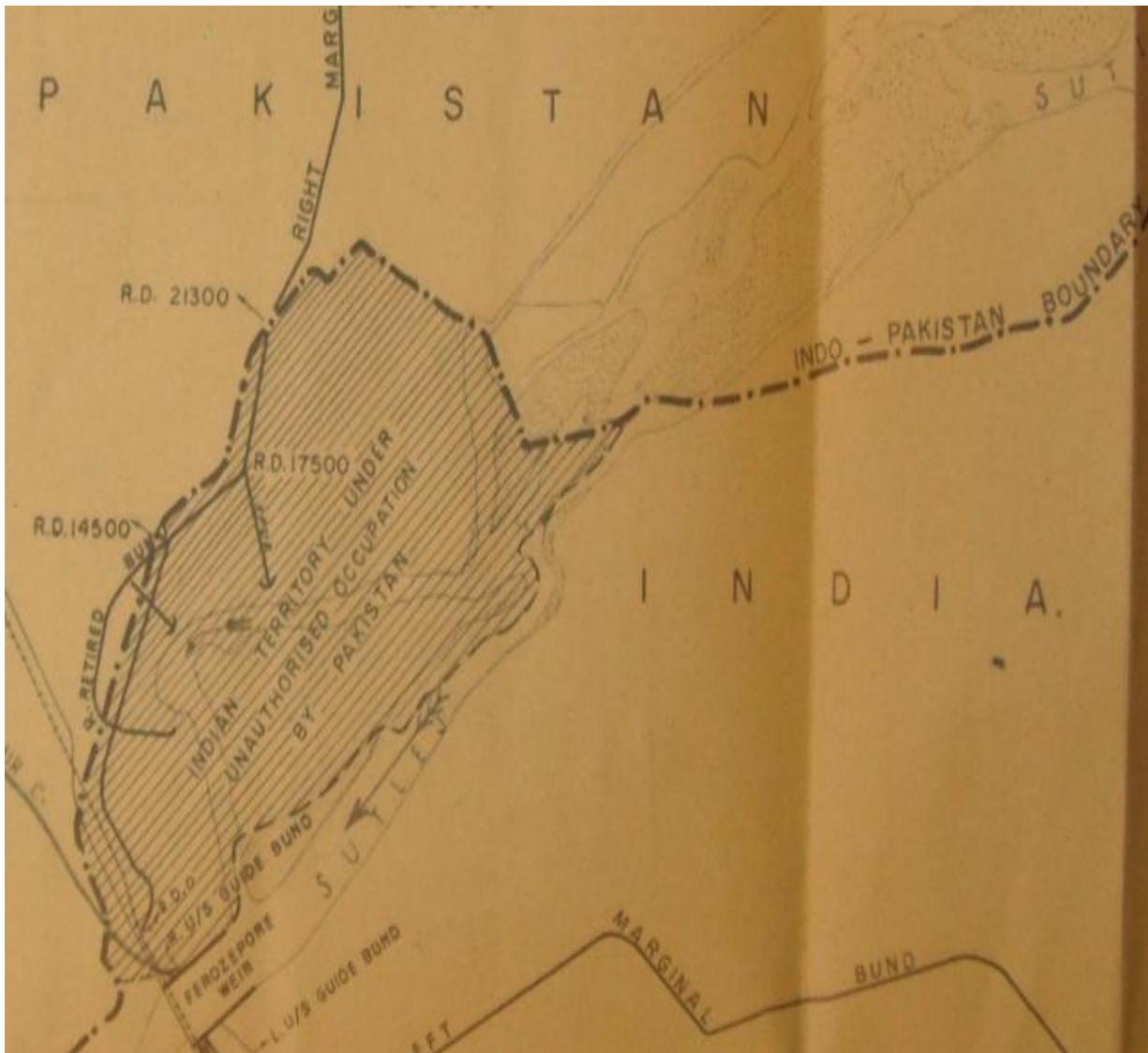
This chapter has reviewed data regarding water supply and demand in Pakistan. Contrary to the construction of a “water crisis” that centers around the infrastructure failure of the Indus “machine”, I concluded that the danger of material deprivation on the basis of aggregate demand outstripping the provisioning capacity of natural resources, is overstated. This is not, however, to downplay the gross inequities in access to the means of subsistence in Pakistan – anyone who has walked for even one hour in any city or village of Pakistan can attest to this.

My conclusion disrupts the security discourse that analyzes the geopolitics of the Indus in Pakistan as a simple case of infrastructure failure. The alternative view of water geopolitics I take in this dissertation has been sketched in the Introduction, and will continue to be fleshed out in the chapters that follow. This argument against predominant understandings of water scarcity lays the ground for my analysis of the dialectic of hydraulic regionalism and technocratic developmentalism as they undergird the geopolitics of infrastructure on the Indus Rivers. In the next chapter, I draw upon archival sources to discuss the politics of technocratic discourses in the context of the Indus Waters Treaty negotiations in the early 1950s.

## CHAPTER 2: NEGOTIATING TECHNOCRATIC REPRESENTATIONS OF THE INDUS

One night in 1952, several people cut the banks of a canal distributary in the dusty plains of Punjab. Officially, farms in Punjab receive water only from smaller watercourses (called mogas), not directly from the distributary canal. Making cuts in a canal distributary, however, is a common enough practice, especially by powerful people who are not likely to face legal consequences for their actions, in the irrigated tracts of Punjab (Chambers 1988; Mustafa 2013). The difference this fall night, however, was that the canal was cut was in foreign territory. The people who had cut the canal were Pakistani nationals. The water that was now watering Pakistani fields would have gone onto Indian farms if the canal were not cut – or so the Indian government claimed in a note of protest sent to the Pakistani government several months later ([Pakistani bureaucrat], 1953, June 15).

In the early 1950s, as the new states of India and especially Pakistan floundered to define not only their new national identity (Zamindar 2010), but also to demarcate their national territory, the question of territory rose to the forefront of Indus dispute negotiations. The small block of territory on the Sutlej River right before it finally enters in to Pakistani territory (see Figure 10) was at the center of heated disputes between Indian and Pakistani officials, and soldiers. These territorial disputes interrupted the technocratic developmentalist urge to overcome the politics of hydraulic regionalism by generating and sharing of water flow data.



**Figure 10: Indian map, shaded area showing "territory under unauthorized occupation" on the Sutlej River. Note that Pakistan is actually upstream to India in this area (Foreign Office New Delhi, March 1960).**

In this chapter, I draw on the negotiation record of the Indus Waters Treaty, maintained by the World Bank in Washington D.C. to argue that technocrats tried in vain to simplify the Indus by abstracting from its salient geopolitical and political aspects. Technocratic elites attempted to represent the Indus dispute as a problem of engineering, finance and inadequate levels of technical communication between Pakistan and India. However the nature of the Indus

as an international river produced these geopolitical dynamic that disrupted technocratic representations.

I am not saying that rivers are inherently political, or are always political in the same way (Alatout 2009). There are, I'm sure, many rivers in the world that cross borders without exciting the slightest political passion. My argument is that the Indus is a political river, although powerful actors have for over a century striven to represent it otherwise. Despite the assumptions of many scientists and experts, there is a complex relationship between the environment on the one hand, and the stories we tell *about the* environment on the other. Furthermore, these environmental knowledges and narratives vary according to the social position of the person producing them (Robbins 2000b; Alatout 2009, 2011; Harris 2011).

James C. Scott's book *Seeing Like a State* (1999) raises questions about environmental knowledge and state power in a provocative and influential way. Scott's elegant thesis is that the "high modernist state" comes to represent and know the world in a very simplified way by classifying, standardizing, and quantifying reality. The most important feature of this "state epistemology" is that it necessarily engages in the task of abstracting bits of data from the complex workings of the world. Scott argues that this way of knowing cannot hope to capture the complexity and dynamism of the socio-natural world. His book is a charge-sheet against the high modernist state that details the history of monstrosities that state schemes gone awry have inflicted, from Soviet collectivization to urban planning in Brasilia. Scott argues for greater attention to the grounded, local knowledges that people form in and through their everyday lives.

Scott's thesis has generated much debate in the political ecology literature. For example, ethnographers have complicated Scott's picture of a monolithic state impinging upon helpless human communities. These scholars see state knowledge being produced in the interactions of

bureaucrats with producers, nature, science, and each other. In other words, the way the state produces representations should be seen not as autonomous and external to society, but in contrast as grounded in state-society interactions. For example, data from respondents in Rajasthan demonstrates that the state is perceived as a “...fractured knowledge reproduction machine that participates in epistemological alliances on the ground...” composed of emerging and “new communities...entering the state apparatus,” (Robbins 2000b, p. 142; see also Robbins 1998). Rather than viewing environmental knowledges as singular and monolithic, it is more appropriate to view stories and knowledge about the environment as a field of contest, in which certain conceptions of the world are jostling for dominance in a social field marked by differentials in social power and status (Wainwright 2010; Loftus 2012).

Scott’s thesis has also influenced an emerging perspective called “critical hydro-politics” that applies the insights of diverse and competing environmental knowledges to the study of international rivers. Critical hydro-politics emerges from a subfield of political geography initiated in the 1990s called critical geopolitics. The label of “critical” in this context denotes attention to the ways in which geopolitical discourses are active agents in the production of geopolitical outcomes, not mere mirrors of reality (O’Tuathail 1996; Dalby 1999). Accounts of international rivers have focused on the geopolitical effects of expert and state representations of international rivers (Bakker 1999; Sneddon and Fox 2006, 2012; Alatout 2007, 2009) as well as the complex multi-scalar (Mustafa 2007; Harris and Alatout 2010; Norman et al. 2012) and multi-national (Pritchard 2012; Sneddon 2012) geographies of river development and conflict. My concern in this chapter is with the geopolitical nature of expert representations of international rivers.

A crucial insight from hydro-political research, produced out of analytical engagement with the Mekong River in Southeast Asia, is that the technocratic concept of managing a river within the scalar unit of the watershed is socially constructed and geopolitically potent (Alatout 2009, 2011). Bakker (1999) argues that the discursive framing of the Mekong as an untapped resource is conducive to re-scaling of resource exploitation in a way that benefits private capital and global markets, as opposed to local uses (see also Glassman 2010). Harris and Alatout (2010) focus less on the influence of capitalism in hydro-politics, and more on the way state experts discursively frame the politics of water. They demonstrate that the expert construction of rivers in Turkey and Israel serve nationalist purposes of concentrating power in the hands of agents of the central state. Similarly, Alatout (2007, 2009) examines how the legal and scientific construction of water “abundance” and “scarcity” enabled the colonization and territorial activities of the Israeli state. Sneddon and Fox (2006, 2012) argue that the discursive construction of the Mekong watershed by water managers is formed not in a vacuum, but rather at a politically fraught disjuncture of geopolitics and hydrology. The link between the discursive work of experts and the centralization of state power is an important one to come out of this research.

The upshot of this literature is that the watershed is not a “natural” unit for the management of a river, nor is it simply a neutral and objective way to manage the river for the good of everyone. On the contrary, the unit of the watershed does specific work for the interests of capital and state that do not necessarily sit well with other geopolitical and biophysical forces. Echoing the results of this conversation, I argue that this is a recurring theme in the hydro-politics of the Indus River over the past century at both the international and national scales. In

this chapter I explore how engineers and technocrats have sought to develop an apolitical and simplified knowledge of the Indus that undermines geopolitical and territorial tensions.

### Negotiating the Indus

The Indus negotiations were initially aimed at developing the Indus Basin “as a unit”, meaning in an integrated and joint way. This had been, in practice, the way the British governed the Indus Basin in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries. This desire is clearly expressed by the prominent administrator David Lilienthal, in a 1951 article *Collier’s* magazine. Lilienthal’s article was the catalyst for the Bank to step in and mediate the dispute between Pakistan and India.

I suggest that this unnecessary controversy can be solved by common sense and engineering, to the benefit of all the people who live by the waters of the Indus River...Pakistan’s position, that she has a legal right to the uninterrupted flow of water, a right to a share of waters stored by India’s dam upstream – is quite inadequate for this great issue, however sound her legal claim might be if the dispute were between two farmers asserting their private rights. The International Court of Justice might decide the legal issue in Pakistan’s favor if India agreed to submit it...*This is not a religious or political problem, but a feasible engineering and business problem for which there is plenty of precedent and relevant experience* (Lilienthal 1951, p. 58, emphasis added).

Lilienthal, speaking as a practical man, was averse to the idea of bringing in “politics” to the Indus dispute. Indeed, numerous official documents from the Bank as well as from Pakistan and India, and especially in the years before 1954, speak of the need to keep the negotiations on the “level of engineering” as opposed to the “level of politics.” By 1954, it had become clear to the Bank that a purely “engineering” solution could not be reached without some sort of change in the political assumptions underlying the negotiations. There are numerous complaints from World Bank officers, and especially General Wheeler, the Bank’s most senior engineering representative, about the inability of the Pakistani and Indian engineers to make any progress on

the negotiations because of the meddling of politicians. At least in the position of the World Bank, the capabilities of Indian and Pakistani engineers or the availability of technical data could not be blamed for the lack of progress in the negotiations. The following excerpt from the 1954 Proposal makes this clear:

The inability to agree in the Working Party has *not been due to technical difficulties or inability to devise appropriate engineering works* and measures to make the most effective use of the waters. If this were the whole problem, a solution would doubtless have been found before now. The available technical resources are impressive. *The proficiency of the Indian and Pakistani engineers in canal irrigation techniques is unsurpassed, and perhaps unequalled, anywhere in the world. Abundant technical data is at hand.* It is doubtful whether such *complete recorded flow data* as exists for the Indus system of rivers and canals could be duplicated for any comparable river system in any other country (World Bank 1954, February 5).

As the italicized portions of the above text show, in the judgment of the World Bank the completeness, quality, and availability of the water flow data were not in question. What is left unsaid is that it was *political* issues and sensitivities that could not be overcome. It seems amazing that anyone could have thought Indian-Pakistan relations could be practically considered without “politics” or its dreaded cousin “passion”. But for the technocrats, the engineers and development experts who negotiated the treaty, the road to this realization was long and hard.

Bank personnel and Pakistani and Indian delegates did not stop at merely expressing their desire that the negotiations be conducted at a non-political level. Indeed, technocrats exerted much effort on managing and controlling representations of the Indus dispute and the Indus River itself. But representations of the Indus were anything but apolitical. Coverage of the Indus by the news media, government propaganda, and even water flow data escaped the control of technocrats. The first phase of the negotiations, from 1952-1954 reveal the efforts of technocrats

in this area. In particular, the question of how to manage the news media preoccupied Bank officers as well as the representatives of India and Pakistan.

### The News Media

On May 17, 1952, In Washington D.C., representatives from Pakistan, India, and the World Bank all sat around one table for the first time. The Engineers' Meeting, as it was called, began the formal negotiation process for the India/Pakistan Indus dispute. The engineers were tasked with completing "a comprehensive plan for the optimum development of the water resources of the Indus River system considered as a functional unit" (Wheeler 1952, January 11a). General Wheeler was the chief engineer acting on behalf of the World Bank at the meeting, and he made energetic inquiries to the British government (Wheeler 1952, October 30), the Colorado River Commission (Wheeler 1952, June 18), and a private British engineering consulting firm (Wheeler 1952, April 28) to acquire any data or expertise they might have on the Indus River. Indeed, the most substantive outcome of the meeting was that a plan was put forward for Pakistan and India to continue exchanging data on river flows. The Working Party also planned the next series of meetings to take place in Karachi and Delhi towards the end of 1952. The most interesting aspect of the Engineers' Meeting, however, is not what was decided regarding the substance of the Indus negotiations, but how to control the representation of the meetings and the Indus River dispute itself in the months and weeks leading up to the May meeting. Many, if not most, of the records in the archives from this period touch upon how to control and manage the national news media of the United States, India, and Pakistan.

The news media emerges from these records as the very embodiment of the specter of "politicization" of the issue that all participants feared so much. Recall that the whole premise of

the World Bank's involvement in the negotiations, from the 1951 Lilienthal Article down to General Wheeler's opening remarks at the Engineers' Meeting was that it was of crucial importance to proceed with the negotiation on a "functional, not political, plane," (Wheeler 1952, January 11b). The records show an acknowledgement by technocrats that representatives of the media held enormous power to sway the outcome of events by virtue of how they represented the issues. Ultimately, however, attempts to control the media floundered.

Most of the exchanges between the Prime Ministers of Pakistan, India and the representatives of the World Bank leading up to the Engineers' Meeting touch on the topic of the media. Specifically, there was an active attempt by all three parties to coordinate the release of information to the media, if possible until after the talks had been concluded, out of "...concern that any publicity might provoke repercussion in India and Pakistan which would have an unfavorable effect on the course of the discussions" (Rucinski 1952, April 3). In an internal Bank memo, reporters to be invited to the eventual press release about the meeting from U.S. newspapers are singled out by name. Interestingly, along with correspondents from major newspapers like the New York Times, the Washington Post and the Baltimore Sun, specific mention is also made of reports from the Journal of Commerce and Banking magazine (World Bank Employee 1952, March 4). Dave Somers, in two messages wired to the Bank headquarters in early March 1952 goes so far as to employ coded language, referring to the Indian government as the "Seminole Chief", the Indus as the "Sawnee", and Collier's Magazine as "Coal Furnishers Magazine" (Lars 1952, March 4). In a revealing cable dated March 16, 1952, written to Eugene Black, President of the World Bank, from a Bank official in Delhi, fears of media-led politicization of the negotiations are spelled out: "Both sides extremely anxious avoid [sic]

publicity at this time stop fear local press clamor which might force engineers take intractable positions at conference stop” (Bengston 1952, March 16).

Ultimately, however, the Bank could not control the flow of information and it became clear that there was a leak. On April 16, and again on April 18, a reporter from the Washington D.C. bureau of Newsweek Magazine called the Director of Bank Public Relations and let it be known that they knew about the upcoming Engineers’ Meeting. The Director persuaded the reporter to not print the news, for the “public good”, but was unsure whether the reporter would actually keep the information to himself. Awareness that the news was already out spurred the Bank to hasten its press release regarding the meeting to coincide with the publication of the next issue of Newsweek, on May 1 (Graves 1952, April 24). The news media, despite the best efforts of the World Bank, had ultimately forced the Bank to speak about the meeting much before it would have preferred to.

Worries over the control of information were not limited to private media outlets, however, and the national governments themselves took a hand in the dissemination of information. Near the end of the month of November, 1952, only weeks before World Bank officials were due to arrive for another meeting in Karachi, Indian Prime Minister Jawaharlal Nehru shot off an angry letter to Somers about a “pamphlet” published and distributed by the Pakistani Embassy in Washington, D.C., which apparently portrayed a biased version of the negotiations involving the Working Party. Nehru felt “so disturbed about this,” according to a memo written by Somers for the World Bank files, “that he would no longer be willing to exert the kind of moderating influence that he has exerted in the past and doubts that it would be acceptable in India, once the existence of this pamphlet is known, even if he would,” (Somers 1953, November 23).

During the winter of 1952-1953, media reports were at the center of a controversy which again threatened to “politicize” the Indus Waters dispute. The Pakistani press reported that India was withholding water from the Sutlej River and especially the Upper Bari Doab Canal before they entered Pakistani territory, and therefore violating the requirement of “status quo” that Black had highlighted in his March 13 letter (Black 1953, February 6). The Pakistani government followed up these reports with a formal request to the World Bank to “intervene” and “investigate” the supposed diminution of Indus water supplies. During the months of December 1952 and January 1953, the Working Party held meetings in Karachi and Delhi, and toured agricultural areas and dam sites in Pakistan and India (Indus Basin Working Party 1952, December 18). General Walker was the engineering representative of the World Bank and was therefore present in the subcontinent during the controversy. He reluctantly made inquiries into the matter, visited the area in Pakistan which was allegedly suffering diminished water supplies, and suffered the “heated discussion” of the Pakistani and Indian engineer-designees over the matter.

Wheeler was torn between keeping the matter strictly on an “engineering level”, or risking politicization by involving politicians and heads of state in the matter. In a clipped wire to Black dated December 18, 1952, Wheeler said that the

“Working Party discussion might be seriously hampered or rendered ineffective by concurrent discussions at President-Prime Minister level. Working Party debates have frequently been terminated by reminders that meetings are entirely on engineering level” (Wheeler 1952, December 18).

The involvement of government officials to investigate and sort out the issue of canal water diminishments, outside the “engineering-level” focus of the Working Party, was an option strongly favored by the Pakistani government (Iliff 1952, December 24).

On their end, Indian officials were not taking the accusations of the Pakistani press and government officials lying down. On January 17, 1953, Nehru made the following statement at the annual meeting of the Congress Party in Hyderabad: “The canal waters issue again should depend for its decision on facts and a correct appreciation of the situation... Meanwhile, entirely false charges are continuously being made in Pakistan, accusing us of having stopped the flow of water through the canals” (quoted in Mehta 1953, January 24). Eugene Black, who was receiving constant updates on the situation from General Wheeler, was at a loss at what to do about the situation. On the one hand, he felt he could not ignore the formal accusation that Pakistan had formulated, as it was intimately related to the success of the ongoing negotiation of the Working Party. And on the other hand, the constant threat of politicization of the affair, and the lack of transparent data, restrained him from making any formal judgment on the matter (Black 1952, December 31).

By the end of January, 1953, though, Wheeler was under the impression that the matter had been put to rest; Pakistani officials had stopped pressing for an inquiry into the matter, and instead insisted that an official procedure be adopted for the exchange and verification of water flow data (Black 1953, January 23). The greater and more transparent exchange of data was a mechanism that Indian and Pakistani officials were to keep discussing for the duration of the negotiation, and indeed, it still features prominently in discussions between the two countries today. I discuss the issue of water data later in this chapter and in the last chapter of this dissertation.

Over the course of the next year, before the next meeting in Washington D.C. in late 1953, the issue of canal water shortages refused to die down. Nehru sent an indignant cable to the Pakistani PM Nizamuddin on February 18, 1953:

...I have been astonished to see an *intensive propaganda being carried on in Pakistan* on the canal waters issue accusing India of deliberately following a policy to cause deep injury to Pakistan by withholding canal waters. Charges have been *made not only in the public press but also by responsible ministers* that we were cutting off canal water supply to Pakistan. While this propaganda has been going on for some time and we have drawn the attention of your Government to it, so far as I know, no official complaint has been made to our Government. Indeed after full enquiry I have found that the complaints referred to in the public press have no substance. There has been no question of our cutting off canal water supply and certain diminution has been due on both sides to local causes like drought...*I now find that the Pakistan Government has issued an official handout on this subject...* it appears that this handout contains statements which are very far removed from facts and makes totally unfounded accusations against India (Nehru 1953, February 18).

Rather than simply talking about the news media, Nehru makes a specific point of highlighting the role of the government in the production of “intensive propaganda” about the Indus. He is particularly indignant to “find that the Pakistan Government has issued an official handout on this subject”. I have focused in the preceding discussion not on the content of media representations, but on the fact that the media was perceived as a threat to the negotiators. I turn now to an analysis of this official government representation of the Indus and the relationship between the state of Pakistan and the Indus. The analysis of the pamphlet will focus on the content of the representation.

#### Government Propaganda: Pakistan’s Pamphlet of 1953

Indeed, Nehru’s suspicions regarding the propaganda efforts of the Pakistani government were not unfounded. On the February 19<sup>th</sup>, 1953, the Pakistani Embassy in Washington D.C. issued the following statement, “for information of editorial writers”:

Pakistan today faces starvation and economic ruin by a process of *slow strangulation at the hands of India*. It is a culmination of a long series of efforts by Delhi for disruption of the [Pakistani] State...today comes an unparalleled threat; starvation of 76 millions by

depriving them of the waters of the Indus Basin by which they live... West Pakistan lives by irrigation. Without the rivers this arid area won from the desert would revert to desert...one of the world's food granaries would dry up and millions starve to death.

The Pakistani Embassy in Washington D.C. did not stop here in its propaganda efforts.

Later that year, on November 1, 1953, the embassy released a pamphlet entitled: "Pakistan: The struggle for irrigation water – and Existence" (Embassy of Pakistan in Washington, D.C. 1953, November 1). This pamphlet is interesting for many reasons, but primarily in the way it represents Pakistan for a U.S. audience. An image of Pakistan is constructed in three major ways; as a Cold War ally of the United States, as a vulnerable and precariously poised downstream state in relation to India and as a long-standing and deep-rooted bastion of democracy and civilization in the Muslim world. This set of representations is geared at associating the Pakistani state with historical and cultural images in the effort to construct Pakistan as primarily a "downstream" territory that is both vulnerable and worthy of protection. The first two representations are geographical, and the last is historical. Let us begin with a discussion of the historical associations the pamphlet attempts to connect to the current condition of the Pakistani state. The following excerpt comes from the introduction of the 20-page pamphlet.

*It [Pakistan] is new, but its roots stretch back over the centuries to the great Moghul Empire, which so nearly unified India under Muslim rule. As was the case then, Pakistan today, under Muslim rule, provides one of the real pillars of democratic strength in the great South Asian areas from Suez to the Pacific – a nation which should be better known and understood in the United States... Many people have doubted whether a nation cemented together mainly by a common religion could ever be viable. They forget, that in reality, Pakistan represents the blossoming in the modern world of an age old culture which last flowered under the Emperor Akbar and his descendants when the colonization of American was only about to start... That culture had produced great art, a new national language, great advances in mathematics, the superb Moghul architecture, and the Taj Mahal universally recognized as the world's most beautiful building. Plainly it is the creative strength of such a culture that is the foundation of Pakistan. Had that*

fundamental [sic] not been there, Pakistan could never have been achieved in the face of the difficulties under which she attained her existence (ibid, p. 5).

A remarkable nationalist historical imagination is at work here. The first thing to note is that the invocation of a grand imperial past, “when the colonization of America was only about to start” is designed to lend permanence and stability to the territorial viability of Pakistan. It must be remembered that at this time, less than a decade after the states of Pakistan and India came into existence, there was still active talk about the re-integration of Pakistan into Indian territory. The second thing to note is the ease with which the political geographic contradiction of Muslim nationalism in South Asia is elided. The geography of the “fundamental culture” of Pakistan, including the building “universally recognized as the world’s most beautiful”, was most decidedly not located in the territory that became Pakistan. Finally, the need to present Pakistan as a bastion of democracy is so overpowering that it can be stated with ease that even under the Mughal Empire of the 17<sup>th</sup> century, Pakistan (which, mind you, did not exist even in a purely utopian imaginary sense until the 1930s) was a “real pillar of democratic strength”. This invocation of Pakistan as a democratic bastion is ironic, because Pakistani’s in 1953 were still several years away from drafting its first constitution, and party-based elections on the basis of universal suffrage would not take place for more than two decades.

The work being done in this introductory part of the pamphlet, before the notion of downstream vulnerability is even broached, is to justify Pakistan as a legitimate nation worth saving in its own right, regardless of its relationship with the U.S. This is, however, attempted through an idiom expected to resonate with an audience in the U.S.; thus the invocation of democracy, justice and civilization. Let us now turn to the geopolitical imaginary of Pakistan, and in particular, the way U.S.-Pakistan relations are represented. Readers may be forgiven if

they suffer some historical *deja vu*; elites in Pakistan have a habit of projecting Pakistan as a frontline territory in U.S. global wars. The excerpts below are taken from various sections of the pamphlet.

Pakistan, an Islamic Democracy, is – a positive force in world affairs – a *bulwark against communism*, - in population, the sixth largest in the world.

*Defense of her [Pakistan's] borders from communism in the north...* necessitated the use of 61.6% of all Pakistan's revenues...for the Defense Services.

*American friendship is respected and valued by the leaders of Pakistan.* Premier Mohammed Ali has repeatedly expressed his high opinion of the U.S.A. and its people, whom he knows very well, and the *gratitude of his people for the gift of American wheat.*

These excerpts represent a secondary step towards the politicized production of Pakistan as a downstream territory worth saving. The work of these passages is to emphasize that Pakistan is an ally of the U.S., and a grateful one at that. The Cold War context of these statements cannot be mistaken, and will prove a crucial part of the story in a later chapter in the dissertation. For the moment, however, we turn to how the government pamphlet projects Pakistan vis-à-vis its larger neighbor to the east. It is in this section that a politicized image of the Indus is hammered home – Pakistan is downstream and vulnerable. The following excerpts are taken from various sections of the pamphlet.

There are *many rivers in India from which irrigation waters could be drawn.* The mean annual flow of the rivers Ganga and Jumna – which could easily irrigate the area for which India demands more water from the rivers of the Indus Basin – is 400 million acre feet – 2 ½ times that of all the rivers in the Indus Basin. *The rich man proposes to take the poor man's ewe lamb!*

Refugees from India have *poured into Pakistan – the "Promised Land"* – by the millions in hopes of starting a new life. Never before in history has a small new nation been suddenly called onto absorb 6 million displaced persons, mostly destitute.

Pakistan is, and probably always will be, an agricultural country, no matter how rapidly industrialization takes place – Agriculture which in the West [Pakistan] depends almost entirely on irrigation – Irrigation which India threatens progressively to diminish.

India, the upstream claimant, needs more irrigation water, even though rainfall in the region is heavier than in West Pakistan. *Lying upstream, India has the power to take the water, to the everlasting detriment of Pakistan.*

From the very beginning...Pakistan urged that the matter be referred to the International Court of Justice, *since the issue was so largely legal.* India refused.

If this area [Indian Punjab] needs to be developed, the Jumna and the Ganga are the logical sources of water. *Why should the rich man – India- take Pakistan's Ewe Lamb?*

Several themes can be teased out of the above, all of which reinforce the notion of Pakistan as a fundamentally vulnerable and wronged downstream territory. First, there is a presentation of Pakistan as unevenly matched with the much larger and more abundantly endowed India. The pamphlet makes repeated Biblical invocations of Pakistan as a “poor man”, which has only one “ewe lamb”, the Indus, while India “has the power to take the water” by virtue of being the “upstream claimant”. The injustice of India wanting to take the water of the Indus to “the everlasting detriment” of Pakistan is highlighted, despite there being “many rivers in India”, and even though “rainfall is heavier” in India than in (West) Pakistan. In this characterization, India is the “rich man” who needlessly and greedily takes advantage of the “poor man”, Pakistan. Along the same lines, it is also argued that India is lording its regional political power over a fundamentally just Pakistan, which has “from the beginning” considered the issue to be “largely legal”. Finally, the pamphlet is at pains to point out the vulnerability of Pakistan in socio-economic terms. Not only will Pakistan “probably always be an agricultural country” in a state of perpetual underdevelopment, but it has the extra burden of taking care of an infusion of “mostly destitute” refugees in India in search of the “Promised Land”.

The pamphlet also goes into details about the legal history of the Indus dispute, an angle of the dispute that I discuss in greater detail in another chapter. I have focused on the geographical-historical imaginary of Pakistan as a deep-rooted, vulnerable, and just nation in the

analysis above. The point to be emphasized is that the news media was not the only threat of “politicization” of the issue. The Pakistan embassy in Washington D.C. took an active role in producing tailored propaganda to sway the opinion of the American public and news media. The purpose of this propaganda was to represent the Indus dispute as fundamentally political, with the root of its politicization in the downstream geography of the Pakistani territory.

The negotiation records make repeated reference to the need to keep the negotiation on an “engineering” and “technical” level, precisely to avoid the type of politicization highlighted above. The story I turn to next, however, demonstrates that “politicization” was not restricted to actors who thought of themselves as political. The ostensibly technical and apolitical task of collecting water flow measurements was also prey to constant politicization. This example perhaps shows most forcefully that the Indus dispute was necessarily political, despite the best attempts of technocrats and engineers to represent it otherwise.

#### Water data verification controversy, 1953-54

For the last analysis of this chapter, I turn to a controversy that erupted between 1953 and 1954 over the matter of sharing water flow data between Pakistan and India. News and government propaganda are clearly political representations. But technical data is often thought of as impervious to this type of politicization. Indeed, even today, one of the most frequently invoked proposed solutions to hydro-political tensions on the Indus, on the subnational and international levels, is more and better data. But the important task of data collection was not immune to territorial and political hostilities between the two countries.

On February 9, 1953, Pakistan proposed that a procedure be established to share and verify flows on the Sutlej River – particularly on Ferozepur Barrage. A letter from the Prime Minister of Pakistan reacted to a vaguely proposed World Bank plan to improve data collection and sharing;

... [the Bank proposed] an agreement *setting up procedures for current collection and on the spot verification of current flow* and discharge data on the rivers of the Indus system in India and in Pakistan. By verification I assume that a representative engineer each of Pakistan and India, and another of the World Bank may constitute a standing commission to whom current flow and discharge data on the rivers and at key points is supplied by the two countries, and the commission may from time to time on a spotcheck basis inspect station logs and check gauge and discharge readings (Nazimuddin 1953, February 9, emphasis added).

Pakistani negotiators were eager to establish a system whereby they would be permitted to engage in regular checks of gauges on Indian territory. This suggestion must be put in the larger context of the negotiations. The Bank was anxious to keep all discussion of the Indus dispute insulated from the notorious and toxic state rivalry between Pakistan and India. Pakistan's suggestion for "on-the-spot" verification of station logs and gauge and discharge readings was provocative, however, and brought to the surface territorial tensions between Pakistan and India. On February 16, Eugene Black told a Pakistani delegate in London that he thought the suggestion to set up a verification committee would "prove offensive to India", and the idea would best be dropped (Somers 1953, April 8).

Indeed, in a meeting on Baghdad on March 9 between B.K. Nehru, a prominent Indian statesman and diplomat, and Black, the former said that any such plan would be impracticable, as it would "require an Army" to check all the readings and verify calculations. Nehru went on to put more pressure on the negotiations by stating that "by April 1954 India will be ready to draw water from the [Beas-Sutlej Rivers] system and that if there is no agreement by then, trouble will

start,”(ibid). On a separate occasion on March 24, 1953, the Government of Pakistan’s legal counsel John G. Laylin reported that B.K. Nehru

...indicated to Mr. Mohammad Ali that India *might agree to supply current flow data to the Bank on the condition that it is not to be disclosed to Pakistan*. Mr. B.K. Nehru sought to justify withholding the information from Pakistan on the ground that India had given its undertaking about maintaining existing uses to the Bank and not to Pakistan. Mr. B.K. Nehru argued that if information regarding current flow data conveyed to Pakistan, it might be used by Pakistani against India. He did not explain how or why (Laylin 1953, March 24, emphasis added).

A week later, another internal Bank memo provides more details into the reasons the Indian government was resistant to the idea of a data verification committee. B.K. Nehru insisted that “this was a question of national sovereignty”, and that the “dispute is not about gauge readings or the facts. It is about the interpretation of what is really the status quo...” (Somers 1953, April 18). Recall that the maintenance of the status quo, in terms of flows to downstream Pakistan, was one of India’s conditions for continuing negotiations.

As should be clear from B.K. Nehru’s position above, India was not receptive to the idea of a Pakistani engineer stepping foot onto Indian soil to verify Indian gauge readings. Jawaharlal Nehru, who had taken a personal interest in the Indus negotiations from the start, entered the fray with a letter to the Pakistani PM dated April 6, 1953.

...you refer to some kind of procedure for verification. We have in fact appointed a special Commissioner on behalf of the government of India to see to it that full effect is given to our assurance [of appropriate flows to Pakistan]. If, at any time, you have the slightest doubt in this matter, I invite you to refer it to me, as I am taking personal interest in this question. I am sure, however, that there will be no occasion for you doing so...*I would not welcome any Inspectors or others of the World Bank to interfere with this matter. That is unbecoming for an independent nation* (Nehru 1953, April 6, emphasis added).

Pakistani negotiators did not give up on the idea so quickly. In a series of letters to the World Bank between April 13 and April 15, Pakistani negotiators referred to precedents in

international state behavior for verification of flow data. In particular, they referred to the International Boundary and Water Commission “in the years during which the treaty between the U.S. and Mexico was under study and since...”. To drive home the argument, a precedent from the Indus Basin was also invoked: the 1945 agreement between Punjab and Sindh ([Pakistani Negotiator] [1953, April 13-15]).

W. Iliff, a World Bank Vice-President, clarified the position of the World Bank vis-à-vis the proposed verification committee in a letter to the Pakistani Minister of Industries. The Minister of Industries had been assigned as the point-person for the Pakistani government in the midst of the extraordinary turmoil in the domestic political scene. The letter is dated April 15, 1953:

I have been informed by the Government of India that they are unwilling to accept the procedure suggested by you for collection and verification of current flow data... They [India] have further informed me that the Government has appointed a senior officer... with the title of ‘Special Commissioner for Canal Waters’... any such complaint [from Pakistan] can be lodged directly with the special commissioner by the chief engineer concerned... and if the complaint is appears to him to be of sufficient moment, a Pakistan [sic] engineer will be invited to come and discuss the matter with him... In the circumstances I believe it would serve no useful purpose to pursue this matter and that we should rather concentrate our efforts on formulation of the comprehensive plan (Iliff 1953, April 15).

In a letter to David Lilienthal dated April 21, 1953, Eugene Black attributed internal pressures to Pakistan’s insistence that a verification committee to ensure that India was not “stealing” water that should have flown to Pakistan: “The critical food situation in Pakistan has, of course, introduced an element which has, I am afraid, led the Pakistanis to lay at the door of India rather more responsibility for this situation than perhaps India deserves...” (Black 1953, April 21).

On April 29, 1953, an official at the Pakistani Embassy in Washington D.C. responded to India's refusal to enter into a procedure. The official argued that India's proposed method of appointing a Special Commissioner to handle Pakistani water complaints was inadequate. Instead, the Pakistani official proposed to de-politicize the issue by including an engineer appointed by the World Bank, who would ostensibly be above the politics of Indo-Pak rivalry and territorial sensitivity:

[Mr. Black's suggested] alternative procedure we understand to be that a *Bank engineer should act with a Pakistani engineer* in the collection and verification of data on flow and discharge of rivers and canals in Pakistan, and that this same engineer or another Bank engineer act with an Indian engineer in the collection and verification of flow and discharge data in India....It is not enough to provide for a procedure for complaints after shortages have occurred...My Government would hope that *the presence of a Bank engineer participating in the collection and verification of flow and discharge data would help restore the confidence of the farmers* that they will receive for their plantings their due share of the available water supplies....(Shafqat 1953, April 29).

The implication was that a Bank engineer would be above the pettiness of the Indo-Pakistan rivalry. The Bank's response to Pakistan's suggestion was, again, not encouraging. On May 8, 1953, Iliff responded directly to the Pakistani official's April 29 letter: "...in [the] present circumstances, it would serve no useful purpose to pursue the matter of establishing a procedure for verification of current data..." (Iliff 1953, May 8). It seemed that Pakistani delegates had to let go of the idea of having either Pakistani or Bank engineers participate in the data verification on Indian territory. Instead, the Pakistani government reciprocated by appointing its own "Irrigation Commissioner" to handle all matters relating to insufficient flows and the verification of data. Between the years 1953 and 1954, correspondence between the two commissioners, Garg from India and Ghafoor from Pakistan, shed light on the politicized nature of water data sharing and verification.

On August 29, 1953, Garg and Ghafoor agreed that there would be joint verification of water data measurements. Ironically, this arrangement was not too different from the verification committee initially proposed by Pakistani negotiators. But the excerpts taken from the negotiation records indicate that matters were not so simple. The question of territory refused to die down, and the Pakistani and Indian militaries became involved. Ghafoor sent minutes of the August 29 meeting to the Pakistan Minister of Industries in a letter dated September 7, 1953:

During the discussion India insisted that for observations of the joint discharges at R.D. 2750 of Depalpur Canal which site is in Pakistani territory, the *Indian team should be allowed to take their own armed escort*. On the face of it, the demand seemed unacceptable to Pakistan but it was decided to refer the matter to the border Commanders of the two sides for their opinion. As an alternative it was proposed to Mr. Garg that joint discharges be taken [where] there is a barbed wire barrier on the left bank of the Canal and which for practical purposes is the boundary between the two countries. Also it was suggested that the Indian escort might move along the left bank up to this point and the Pakistan escort along the right bank and remain at the discharge site on the two respective banks...The Indian proposal was not acceptable to the Pakistan's Border Police Commandant...*Under the circumstances, therefore, the joint discharges cannot be taken and the regulation at the head will have to be done by India by altering gate openings of the canal. On our side we shall observe the discharges of the canal independently so as to compare with the figures reported by India (Ghafoor 1953, September 7).*

Garg sent a similar letter to the Indian Minister of Irrigation and Power summarizing the August 29 meeting on October 5:

Discussions were also held by me with the Irrigation Commissioner Pakistan at Ferozepore on 29.8.1953 when the question of joint discharge observations in the canal came up and it was decided to take these observations...Unfortunately, *these observations have not been started as the question of escort of the discharge observation party has not yet been settled*. Discharge site lies within the Indian territory ...The right bank of the canal is in unauthorized possession of the Pakistan military while the left bank is in Indian hands. Pakistan Irrigation Commissioner had suggested that Pakistan Army would provide safe escort to the Indian personnel to which our Military naturally did not agree. I have suggested that the Indian party would be escorted by the Indian

military along the left bank while Pakistan observers can be escorted by the Pakistani military along the right bank (Garg 1953, October 5/6).

Both Commissioners recognized that a stalemate had been reached because of territorial concerns. Although the Commissioners had agreed in principle that discharges should be measured and verified jointly by Pakistani and Indian engineers, the matter of who was allowed where did not allow this to happen in practice. Garg reiterated the situation to the Irrigation and Power Minister in a letter dated October 21, and highlights his powerlessness as a mere engineer in this inescapably political and territorial dispute:

...whole matter impinges [sic] on the discharge observations at R.D. 2750, which site lies in the Indian territory but the right bank of which is in illegal possession of the Pakistan military authorities who also claim possession of the left bank with Indian military authorities deny. *The question has arisen, military authorities of which country should provide escort to the Discharge Observation Party.* Pakistani military do not allow Indian military to escort out party on the left bank, which the latter do not allow Pakistani military authorities to escort our party in this reach. Both the Commissioners are helpless in this matter (Garg 1953, October 21).

Pakistan utilized the political geography of the Sutlej to take the best measurements it possibly could. The Sutlej River crosses briefly into Pakistan before entering Indian territory, and before then finally entering Pakistan. On the basis of these measurements Pakistani officials insisted that India was indeed withdrawing more water than was its due, a charge that Indian officials rejected. In a heated complaint to the World Bank dated December 7, 1953, a Pakistani delegate laid out the case from the Pakistani perspective: “Mr. Garg in effect says that Pakistan cannot claim shortages because it does not know all of the facts; and, Pakistan does not know all of the facts because India will not disclose them,” ([Pakistani Negotiator] 1953, December 7).

The situation remained in stalemate. On October 11, 1953, Indian engineers attempted to take measurements. They arrived at the border, escorted by Indian soldiers. But the Pakistani soldiers posted at the border did not let the engineers proceed, and the engineers had to retreat (Nehru 1953, December 16). An internal Bank memo summed up the situation on December 29, 1953:

They [Pakistan] want data on river discharge [on the Sutlej-Beas Rivers] and canal withdrawals on stations above Ferozepur. They also want arrangements for joint measurement (this has been agreed in principle for measuring downstream Ferozepur but the military cannot agree about escorts)."

"Here [on the Ravi] also they [Pak] want arrangements for joint measurement which has been agreed in principle but India refuses to give visas to Pakistani engineers (Somers 1953, December 29).

Six months later, the frustration of the Commissioners is palpable. In a letter from Ghafoor to Garg dated July 16, 1954, the requests to allow verification of discharges plays like a broken record. But the underlying political and territorial aspects which do not allow the verification agreements to be realized are not even mentioned in the letter.

Pakistan being a shareholder in the common waters is, naturally, justified in asking for India's cooperation and help in obtaining river and canal flow data and verification thereof. But, to our great disappointment, that cooperation has not been forthcoming... *India has even refused to intimate to them [Pakistani engineers] the factual data as observed by her own engineers – data that requires to be verified and checked so as to ensure equitable distribution of supplies between the two countries.* Pakistan is, thus, being deliberately kept in the dark with regard to that distribution. The result is obvious – Pakistan channels starve and do not get even their authorized supplies while there is surplus water in the Indian channels and vast new areas are being brought under irrigation in India. I would suggest that to allay Pakistan's fears and suspicions her *engineers be allowed access periodically to the points of distribution of supplies in India and she be informed daily of the supply position of these points* (Ghafoor 1954, July 16).

At first blush, it seems that nothing could be political about the exchange of technical flow data. However, the Indus cannot be so easily separated from the historical and geographical context which gives it its social character. What the above analysis has tried to show is that questions of territory were never far from any Indus discussion during the negotiation process. And where there are questions of territory involved, military threats are never far behind. Up until the IWT was signed in 1960, the Punjab border around the Ferozepore barrage continued to be a source of geopolitical tension between Pakistan and India. But rather than addressing these tensions head-on, exchanges between engineers instead focused on data, procedure, and verification, eliding the underlying politics of water.

#### Simplification is techno-political

Powerful engineers and technocrats who negotiated the IWT attempted to produce knowledge and stories about the Indus Rivers that de-emphasized the political nature of the dispute between Pakistan and India. In the years 1952-1954, the parties agreed that the Indus Basin should be developed as an integrated unit. As has been noted, the naturalization of the watershed as the appropriate scale of river management is commonly held, even today, by most technocratic and policy analysts of rivers (Norman and Bakker 2009).

In an integrated management approach, location within a basin was important only to the degree that it impacted the efficient and utility-maximizing delivery of water to that area. Crucially, the geographical fact that Pakistan was the downstream riparian and vulnerable to actions upstream could not be given much weight in the integrated basin approach. By 1954, however, the intense rivalry and mistrust between the Pakistani and Indian governments made it apparent that the dream of joint development was simply not reachable. In 1954 the World Bank

proposed its own plan on the basis of a partition of six rivers of the Indus system, assuring operational independence to Pakistan on the three Western Rivers.

Before this point was reached much political tension around the representation of the Indus had to be endured. This chapter has shown how technocrats failed in their attempts to propagate representations of the Indus dispute that were limited to the technical and financial aspects of the river. The technocratic imperative to produce apolitical representations of the river was foiled at different moments between 1952 and 1954 by the news media, by the propaganda efforts of the Pakistani Embassy in Washington, D.C., and even by the very data collection procedures proposed by Pakistani engineers themselves.

J.C. Scott's (1998) argument was that the simplifying "nature" is complicated because nature is inherently and impossibly complicated. In a sympathetic response to Scott, legal geographer Nicholas Blomley (2008) draws on a property dispute that concerns the shifting course of a river from the central United States to argue that "simplification is complicated,". Blomley does not dispute that nature is complicated, but rather that the complications arise from the simplification process itself, because so many different types of knowledge (legal, ecological, historical, cultural) represent the river in conflicting ways (see also Robertson 2012, Kim and Wainwright 2010). Blomley analyzes a legal case that revolves around the impact the shifting course of river has on property claims that referred to the river as a boundary demarcation. Fluvial geomorphologists, lawyers, and Native Americans with property claims to riparian land conflicted at the level of what a river actually was, and what kinds of claims could be made about the things the river did over time and space.

During the early phase of the IWT negotiations, powerful technocrats and diplomats interpreted the Indus dispute as a primarily financial and technological, not a political, problem.

This framing of the problem does not leave room for the acknowledgement of the downstream vulnerability of Pakistani territory. Although technocrats attempted to maintain a privileged position in how the Pakistan/India Indus dispute was represented, their representations were interrupted by expressions of downstream hydraulic regionalism and territorial concerns. The early phase of the negotiations between Pakistan and India witnessed the disruption of a technocratic developmentalist view of the Indus, which downplayed regional political differences within the basin, by the hydraulic regionalism of downstream Pakistani state elites, which emphasized the vulnerability of Pakistani agrarian territory.

### CHAPTER 3: COLD WAR DEVELOPMENT: CAPITAL, TERRITORY AND THE INDUS

The dispute between Pakistan and India was originally about one project on an eastern tributary of the Indus; the Bhakra Dam on the Sutlej River. Over the course of the 1950s the negotiations expanded to include the main Indus stem and its five eastern tributaries – the “Indus system”.

The idea of Indian uses on the Western Rivers was initially perceived by Pakistani negotiators as a threat to the principle of operational independence in Indian and Pakistani uses of the Indus Rivers. As such, opposition to these Indian uses captures the territorial logic animating the actions of Pakistani state managers. On August 21, 1959, G. Mueenuddin, head of the Pakistan Water Delegation, sent a note of protest on behalf of Pakistani President Ayub Khan to World Bank President Eugene Black.

A new crisis is facing [negotiation] talks. India has made new demands on the flow of Western Rivers far beyond the stipulation in Bank proposal restricting ...They also demand storages. This is a reversal of position that total flow of Western Rivers excepting for insignificant uses in Jammu and Kashmir only will be available to Pakistan. We have repeatedly requested Bank [sic] to ensure that these uses remain truly insignificant and that the Indus Water Treaty should be worded so as not to prejudice Pakistan's position regarding Jammu and Kashmir territory. Your intervention is necessary to ensure that untenable Indian demands [sic] are not allowed to hinder progress of negotiations (Khan 1959, August 21).

The quote above reveals another wrinkle in the negotiations that is too large a subject to analyze sufficiently in this dissertation. Nevertheless, it deserves mention. The dispute between Pakistan and India over the status of Kashmir has always been related to water. The governments of Pakistan and India, as well as the World Bank, were intent on treating the Indus and Kashmir issues as if they were inseparable. Occasionally, and inevitably, Kashmir would be invoked by Pakistani negotiators, as in the above quote, to make a point about downstream protection.

Eugene Black's reaction was delivered through World Bank Vice-President W.A.B. Illiff to Pakistani Finance Minister Shoaib, on August 22, 1959:

[The] Bank is...in no position to quote ensure unquote that any proposal or suggestion or compromise put forward by the Bank shall be accepted by the two Governments...I do not repeat not regard the present situation as in the nature of a "crisis" and I would be grateful if you make a strong appeal to President Ayub that Pakistan should reserve judgment until after you have had an opportunity to analyze the effects on Pakistan of the Bank's ideas as to how this particular hurdle might be surmounted (Illiff 1959, August 22).

Pakistani negotiators eventually, and reluctantly, agreed to some limited Indian uses of the Western Rivers. But Mueenuddin still argued for safeguards that explicitly identified Pakistan as the vulnerable downstream riparian. This would have required language representing the territorial logic, and was resisted by Bank negotiators. On April 19 of 1960, Illiff summarized the position of the parties in a note.

To Mr. Mueenuddin, I said that...The Bank would take it very much amiss if Pakistan insisted that formal note should be taken of a Pakistan position that the amount of storage to be constructed on the Western Rivers by India for hydro purposes, or for flood control purposes, should be related to the damage that these structures might do to Pakistan if they were maliciously operated by India (Illiff 1960, April 19).

Illiff's again voices his opposition to the territorial in a memo dated May 3rd, 1960;

On the question of storage construction by India on the Western Rivers, I pointed out to the Foreign Minister that if Pakistan continued to apply the criterion of the harm that might be done in the event of storage works being operated maliciously by India, he placed me in an impossible situation. The Indians would certainly not listen to any representation from me that it was their intention to break any international agreement into which they had entered. The Foreign Minister said he appreciated my feelings on this subject and he instructed Mr. Mueenuddin (who was present at the interview) to approach this question without the considerations of malevolence in mind (Illiff 1960, May 3).

Indian uses on Western Rivers were not in keeping with the “division of waters” plan outlined by the World Bank in 1954, and were hotly contested by Pakistani negotiators. The historical record suggests an active suppression of explicit downstream protection, or the territorial logic, during the course of the negotiation in the late 1950s. The question, however, is: why? How and why did Pakistani negotiators abandon the quest for downstream protection, when the location of the Pakistani state as a downstream riparian would seem to demand strict adherence to this position? Why was the IWT not identical to the 1954 Bank Proposal, or the 1957 Heads of Agreement, but a document which specifically permitted Indian uses of the Western Rivers, in the form of Article 3? What changed between 1954 and 1960, from the Pakistani perspective, to move from position of no Indian uses on the Western Rivers to limited uses?

In a recent determination on a structure on the Western Rivers, the Kishenganga Decision of 2013 (see Chapter 6 and 7), a Court considered this very question. Although posed and answered by the Court, ultimately the historical question of how India came to attain qualified uses on the Western Rivers had no bearing on the case. This was because the Court considered this particular historical question irrelevant to the required interpretation of the IWT.

Given the significant rights enjoyed by India as the upstream riparian under customary international law, as well as the natural advantages enjoyed by the upstream riparian, the Court recognizes, in view of the acute need both of India and Pakistan for hydro-electric power, that India might not have entered into the Treaty at all had it not been accorded significant rights to the use of those waters to develop hydro-electric power on the Western Rivers (Schwebel et al. 2013, p. 156).

The Court was of the opinion that without limited uses on the Western Rivers, India would not have agreed to any treaty at all, and this is why Pakistan agreed to those uses. The Court also summarizes, too briefly, the Pakistani legal teams' own response to this question. "...Pakistan's position as a downstream State puts it in a permanent position of vulnerability. Pakistan submits that this position explains its willingness to agree to the division set out in the Treaty," (ibid, p. 60).

These answers are unsatisfactory. Both imply that Pakistani negotiators had "no choice" because of the vulnerable downstream location of Pakistan relative to India. But this was as true as it was in 1947 as it was in 1960. Why did it take so long for Pakistan to not exercise the choice it never had? Why, if India held all the cards, did the Indian government not simply take all the waters of all the rivers? Negotiations do not occur between a helpless party and an all-powerful one. To argue that India was merely being generous and gracious to its neighbors as part of a liberal modernist foreign policy, as some "security analysts" have done (Rai and Patnaik 2012; Chellaney 2011) is, at best, naïve. At worst, it continues the doubtful tradition of security analysis of celebrating whatever state authority happens to be buttering your bread (see Chapter 1). The answer to this question, I argue, lies not in the IWT itself but in the historical and political process which resulted in another agreement essential to understanding the geopolitics of the Indus Rivers.

On September 16, 1960, the same day the IWT signed, the Indus Basin Development Fund Agreement (IBDF) was signed between Pakistan, the Bank, and five capitalist states. The agreement stipulated the conditions and procedures by which Pakistan could access loans and grants with which it was to build "replacement works" on the Indus Rivers. When inaugurated in

1960 the Indus Basin Project cost roughly \$1 billion (\$30 billion in 2013 dollars). This cost would be revised upwards over the next decade.

The World Bank contacted “friendly governments” around the world, all rich capitalist states, and offered Pakistan expertise and capital in exchange for agreeing to a treaty. In effect, negotiators thought they were deferring the status of Pakistan as “downstream” through the intense development of its rivers. The IBDF would fund the construction of massive “replacement works” in Pakistan, that would enable it to store and divert the waters from the Western Rivers eastward to the fields that the Eastern Rivers (now meant for exclusive Indian control) formerly irrigated. The institutional form of this deferral of “downstream” by “development” was the Indus Basin Development Fund (IBDF). This agreement was signed on the same day as the IWT between Pakistan, the World Bank, and the Friendly Governments (Australia, Canada, Germany, New Zealand, the United Kingdom and the United States).

The replacement works consisted of two dams for storage (Mangla on the Jhelum and Tarbela on the Indus), and a series of “link canals” that linked the tributaries of the Indus, which flow roughly parallel to each other. The link canals that the agreement called for were meant to bring water from the western rivers of the Indus that had been designated as “excess” to the regions irrigated by the Eastern Rivers – the waters of which Pakistan could no longer count on. Eight link canals were built, totaling nearly four hundred miles in length, to transfer fourteen MAF of water between the rivers of the Indus system. In addition, three barrages were built to carry canals over rivers and some existing canals and barrages were renovated. The Indus Basin Development Project carried a price tag of \$1 billion (1960 dollars) – one of the largest and most expensive engineering projects the world had ever seen. This prize, along with the promise that

status as a downstream riparian was a matter of engineering and finance, not geopolitics and political economy, was too much for the developmental military regime in Pakistan to resist.

How are we to understand the complex forces that resulted in the world's largest infrastructure project being constructed on the Indus at this historical juncture? Historians and geographers have in the last decade produced wealth of knowledge regarding the conjuncture of Cold War geopolitics, development in the "third world", and technical expertise spread of river basin development to Asia during the Cold War (Klingensmith 2007; Cullather 2010; Ekbladh 2010; Sneddon and Fox 2010, 2012; Alatout 2011; Sneddon 2012). A common strand in this literature is the identification of networks of powerful actors, including experts, politicians, and capitalist interests that articulate at historical conjunctures to implement wide-ranging state-led transformation of waterscapes (see also Swyngedouw 1999, 2004, 2013; Evenden 2009; Molle 2009). Although careful historical analysis of conjunctures is absolutely necessary, I want to examine the relationship between these historical events and larger social-spatial structures that underlie the hydro-politics of the Indus.

Specifying the causal forces and structural tendencies in global geopolitics is incredibly daunting. Harvey (2003) identifies two logics as the main forces that shape the interaction of states that operate within a capitalist world-economy. The capitalist logic is driven by firms' need to accumulate profits. This is the sphere of everyday economic relations and the flows of financial capital. The territorial logic is driven by the state's need to control territory and populations. This logic predates the logic of capitalism.

The interaction between the capitalist logic and the territorial logic can be complementary, contradictory, or indifferent, depending on the historical contingencies. Harvey argues that what distinguishes capitalist imperialism from the world-system at other points in

history is that in the era of the “new” imperialism, “it is the capitalist logic that typically dominates”. The chart below summarizes Harvey’s formulation.

|               | <b>“logic of capital”</b> | <b>“logic of territory”</b>             |
|---------------|---------------------------|-----------------------------------------|
| <b>drive</b>  | accumulation of profits   | control of territory and<br>populations |
| <b>agents</b> | firms and capitalists     | states and state managers               |

**Table 4: The geopolitics of capitalism, Harvey (2003)**

Harvey’s understanding of the geopolitics of capitalism is not unique. In fact, the dichotomy of state/capital that he works with is adopted (with variations and nuances) by a host of scholars across geography and the social sciences (Wood 2003; Mercille 2008a, 2008b; Cowen and Smith 2009). Indeed, it has become a truism that what defines the “neoliberal” age that the world lives in post 1970s is defined by the ascendancy (qualified to varying degrees by different authors) of the “capital logic” over the “territorial logic”. But historical Marxists have critiqued Harvey’s invocation of a trans-historical “territorial logic”. They argue that it is impossible to determine “essential” features of territorialism that hold true for the immense diversity states involved in capitalist circuits, past and present.

Moreover, historical Marxists point out is not particularly useful to talk about capital or territory as analytically distinct concepts, as in concrete circumstances it is often not possible to parse these abstract forces (Brenner 2006). Finally, international political economists argue that any understanding of capitalism must take into account the regionally varying and historically contingent evolution of states within an inter-state system (Gestenberger 2011; Teschke and Lachner 2007; Morton 2007; Wood 2006).

I agree with these critiques. By definition, abstract categories are positing structures that have causal effects, regardless of variations in historical or geographical situation. Indeed, history and geography is precisely what is being abstracted away to construct the category (Thompson 1975; Eaton 2000). In what follows, I analyze the Indus basin disputes in relation to processes of Cold War development finance and state formation and uneven development in Pakistan. My argument is that the capital and territorial logics are useful abstractions only up to a point- in the concrete analysis of actual geopolitical outcomes, it is necessary to see these logics as mutually determined.

The recognition of the impact of geopolitical discourses has engendered a debate in the literature about how to balance (analytically as well as methodologically) political economic and discursive factors (Agnew 2011; Black 2011; Cowen and Smith 2009; Mercille 2008a; Smith 2000). This chapter also argues that questions about which half of the dichotomy between reality and representation the analyst should prioritize should not result in paralysis. Following Mercille (2008a, p. 500), I hold that “discourses and materiality are both important and influence each other as well as policy; to focus too exclusively on one or the other misses important aspects of political events,”.

This chapter focuses on detailing the international global financial and political architecture of the 1950s. To make my case, I draw in turn on the professional and personal ambitions of David Lilienthal, the development diplomacy of the World Bank, and an examination of the involvement of global finance in the resolution of the Indus dispute. Finally, to close the chapter, I argue that abstractions like the capital and territorial logics are best used within a framework of “over-determination” for the purposes of historical inquiry. Thus, we cannot reduce geopolitical and geoeconomic events to a uni-causal “capital” or “territorial”

logic. Furthermore, the nature of these “logics” is such they should be considered as structural *tendencies*, which are subject to the continual interruption by various counter-tendencies. The next chapter will supplement this analysis by a discussion of uneven development and state formation in Pakistan, before and after the signing of the Indus Waters Treaty.

First, however, a cautionary note must be sounded regarding the use of scalar analysis. Critical political geographers have warned that the analytical use of scale compounds the danger of mistaking the dynamics of the world as *actually* occurring on several unrelated and independently acting scales (Marston et al. 2005). However, in many cases, but certainly not all, scale is an epistemological tool, not an ontological assertion. Scale is a geographic abstraction to highlight the spatial and structural aspects of complex processes – it does not have to be an assertion that reality somehow unfolds in isolation at multiple scales. In my case the use of scalar analysis is necessary because there is clearly something going on at the “international scale” (with the involvement of the World Bank, and the mobilizing of money from around the world) that is different, but related, to what is happening on the national scale in Pakistan.

While discussing the international scale, I attempt to avoid the trap of treating the “global” and “local” scales as ontologically isolated by using the expository technique of biographical social history. As a part of explaining the international Cold War logics that animated state and developmental elites in the 1950s, I draw on the biography and words of David Lilienthal. When I turn to a discussion of the national-scale analysis, however, I am again at risk of treating the global financial system and the development of the Pakistani state form as if they were occurring on ontologically different levels. One common mistake, especially in studies of international affairs, is to proceed with the analysis as if the “global” impacts the “national” or “local” in a unidirectional way (Hart 2002). This is avoidable, however, if I can

sketch out a way that the global and the national intersect in a way that does not have global determining the national (or the national/local determining the global) in a simplistic way. I return to this point in Chapter 4 where I discuss the historical-geographical method of theorization inspired by Gramsci. I begin with the analysis of international political economy, with a special focus on the structure of development finance.

### The World Bank and Cold War Development

The historical context of the international financial and development system of the 1950s is the so-called “Cold War”. The scholarship on the world of Cold War international development has produced remarkable scholarship in recent years. For example, there is the work of Chris Sneddon and Colleen Fox on the Mekong River (Sneddon 2012; Sneddon and Fox 2011), David Ekbladh (2010) and Daniel Kilgenschmidt’s (2007) on the Tennessee Valley Authority, Nick Cullather (2010) on the politics of food aid, Nils Gilman on the impacts of modernization theory on development practices. A recent volume edited by Gabrielle Hecht explores the complex impacts of technology and development aid during the Cold War on, amongst other things, Third-World state formation (Hecht 2011).

This is an incredibly nuanced and historically rich literature, but I hazard a generalization to highlight the relevant insight for my analysis. These historical works emphasize what has come to be called the “techno-politics” of the Cold War era. Chris Sneddon argues that techno-politics is the process by which “particular technologies and forms of knowledge are both integrated within networks of political calculation and also generate broader networks of expertise, ecological relations...and geopolitics,” (2012, p. 566). In a similar vein, James Ferguson (1994) has argued that the practices and representations of international development

paper over deeply political issues and present them as technical; in other words, development as an anti-politics machine. The connection between this insight and the chapter in the first part of this dissertation are hopefully clear. What I argue in the following historicization of the capital logic in the is that the global financial structures which enabled the IBDF were thoroughly politicized by the territorial and state-based logics of the 1950s Cold War.

*David Lilienthal: Embodying Cold War Developmentalism*

To talk of a structure as large and totalizing as “Cold War development” is a daunting task, to say the least. I want to broach this endeavor through a method of exposition that can be called “biographical social history.” Richard Eaton comments on his use biography in his book *A Social*

*History of the Deccan:*

“It is not that the people whose lives I have chosen to highlight were the movers or the causes of such social processes. To argue in that manner would bring back the ghost of Great Man Theory, a kind of history-writing that one hopes is safely past. But individuals do embody microcosms of at least some, if not many, aspects of the social macrocosms in which they live,” (Eaton 2005, p. 5).

For Eaton, engaged in the highly politicized historiography of Muslim rule in medieval India, the use of biography is geared toward generating accessible, yet historically rigorous, narratives to counter the mobilization of historical figures for right-wing and chauvinist political purposes. This is, of course, commendable. In the case I explore in this paper however, the main attraction of biographical social history is the way in which it allows us to write about macro-social processes.

Large-scale events and processes such as global capitalism, neo-liberalization or international affairs are often invoked in academic writing. But these are too often depicted as

abstract, disembodied “logics” that animate the world somehow from the “outside”. Furthermore, scholars often make arbitrary categorical cuts through which they analyze the world. For example, labeling some practices as cultural, others as political, and yet others as economic. But how would we label the decision of a woman to go to medical school to become a doctor just like her mother – cultural, political, or economic? Indeed, these lifeless representations and arbitrarily exclusive categories are inadequate. But this representational inadequacy is not a sign that there aren’t powerful global forces out there. The inadequacy lies in our methods of abstraction and exposition. It is here where biographical social history is useful. In this method, the analysis of large and complicated social systems is not avoided, but tempered by placing it in productive tension with a living, breathing, purposive entity that shaped and was shaped by aspects of social totality interest us. To illustrate the ways in which the world of Cold War Development decisively shaped the financing of the IBDF, I call onto the stage one David Lilienthal, American bureaucrat and development specialist extraordinaire. Lilienthal provides a good example because not only is he exemplary of the world of Cold War Development, but because of his direct involvement with the Indus dispute.

David Lilienthal was born and raised in the small town of Morton, Illinois. His parents were Jewish immigrants from East Europe, and his father was a small businessman. After a successful academic and athletic undergraduate career, he enrolled in Harvard Law School in 1920, where he came under the mentorship of Felix Frankfurter, one of the founders of the American Civil Liberties Union. Frankfurter was a prominent jurist, at the forefront of progressive causes and a stalwart of FDR’s New Deal. After Harvard, Lilienthal worked with a labor lawyer in Chicago, and then worked with Wisconsin’s Public Service Commission. In

1933, FDR appointed Lilienthal to the board of the newly created Tennessee Valley Authority, or TVA.

The TVA, a multipurpose dam project in an impoverished region of the US, was a potent symbol of FDR's "New Deal", a fiscal and social policy that highlighted the state's positive role in managing the economy; especially in terms of catalyzing effective demand in the economy, constructing infrastructure, ensuring employment, and providing social welfare. David Lilienthal and the TVA rose to international fame together. Lilienthal was an expressive and eloquent man. When he spoke of the potential for TVA style projects, where the government intervened in a major way to provide basic services to needy citizens, for world peace, security, and democracy, people listened. Over the 1940s and early 1950s, the "TVA idea" captured the imagination of leaders of decolonizing countries around the world, and Lilienthal was seen as the type of energetic and efficient man who could make such things happen.

Lilienthal left the TVA in 1946 to take up another prominent post on the U.S. Atomic Energy Commission in 1946. This position added to Lilienthal's cache as a man of renowned administrative skills that understood and appreciated the power of science and engineering to change the world. In 1950, at the age of 61, Lilienthal resigned from public service and turned his eyes to the international stage, and to business. He was particularly interested in the new successor states to the British Empire in the subcontinent – India and Pakistan. In January 1951, Lilienthal writes in his journal:

As to my own thought of making a short visit [to India]: I represent in my person one aspect of American life that is appealing to many Indians, the TVA idea, and that has caught their imagination, that fits their spirit. Perhaps I could do some good just as a living example of something about America that fits into Indian mores, backgrounds, etc (Lilienthal 1966, p. 55).

The time for Lilienthal's entry onto the world stage was ripe – the power and prestige of the U.S. was at an all-time high. Its military and scientific powers were at this point unparalleled and in David Lilienthal's self-image he was nothing if not an American. The U.S. was jolted out of the Depression by the New Deal, and more importantly, the total mobilization of the economy upon the US's entry into World War II. The U.S. also presented itself, and on the international stage was often perceived to be, a paragon of capitalist modernity and abundance. In the context of the so-called "Cold War" between the U.S. and the Soviet Union, the belief that aiding rapid capitalist development in decolonizing countries counter the ideological appeal of Communism became a pillar of U.S. foreign policy. Between 1945-1951 the U.S. sunk billion US\$ to redevelop war-torn Europe. To put this in perspective, the same amount of money as a proportion of total U.S. GDP today would amount to \$804 billion US\$. This massive flow of development capital flowing from the U.S. to Europe gave the U.S. enormous influence in the process of European reconstruction. Lilienthal understood that could be seen as imperialism by other country's but he saw the international role of the U.S. to be determined not by territorial ambition, but by its sheer economic productivity. He writes;

The contrast [of imperial England] with America's role today...is remarkable. We don't want the damned job of running the world, or any part of it. This leadership is being thrust upon us, by reason of our great ability to produce (i.e., our wealth of food, fiber, machinery, and munitions) (Lilienthal 1966, p. 79).

Later that year, Lilienthal visited Pakistan and India at the invitation of the heads of the respective countries and with the blessings of the State Department of the US. Lilienthal excited enormous interest around the world, and the leaders of Pakistan and India were eager to have his opinion on how they should proceed to develop their countries. They wanted to know how they

could do what they had heard Lilienthal had done in his own country; develop a backward region with the combined power of energetic government and the latest science. Lilienthal's impressions on visiting India and Pakistan are interesting, and it is worth quoting from his journal at length.

We were taken through a village, a farming community late this afternoon...It was selected for us to see....so it was probably far better than many...they [villagers] were living like animals, except only for the few people providing services. The bullock cows and the people were all together. Filth, no sanitation, and, of course, everywhere babies, babies...At the moment I *find myself a chauvinistic American*, a White Man's Burden character. I see no prospect that they will ever get out of this terrible situation by their own efforts. Not a chance. *There is no evidence they have the requisite management ability, the moral power, the leadership, the sense of responsibility, or the resources to crawl out of this morass...*When they had great and powerful kings – we saw the monuments of their greatest rulers of the Mogul days today – they had marks of splendor, but it was limited to kings and their group. They are, if anything, worse off now than then, physically. *What has "freedom" done for them? I don't see much evidence of it.* To talk to such miserable people about their right to vote or the democratic organization of their society is about as pointless as anything I can think of. *We in America have proved that we can do things no one in Asia can do – we can produce* (Lilienthal 1966, p. 88).

Lilienthal expresses many elements of what I am calling the Cold War international development ethos. First, there is the perception that the vast masses of poor countries live in a state of timeless abjection, in which they are stuck unless an external force intervenes. Although Lilienthal displays reflexivity about his "White Man's" burden, this does not change his analysis of the essential situation. Second, we can see the workings of what Ferguson has called the "anti-politics machine" of development: Lilienthal feels it is pointless to talk about the "democratic organization of their society" when the need is clearly for forceful technological and economic intervention. Lilienthal also believes that the natural fount for social transformation came from the ability to produce and harness the power of capital, and this is an ability that some had and others did not. Lilienthal's quickness to nationalize this ability as "American, and not just

“Western” as is the common-sense today, is a faithful reflection of American dominance in raw in the inter-state capitalist system at this time.

In 1954, Lilienthal’s plan of managing the basin on an integrated basis was formally abandoned, and it was decided by all parties that the Basin should be partitioned in some form, with the Western Rivers going to Pakistan and the Eastern Rivers going to India. Pakistan insisted that this could not be done without major development works, to assure that the fields that were irrigated by the Eastern Rivers continued to be so. The World Bank mobilized guarantees for 1 billion US\$, from the “friendly governments” of Canada, Australia, Germany, New Zealand, the U.S. and the UK, most of it on a grant basis. Control over this enormous sum of money, equal to about 28 billion US\$, gave the World Bank great leverage over the mediation process.

Lilienthal was effectively cut out of the negotiation process by 1954, when the negotiations turned towards engineering a partition of the Indus, instead of managing it in the integrated, bi-national fashion that naturally appealed to the man who had managed the multi-state Tennessee River in to a world-wide fame. The departure of the negotiations from Lilienthal’s utopian watershed management plan is telling of the role international geopolitics would play in the dispute. Lilienthal, although disappointed with the abandonment of his plan, still saw the opportunity to gain personal acclaim.

I ought, in candor, to admit to myself what is not too admirable an impulse, but rather interesting as a reflection on how personal elements do enter even into public matters where they should not. *The “conviction” is that I now feel that if the Bank, or the two parties, were to call me in at this point, to try to get agreement of the Governments, I would be very pleased indeed, and that I have considerable confidence that I could get such an agreement.* I stayed away from this business, like a plague, for almost two years. Now I think the point has come where an “outsider” could bring home the bacon, or rather, I could do just that...The fact that so personal an interest crops up in my mind is

rather disturbing. For I am a reasonably objective person. I know how bad it is to have personal ambitions, or whatever you want to call it, to find their way into vast issues affecting many millions of people and their daily lives and bread. Perhaps by writing it down here I may exorcise whatever distortion of my judgment this factor may have (Lilienthal 1966, p. 534, emphasis added).

Lilienthal continued to work in international development, although not directly through the World Bank. He founded the Development and Resources Corporation in 1955, and his company was involved in projects around the world, including Iran, Columbia and Ghana. His very American confidence and access to finance, and his technocratic anti-politics, were key features of the world of Cold war international development. It is in this context that we can better understand the massive infrastructural investment that was mobilized through the World Bank for the Indus Basin Development Fund Agreement. Now that the overall scene of Cold War developmentalism has been introduced through a biographical social history of David Lilienthal, I turn to a historicization of the World Bank.

### *The World Bank and development diplomacy*

The World Bank is today recognized as an important part of the global economic system – it lent 43 billion \$US in 2011, more than the GDPs of 117 countries. Furthermore, and perhaps more importantly, the World Bank is also acknowledged as a reservoir and producer of a certain type of technical and economic knowledge. The World Bank, as we know it today, took shape under the presidency of Robert McNamara, who took office in 1968. Michael Goldman argues the Bank “played a very minor role in the realms of development and political economy during its first twenty years,” (Goldman 2005, p. 50). Goldman’s view can be sustained only if we evaluate the influence of the Bank of the 1950s with criteria we have developed from our experience of

what the Bank is today. To understand the Bank of the 1950s on its own terms, the institution must be situated in the appropriate historical context.

In the 1950s, the World Bank was most directly concerned not about the alleviation of poverty, but the establishment of its reputation as “creditworthy”. As a result, the World Bank lent conservatively, frugally, and primarily for projects that were deemed “hard” development; infrastructure, power and transport. In contrast to the trends in bilateral development aid at the time, the Bank of the 1950s shied away from making loans in health, education and agriculture. It was especially important for the Bank to be seen as creditworthy in the eyes of one of its most important constituencies: the Wall Street financiers who controlled the flow of investment capital. Until the International Development Association arm of the World Bank was established in 1960, most of the Bank’s funds were raised from the sale of U.S. government-backed bonds (Kapur et al 1997, fn. 12; Goldman 2005; Staples 2006).

Apart from its limited lending activities, perhaps the most important way to understand the global role of the Bank during this period is to look at its activities in “development diplomacy”. This was a policy of making loans for productive investments that would catalyze rapid economic growth, without getting bogged down in the political calculus of Cold War alliances. Here is Black, the president of the World Bank during the 1950s, from a speech delivered at Tufts University:

The so-called competition between Communism and the West is, I am afraid, being conducted too often these days on the Communists’ terms...The issue is this: Are the political interests of the West better served by administering economic aid in an effort to outbid the Russians for public favor in the underdeveloped world? Or are they better served by administering aid with the single-minded purpose of providing something which the underdeveloped countries require for more rapid growth (Black 1960, p. 46)?

Blacks’ ideal mode of operation for the Bank was to give the appearance of neutrality – the concern was not with capitalism or communism, but simply development. Black was critical

of other lending agencies at the time that made “political” loans to countries too blatantly on the basis of their political orientation in the Cold War. But the World Bank’s dependence on Wall Street was well understood by Black:

But development diplomacy needs the backing of capital; unlike some other branches of the art, it is not possible to succeed in this type of diplomacy by just talking a good game. Development diplomacy needs capital because it must be a working diplomacy, capable of pointing to visible results at any given time. *Development diplomacy needs capital because it needs to point to concrete development projects, the tangible proof that it is helping to engineer an escape from poverty* (Black 1960, p. 38, emphasis added).

The World Bank’s reliance on Wall Street was part of a larger identity of the institution with the U.S. state, especially the State Department. It is important to keep in mind the “Americanized” nature of international development at this stage in global history (Gilman 2004; Cullather 2010; Ekbladh 2010). In the 1950s, the United States’ military and scientific powers were unparalleled (Harvey 2003). The U.S. was jolted out of the Great Depression of the 1930s by President Roosevelt’s New Deal, and more importantly, the total mobilization of the economy upon the US’s entry into World War II. The U.S. presented itself, and on the international stage was often perceived by regional elites as a paragon of capitalist modernity and abundance.

Kapur et al. (1997) provide many examples of how the World Bank kept the interests of U.S. foreign policy close to heart. Citing only several will suffice. Nicaragua was one of the largest “developing country” receivers of loans in the 1950s – not out of any outstanding merit in its projects, but because the ruling Somoza family was very cozy with the C.I.A. Black waived the normally strict requirement that borrowing countries settle their arrears before taking a Bank loan for Tito’s Yugoslavia soon after he broke from the Soviet Union, because of the country’s Cold War significance. As global dependence on Middle Eastern oil rapidly increased during this

time period, and as socialist/communist political sentiment gained in the region, the World Bank waived conditions and standard procedure to rush to Iraq in 1950. Finally, the World Bank did not lend to the Eastern Bloc countries of Poland and Czechoslovakia because of the strong U.S. policy of “containing”, not engaging, the communist menace (Staples 1997). All of these decisions were made in close consultation with arms of the U.S. government, especially the State Department and the Treasury.

It is true that Eugence Black did try to resist at least one overtly political use of development aid. The U.S. Embassy in Tehran had written Black as early as 1947, for example, on the importance and urgency of approving loans to Iran as soon as possible. Black resisted, and was again pressured by the State Department to loan an extraordinary amount without the usual string attached to Iran after the fall of Mossadegh in 1954. It was not until 1956 that Black relented and pushed through a loan for Iran (Kapur et al. 1997, p. 104). But the fact that Black resisted, and ultimately failed, political pressure from the United States only strengthens my point that the Bank was far from autonomous from the geopolitics of the Cold War in its actual lending practices in the 1950s.

“Development diplomacy” can be understood as the effort to expand and intensify capitalist growth as a whole, without regard to the political needs and agendas of any one given state. Development diplomacy can be understood as the institutional form taken by global capital’s attempted transcendence from the Cold War geopolitics of the interstate system. Throughout the 1950s, the World Bank was engaged in three notable examples of high-stakes development diplomacy. The first was an attempt to negotiate an out of court settlement between the British Anglo-Iranian Oil Company Iran, which had nationalized the company’s assets, in 1951.

The second was the Bank's attempt to organize and aid the funding of the Aswan Dam in Egypt by the revolutionary nationalist regime of Gamal Abdel Nasser. In both cases, nationalist postcolonial politics threatened to derail crucial nodes of actually existing capitalism; oil in the case of Mossadegh in Iran, and shipping commerce in the case of Nasser in Egypt. In both cases, the World Bank was not able to produce desirable results. Mossadegh resisting any deal with the British that did not recognize Iran's right to expropriate the assets of the Anglo-Iranian Oil Company. Mossadegh's democratic government was toppled by a CIA backed coup in 1953. And Egypt built the Aswan Dam with Soviet funding, and nationalized the Suez Canal in 1956. In fact, it was only in South Asia that the Bank's development diplomacy achieved what was then, and since, been considered a success (Staples 2006).

The Indus dispute was far from the Bank's first engagement with the region. The Bank had a strong and long relationship with Pakistan and India from almost the very beginning of its existence. India received its first loan from the Bank in 1949, and Pakistan in 1952. Together, the two countries received an average of \$31 million annually and accounted for 11% of the Bank's development lending up to the year 1958. The years after 1958 saw a massive increase in Bank loans to the region, especially India. This average disbursement for the two countries jumped five-fold to \$154 per annum in the years 1958-1961 (Kapur et al. 1997, p. 101). It is in this global political economic context of Cold War international development and the World Bank's development diplomacy in what it considered a very important region of the world that we can begin to explore the question of how the Indus Basin Development Fund Agreement was financed.

*Cold War, global finance and the IBDF*

The politicized nature of structure of development financing during the 1950s Cold War strongly influenced the mobilization of funds to support financing of the Indus Basin Development Fund Agreement. We have already examined the clear Cold War context in which Lilienthal's original proposal to mediate the Indus dispute, entitled "Another Korea?" written. In this section, I draw on the archives of the Foreign Office of the UK to argue that nationally-based financial capital negotiated the terms of the IBDF Agreement to suit the particular positions of their national economic and geopolitical agendas.

The historical record reveals that the UK Foreign Office was more concerned about the diplomatic context of the Cold War and maintaining stability in the region, as opposed to commercial or financial issues. An internal memo from the April 9, 1959 is quite revealing on this count:

If we and the other proposed contributors are not prepared to support the Bank's plan or if it is rejected by India and/or by Pakistan, *the consequences will be extremely serious*...Pakistan has made no secret of the fact that if necessary she would fight in such an eventuality [if India followed through on threats to divert waters of Sutlej River for its Rajasthan scheme]..India, if brought to book, could hardly expect to excuse her conduct on familiar legalistic grounds since her position as an upper riparian state demands that Pakistan should continue to be provided with her traditional supply of water...The Western powers therefore would almost certainly find themselves in the position of having to restrain India (or even condemn her intended plans). *The Soviet block could be expected to create trouble at our expense*. ...it is abundantly clear that we would need at the very least to anticipate a rapid and critical deterioration of Indo-Pakistan relations, a major weakening in relations between the West and India, the probable *strengthening of India's relations with the Communist countries*, and a loss of Western influence wherever India's leadership of the Afro-Asians is effective if the Bank's plan is allowed to fail (Hunt 1959, April 9).

The major concern of the UK Foreign Office in considering contributing to the IBDF is what could possibly happen if the UK *didn't* contribute. The worst-case scenario is not that Pakistan would lose certainty over the "lifeline" of the economy. Rather, the concern was that

India would be pushed into a corner and would act in violation of the international water law with regards to the Indus, and that this would have to be met with official rebuke by the UK. Also of concern is the role of India a leader of “the Afro-Asians”, amongst whom the UK stood to lose influence in case the relationship with India soured. What is remarkable in the quote is that foreign affairs with Pakistan are treated as a tool in the effective management of diplomatic relations with India. And India had such sway because of its position vis-à-vis not only the Soviet, but also in the African-Asian world. Another quote, taken from the minutes of an August 14, 1959 meeting between the UK Foreign Office and the Commonwealth office reveals that it is not just fear, but positive publicity for the “free world” that shaped the thinking of UK foreign policy elites.

at the Cabinet meeting on 29th July, he [the British PM] had said that the [Indus Basin] project should be *properly placed in the context of the economic interdependence of the free world* and that its inauguration should perhaps be marked by some international ceremony ([British Foreign Office] 1959, August 14).

The British Foreign Office was not averse to considering the effects their contribution might have on relations with Pakistan. Indeed, the recent military coup of Ayub Khan was seen as an opportunity to influence the loyalties of the regime at a vulnerable moment. In addition, Pakistan had rattled nerves in the UK by threatening to take the Kashmir issue to the Security Council of the UN, as it had consistently threatened to do throughout the Indus negotiations. The British Foreign Office feared that Pakistan would create and “undignified wrangle, damaging both to the relations between India and Pakistan and to the prestige of the Security Council,” (Rumbold 1959, January 23). Symon, a British diplomat, wrote to the Foreign Office wrote about

...the importance of us giving President Ayub a *demonstration of our sympathy and support for his new regime* at the moment when their policies are at the formative stage and hence particularly susceptible [sic] to our influence...it should take the form of some offer of help to particular sectors of Pakistan's economic development (Symon, 1959, January 23).<sup>6</sup>

The question of what currency the contributions would be made created some tension between the parties. In a series of meetings in 1959, the parties went back and forth over whether the contributions would be made in U.S. dollars (because the administration of the funds would be handled by the World Bank in Washington, D.C.), Pounds sterling (because Pakistan and India were both part of the British Commonwealth), tied to specific types of expenditures, or even in kind. The suggestion that aid could be delivered not in cash, but in commodities, was an especially divisive point between the parties. This was because there was a clause in the draft of the IBDF Agreement that explicitly favored international competitive tendering for the massive engineering projects that would be undertaken in Pakistan. A memo from the UK Embassy in Washington D.C., dated June 2, 1959, reports on the desire of the Canadians and Australians to make their contribution in kind, not cash;

...the *Canadians said that they reserved the right to make some part of their contribution in commodities*, either directly for the construction programme or as part of the anti-inflationary support for Pakistan. They could not now specify the commodities they had in mind, but wheat was not necessarily included. *The Australians expressed similar intentions, and mentioned wheat and earth-moving equipment.* The Bank, the Americans and ourselves questioned whether this was compatible with *competitive tendering...which we strongly supported*, in the interests of reducing costs, simplifying the administrative tasks of the Development fund, and reducing the burden on India. Iliff emphasizes that the *Indians attach the greatest importance to competitive tendering*, which might give the opportunity to earn back some of their contribution by supplying cheap cement and other commodities. But neither the Canadians nor the Australians would give way ([British Embassy in Washington, D.C.] 1959, June 2).

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<sup>6</sup> *ibid*

However, both the Canadians and the Australians would eventually give way, and concede that their grants would be entirely in cash. The Germans would eventually agree to this too, but not before some debate about if they could specify the uses to which their contribution would be put. Again, an update from the negotiations in the U.S. to the British Foreign Office is revealing of this tension:

*...the Germans had indicated that they would wish their contribution, or at any rate some part of it, to go in relief of the Indian contribution; they argued that it would be helpful in context of IBRD consortium assistance to general economic development in India, and particularly the third five year plan, to reduce the Indian payment for Indus Waters. Black had deprecated this proposal, mentioning the difficulty about the extra \$30 million and the risk that Pakistani resentment of a reduced Indian contribution, which was any way less than full payment of replacement costs, might jeopardize the plan...Black said that Iliff and Sommers agreed with him on the undesirability of accepting a German contribution on the basis proposed. But he feared that if he now told the Germans that their contribution was acceptable only if it was made on the same basis as that of the other contributors, and used to reduce their shares, the Germans would withdraw their offer. They might also tell the Indians what had happened. He could not undertake this responsibility without the contributors' approval (Caccia 1959, July 14).*

This quote reveals that that West Germany was motivated by a desire to aid development in India. The Germans wanted their contribution to help relieve India's financial obligation towards the IBDF. This would give India greater ability to pursue its third year development plan with greater efficiency. The Bank representatives, however, were not pleased with this suggestion and indeed had considered removing their invitation to contribute to the IBDF, and put pressure on West Germany to make their contribution in the same manner as every other donor.

By mid-December, the parties had come to the agreement that the donor countries would be making contributions to the IBDF in their own currencies. The preference of different countries for making their contributions in kind versus in currency highlights national character

of the financial capital mobilized by the World Bank for the funding of the IBDF. Countries that were competitive on the international market for hydraulic construction and capital goods, like the United States and the United Kingdom, held fast to the principle of competitive bidding. On the other hand, countries that had ready surpluses in certain commodities and were not necessarily competitive on the capital and construction goods market were in favor of making contributions in kinds. Thus the contributions of the countries were motivated in large part by securing markets for nationally constituted capitals. This influenced foreign policy makers in the sense of decisions like whether contributions would be made in currency or kind (like Canada and Australia), and in more long-range concerns of “losing” Indian and Pakistani markets to Soviet communism.

The historical context I have described above to flesh out the relations between the IBDF, the World Bank and the Cold War were well known to the actors involved in the negotiations. There is evidence that officers of the Bank were conscious of the incredible sway the position of the World Bank had by virtue of its location at the nexus of global development finance. In the last year of the negotiations, Pakistan expressed doubts about the wording in the Treaty concerning the status of Kashmir. A letter from Iliff to Black on the question of Pakistan’s worries, from December 1959, reveals that the Bank was well aware that its ability to mobilize development finance from powerful countries around the world gave it crucial control.

Moreover, if there is no water treaty, Pakistan will not only lose the prospects she has of substantial financial assistance from friendly governments, but her economy and external financial credit will suffer a severe blow (Black 1959, December 8).

Eugene Black, the President of the World Bank, was also well aware that control over the global finances that would allow both countries to develop the Indus was a weapon in the hands of the Bank. This can be seen in a letter he wrote Nehru and Ayub on July 7, 1960:

There is an important element of urgency involved. As you know, there is world-wide interest in, and hope for, a settlement of this dispute, and the world expects that agreement is just around the corner. *But I am gravely concerned that the arrangements I have been able to make with the Friendly Governments for financing and Indus settlement may be seriously jeopardized unless there is some assurance of a Water Treaty between Indian and Pakistan within a matter of weeks* (Black 1960, July 7).

### Discussion

Let's return to David Harvey's (2003) "capital logic" and the financing of the Indus Basin Development Fund. We would expect the "capital logic" to determine the structure of global financial capital. But David Lilienthal, the World Bank, and the negotiation agendas of the various "Friendly Governments" that contributed to the IBDB were animated as much by the "territorial logic" of states as they were by the "capital logic" of capitalists. We can say, by drawing on the language I have just explained, that the logic of capital is over-determined, at least partly by the logic of territory as expressed through the Cold War motivations of foreign policy elites. This is to say the capital logic is not reducible to a trans-historical essence. Rather, how these "logics" actually work in historical situations is dependent on how it relates to the territorial logic and other elements in a given situation. If this were not true, we could not explain Lilienthal's re-visioning of the relationship between American empire and global development, the practice of "development diplomacy" as understood by Eugene Black of the World Bank, and the conflicting economic and political motivations that concerned the negotiators of rich capitalist states as they negotiated their contributions to the IBDF.

This chapter focused on historicizing the logic of capital in the context of development finance in the 1950s. I draw on the abstract and logical analysis of David Harvey to guide my inquiry in two respects. First, I focused on the capitalist logic because it is one of the major components Harvey identifies as shaping international politics (Harvey 2003). Second, I examined the capital logic in the international arena because this is where the financing for the massive IBDF project was mobilized. By depicting the world of Cold War Development generally (through the short biography of Lilienthal and the description of the World Bank of the 1950s) and specifically (through the financing of the IBDF), I argue the capital logic was overdetermined, in large part by the territorial logic. The territorial logic of Cold War statecraft exercised itself through finance capital. Thus, it does not make sense to argue which logic “trumped” the other in a given historical circumstance, because any given logic can serve as the vehicle for the expression of other logics. In the next chapter, I focus on state formation in Pakistan in the context of hydraulic regionalism, or subnational region-based politics that revolve around water development (Swyngedouw 2013).

## CHAPTER 4: UNEVEN DEVELOPMENT AND STATE FORMATION IN PAKISTAN

The journal *Indus* was published by the Public Relations wing of the Water and Power Development Authority, the premier water development agency in Pakistan. The most interesting issues of the journal are from the 1960s. In these early issues, an enthusiasm and optimism about the future of Pakistan is expressed, which is in dramatic contrast to the views held by many Pakistani engineers today. S.K. Baloch, poet-engineer extraordinaire penned the following poem, titled “Taming of the Indus at Tarbela”, in the January 1966 issue of *Indus*.

Like a Himalayan god that for a while  
 Condescending leaves remoter haunts  
 It came below: but lo!  
 The magic of its ancient myth  
 That made it worshipped by the cringing mortals  
 Supplicating by its dented shores  
 For favours or for mercy from its raging waters  
 Wasn't there any more.

Dam gigantic that had risen  
 Damming up its downward course  
 Now trammelled it as if in chains  
 It couldn't pillage farm and field  
 Chasing men and drowning cattle  
 Flooding fields of golden corn  
 But held in harness meekly flowed  
 Through spillways over to thirsty lands  
 That yearned for water as of yore

Deserts bloomed and arid lands  
 That blazing sun had burnt  
 Now bore rich harvests those of cotton  
 Wheat and rice and maize  
 And fled from erstwhile barren lands  
 Those howling hungry days  
 While heat and light from hydel power  
 Lit up all the country  
 With bright and gold rays.

Baloch's poem is an apt expression of the technocratic developmentalism that marked official and expert discourse in Pakistan in the 1960s. In Baloch's vision, Tarbela Dam, which was under construction at the time, would mark a radical break in the story of Pakistan. Whereas before "cringing mortals" of the new nation could only beg for "favors or for mercy" from the river, after Tarbela was built deserts would bloom and the "heat and light from hydel power" would light "up all the country with bright and golden rays". Engineering, and specifically river engineering, provided the key for national development and progress. The thorny question of the politics of regional difference, much less the specific issue of hydraulic regionalism, is not even hinted at in the romantic vision Baloch holds of technology. Just three years later, Baloch would be singing a very different tune, as I explore in Chapter 5. In the "Taming of the Indus at Tarbela", however, Baloch nicely captures the ideology of technocratic developmentalism, the notion that technology promotes undifferentiated national development. In this chapter, I examine the historical conditions for the emergence of technocratic developmentalism in 1960s Pakistan in its political as well as hydraulic aspects.

In Chapter 3, I reconstructed the international Indus basin dispute of the 1950s by historicizing the logic of capital on the international scale. I argued that Cold War logics played a large part in mobilizing the finance necessary to build the Indus Basin Development Fund (IBDF) project. This chapter continues the historical reconstruction of the 1950s, but focuses on the national scale. My argument is that the funding and construction of the massive IBDF must be understood in the context of dramatic political reorganization and transformation in Pakistan. Ayub Khan, who came to formal power in military coup in 1958, styled himself a strong and visionary reformer who would usher Pakistan into the modern age (Khan 1967). Under Ayub

Khan, military-bureaucratic elite suppressed political activity and presided over what is still hailed as Pakistan's "decade of development". Pakistan state elites promoted the view that that rational, technocratic planning was the only way foster national development and progress (Hull 2012; Mitchell 2002; Scott 1999).

In 1955, with strong support from Ayub Khan and the Pakistani military, the One Unit plan was implemented. This administrative reform consolidated all the provinces and regions of West Pakistan into a unitary government, thus denying a formal political voice to regionalized nationalities within Pakistan such as Sindhis and Balochis. The construction of massive water infrastructure that more closely integrated the tributaries of the Indus was, in the hydraulic sphere, part of the same technocratic and authority-centralizing moment in Pakistan's politics in the decade of the 1960s. My argument in this chapter is that political geography and political hydrology were both implicated in the same process of state-led technocratic management of Pakistan's economic and political contradiction (Swyngedouw 1999, 2007, 2013; Carroll 2006, 2012). Following Antonio Gramsci, I understand this moment of state-formation and extension in Pakistan as a "passive revolution".

Passive revolution, as explained by Morton (2007, 2010, 2013), is a process of state formation in the capitalist periphery that forms at the intersection of global and domestic political economy. It also denotes a methodological approach to the analysis of that process, which focuses on the cultural and political effects of uneven development at multiple scales. In the case of Pakistan, passive revolution was geared towards the consolidation of state power in the hands of Punjabi military-bureaucratic elite, and was enabled by the global political economic situation (discussed in the last chapter). The military-bureaucratic elite formally took up the mantle of national leadership in Pakistan, and attempted to construct a hegemonic ideology to which all

classes and regions ascribe as a matter of common sense. This hegemonic ideology was one of apolitical, technocrat-led development, and was promulgated by official organs of the military government, not least of who was the prolific Ayub Khan himself.

Throughout this dissertation, I argue that there exists a dialectic relationship between hydraulic regionalism and technocratic development in the historical hydropolitics in the Indus Basin. This chapter focuses on the historical and political context of technocratic development in the 1950s in Pakistan. It also places the global funding of the IBDF in the context of political evolution of the state in Pakistan. In the next chapter, I examine in greater detail how hydraulic regionalism has interrupted, and continues to interrupt, the tendencies of technocrat-led watershed development.

Before turning to historical analysis of this Cold War conjuncture, I discuss Gramsci's method of passive revolution.

#### Gramsci's passive revolution and the 'function of Piedmont'

Two Gramscian concepts frame the analysis and narrative of this chapter. The first is passive revolution, as discussed above. The second draws mainly from Gramsci's analysis of the Italian Risorgimento, or Italy's national unification, over the course of the 19<sup>th</sup> century. The caveats I mentioned in the introduction, regarding the special care with which Gramsci's concepts are made to "travel" by theorists, should be kept in mind. It would be incorrect to mechanically apply these insights outside of the context in which he developed them (Morton 2013; 2010). On considering the value of the passive revolution, Gramsci (1971, p. 114) notes:

Hence the theory of the 'passive revolution' not as a programme, as it was for the Italian liberals of the Risorgimento, but as a criterion of interpretation... (It would seem that the

theory of the passive revolution is a necessary critical corollary to the Introduction to the Critique of Political Economy).

Andrew Morton's (2007) explication of Antonio Gramsci's theory of "passive revolution" is helpful in thinking about how to relate "the international" as an important, but not hierarchical or unidirectional, causal force in particular instances of state formation. Passive revolution also helps us avoid the pitfalls of scalar analysis that were touched on briefly above. Gramsci uses the term "passive revolution" in several ways to refer to processes of historical state formation that depart from a "classical" French model of a revolutionary bourgeois seizing power from the feudal classes with the backing of the popular classes, especially the peasantry. In fragments of his prison writings, Gramsci refers to the passive revolution as a "blocked dialectic" and as a contradictory process of "revolution/restoration" (Gramsci 1971, pp. 106-120). In the context of international political economy, however, Gramsci refers to the process of passive revolution to describe the evolution of states and regions and the geographical spread of capitalist class relations in the context of a well-developed inter-state system.

Key to this understanding of state formation is the conception of a state as a *node*, rather than a *level* in the resolution of various contradictions between unevenly developed regions within and between national territories (Jessop 2005, Morton 2010). Gramsci thus understands the passive revolution in Italy not only in the context of the regional intricacies of the peasant question, but also the geographical spread of Fordism and even the successive waves of counter-revolutionary strategies employed by European elites in the wake of the French Revolution (Morton 2007). Passive revolution, then, allowed Gramsci to analyze state formation in "specific contexts in the expansion of *both* the geopolitical system of states *and* capitalist uneven

development,” (Morton 2013, p. 58, emphasis in original). In Gramsci’s own words (1971, p. 84);

These variations in the actual process whereby the same historical development manifests itself in different countries have to be related not only to the differing combinations of internal relations within the different nations, but also to the differing international relations (international relations are usually underestimated in this kind of research) (p. 84).

Gramsci’s “Notes on Italian History” (1970, pp. 44-122) are his diagnostic attempt to understand how and why the political project of unifying the Italian peninsula into a single state did not fulfill its radical potential. Gramsci criticizes both major political groups that were active in the Risorgimento; the conservative Moderate party as well as the populist Action Party, although he is more unsparing in his critique of the Action Party. By failing to “pose the agrarian question”, Gramsci says, the Action Party failed to pose, much less to solve, the “national question” in Italy. By this Gramsci means to suggest that a trans-regional alliance between peasants and workers, oriented on their mutual interests as oppressed and undeveloped classes, could have bypassed the elite-formulated politics of regionalism (see also Gramsci 1995). The Moderates, on the other hand, are given a pass by Gramsci. This is because he does not perceive them to have failed in their political mission. The goal of the Moderates, as perceived by Gramsci, was never national unity and a resolution of the uneven power relationship between North and South Italy, but rather the “organic expansion of Piedmont” (Gramsci 1971, p. 100).

The region of Piedmont sits in the northeastern corner of Italy, along the border with modern-day France. The Kingdom of Sardinia-Piedmont was an early and powerful force for Italian unification in the mid-19<sup>th</sup> century, although, as Gramsci remarks, the Piedmontese

Moderate party “...wanted Piedmontese expansion and not an Italian confederation,” (ibid, p. 85). The region of Piedmont assumes importance in Gramsci’s analysis of the Risorgimento because he interprets the social and political function of this regional state as a “ruling class” (ibid, p. 104). Gramsci argues that Italian unification was not led by a ruling class evenly distributed over the space of the peninsula, but rather by a regional formation that dominated the other regions (including regional elites) . Gramsci (ibid, pp. 105-106) was keenly interested in the

...significance of a ‘Piedmont-type function in passive revolutions – i.e. the fact that a State replaces the local social groups in leading a struggle of renewal. It is one of the cases in which the groups have the function of ‘domination’ without that of ‘leadership’: dictatorship without hegemony.

The province of Punjab, as we will see, played a Piedmont-type function in the technocratic passive revolution in Pakistan in the late 1950s and 1960s. Although Ayub’s regime was unmistakably a military dictatorship, I argue that this does not foreclose attempts by the regime to promulgate an ideology of apolitical development in the hopes of establishing not only “domination” but “leadership” throughout Pakistan. Before an examination of some of Ayub Khan’s rhetoric on development and nation building, however, I link the discussion of the Cold War in the last chapter to domestic politics in Pakistan during the 1950s.

### The Cold War in Pakistan

Pakistan did not enter Cold War geopolitical calculations with Ayub Khan’s coup in 1958. Pakistan was by the mid -1950s becoming an emergent “frontline state” in the U.S. regional strategy of encircling the Soviet Union, especially through the territories of Turkey, Iran, and

Pakistan (Akhtar 2010). When the UK Parliament passed the Indian Independence Act in 1947, legally granting the dominions of Pakistan and India formal independence, it was the Indian state that inherited the centralized imperialized state structure in Delhi. “Pakistan”, at this time, was more a political slogan than an apparatus of state at this point – the new country was severely lacking in finances, trained administrators, industrial capacity, international credibility, or even an organized national party with grass-roots support. What it did have, and what seemed to state elites at the time to be Pakistan’s best bet on survival, was an Army. And what an Army: it was arguably the successor of the grand British Indian Army which contributed more than a million soldiers to the British effort in the World Wars and policed the Indian Ocean region and Central Asia for almost a century. Pakistan’s, and especially Punjab’s, martial role in the British Empire also had to do with its geographic location, and this was a geopolitical asset that the British hoped to retain even after relinquishing power in the region.

The British Chief of Staff, advising the Government on the future of military alliances in the region, wrote in November 1946: “The area of Pakistan is strategically the most important in the continent of India and the majority of our strategic requirements could be met by an agreement with Pakistan alone. We do not therefore consider that failure to obtain the [defence] agreement with India would cause us to modify any of our requirements,” (quoted in Ankit 2010, p. 50). Although it was not until 1958 that General Ayub Khan would lead the first military coup in Pakistan’s history, the Army began centralizing state authority in its hands and representing itself in the arena of inter-state relations as the representative of Pakistan well before then (Jalal 1990).

Although the U.S. was actively seeking Cold War allies in the postwar landscape, the initial alliance between the U.S. and the Pakistani state was not inevitable. Indeed, the U.S. State

Department and the U.S. media establishment supported the notion of a united Indian state succeeding the British, and therefore held a dismissive view of the Pakistan Movement in the 1940s. Early attempts by the Pakistani state to acquire military equipment and foreign aid from the U.S. were politely rebuffed or received indifferently. South Asia was simply not a high-priority area for the U.S. at this time. This pattern changed in the 1950s, with the outbreak of war in Korea, the adoption of a non-aligned position by the Indian state under Prime Minister Jawaharlal Nehru, and the growing conviction in the U.S. State Department that Middle East oil was vulnerable to Soviet seizure. Although the Pakistan-US alliance at this time had significant effect and laid the ground for future alliances, the amount of U.S. aid, especially military aid which the Pakistani military yearned for, always fell short of expectations.

The Pakistani Army, firmly in control of the Pakistani state, and the U.S. State articulated their alliance around the node of anti-communism. In the sphere of inter-state relations, this was reflected by an arms deal with the U.S. in 1954 and Pakistan's joining in several regional, and largely symbolic, anti-communist alliances in 1955; the South East Asian Organization Treaty (SEATO) and the Baghdad Pact (known also as the Central Treaty Organization, or CENTO). The supposedly religious essence of Pakistani national culture, which presents such a frightening specter in reporting of the geopolitics of Pakistan today, was seen as bolstering the anti-communist credentials of Pakistanis.

John Foster Dulles, Eisenhower's secretary of state and a pioneering Cold-War warrior, gushed about the possibility of an alliance with Pakistan before the House Foreign Affairs Committee in June of 1953; "I believe those fellows are going to fight any communist invasion with their bare fists if they have to," (quoted in Kux 2001, p. 56). In 1954, Pakistan and the U.S. signed the Mutual Defense and Assistance Pact. The pact of 1954 provided the legal foundations

for U.S. military aid to Pakistan, but Pakistani officials were disappointed at the meagerness of the initial offer: a one-time commitment of no more than \$30 million dollars. Government officials wanted more than this, and while visiting Washington D.C. in the fall of 1954, played up their anti-communist credentials. An irked Dulles is reported to have responded (in an eerie foreshadowing of the patronizing U.S. geopolitical discourse around the ‘war on terror’ a half-century later), that he ‘thought Pakistan had undertaken its anti-communist stand because it was right, not just to make it eligible for certain sums of dollar aid’ (quoted in Kux, 2001, p. 68).

The alliance of the 1950s had decisive impacts on the balance of institutional power. The Cold War interests of the U.S. in the region, the early deaths of prominent Pakistani politicians, and ultimately the willingness of civilian administrations to defer to Army leadership for administrative tasks (civil disorder, refugee resettlement, foreign policy) tipped the favor decisively towards the Army in the first decade of Pakistan's rule, culminating in the first military coup by General Ayub Khan in 1958 (Jalal 1990).

The anti-communism of the Pakistani state permeated the domestic sphere, and the 1950s and 60s saw the dismantling, repression, and even banning of communist, leftist, and progressive institutions in Pakistan. The culmination of this repression came after a foiled coup attempt by leftists, some of whom were serving members of the armed forces in 1951, otherwise known as the Rawalpindi Conspiracy case (Toor, 2011). The most potent threat to military rule at this time came from populist democratic forces: notably ethno-nationalists in East Pakistan (later Bangladesh) and from the cultural appeal socialist intellectuals held with the masses. To counter both threats, Pakistan’s military intelligence unit, the Inter-Services Intelligence (the ISI) established links with militant Islamic groups, using Al-Badr and Al-Shams to slaughter students, intellectuals, and politicians during the Bagladesh liberation movement in the early

1970s (Akmam 2002; Nawaz 2008). Anti-communist literary and political groups, especially fundamentalist Islamist ones, were given support by the ISI and the CIA's 'Congress for Cultural Freedom', in addition to an American publishing house in Karachi (Ali 2011; Toor, 2011).

Support for Pakistan from the "free world" in the second half of the 1950s was not restricted to cultural activities. Foreign aid to Pakistan from capitalist states increased from 1% of Pakistani GNP in 1955/1956 to 5% in 1959/60. More impressive is the fact that foreign aid as percentage of total development expenditures in Pakistan increased from 15% in 1955/1956 to 44% in 1959/60 (Rosen 1985, pp. 174-75).

#### Uneven developments of the Pakistani state

It would not be controversial to argue that the military government of Ayub Khan was anti-politics – indeed, what else would characterize a military government? But of what did "politics" consist of in 1950s Pakistan? What were the contradictions of state, society and economy to which the military regime was a reaction? One influential explanation focuses on the politics of ethnicity, understood as a politics of class groups vying for access to scarce government positions, form the defining contradiction in Pakistan. I argue in this section that uneven development, across political structures, sectors of the economy, but especially across space, offers a valuable vantage point to understanding the politics of ethnicity in Pakistan.

It is useful to consider at the outset the relationship between state and capital in Pakistan. In Pakistan, unlike in India, there was neither a strong capitalist class nor the direct threat of electoral recall of state managers in the 1950s (cf. Chibber 2003; Sanyal 2007; Chatterjee 2011). An industrial capitalist class simply did not exist at the time of Pakistan's independence in 1947. Almost all of the productive industrial assets that British India boasted were in territories that

ended up in India. There was, however, a mercantile trading class in which the government saw a nascent industrial bourgeois. Economic policies in Pakistan in the first decade after independence explicitly favored this urban merchant class in the hopes that it could serve as an engine for industrial growth in the country.

The 1950s were marked by a distinct bias in planning towards urban consumers, traders and industrial enterprises. This was reflected in the conscious decision of Pakistan's government to pursue a strategy of import-substituting industrialization in the country. This means that local industry was given preferential access to local markets through government support. At this time the main focus of industry in Pakistan was the production of consumer goods. As Pakistan had virtually no industrial class at the time of partition, the government's strategy was to incentivize the trader/merchant class to invest their profits in industrial ventures. This strategy was greatly aided by the commodity boom brought on by the Korean War between 1950 and 1952. The surpluses made by traders during this period were significant, and led to the creation of a nascent Pakistani bourgeois.

Agriculture in Pakistan, which constituted the bulk of the labor force and export earnings of the economy, produced surpluses which were consciously siphoned to the urban sectors of the economy. The main mechanism through which this transfer was achieved was an over-valued exchange rate. In 1949, the United Kingdom devalued the pound and India followed suit. Pakistan, however, did not devalue, and this resulted in its having an over-valued currency with respect to both India and Great Britain. An over-valued currency benefits importers, since it makes their expenditures cheaper, and hurts exporters, because it makes what they are selling more expensive on world markets. Noman (1985, p. 18) cites a study which estimates that about 15% of the gross output of agriculture was transferred to the urban economy every year.

The focus on industry, to the neglect of agriculture, was simply not sustainable in a country where the engine of the economy and livelihoods was the agrarian sector. There was sluggish growth in the overall economy of Pakistan during the 1950s, largely because of stagnation in the agricultural sector. The economic data below supports this interpretation (Table 5).

|                                  | 1950-<br>1951 | 1951-<br>1952 | 1952-<br>1953 | 1953-<br>1954 | 1954-<br>1955 | 1955-<br>1956 | 1956-<br>1957 | 1957-<br>1958 |
|----------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| <b>GNP/capita (Rs.)</b>          | 312           | 313           | 314           | 315           | 316           | 316           | 316           | 317           |
| <b>Rural income/capita (Rs.)</b> | 205           | 204           | 202           | 202           | 201           | 199           | 198           | 195           |
| <b>Agriculture (% change)</b>    | 2.6           | -9.1          | .18           | 13.6          | -.8           | 2.1           | 2.3           | 1.9           |
| <b>Manufacturing (% change)</b>  | 23.5          | 18.7          | 23.6          | 28.7          | 24.1          | 17.5          | 8.1           | 4.9           |

**Table 5: Economic change in Pakistan, 1950-1958**

There was a boom in manufacturing in the first half of the 1950s, reflecting the governments' subsidy of the sector as well as the impacts of the Korean War. However, it is painfully clear that not only had this boom petered out by 1956, but that it had little or no impact on GNP/capita, which increased a measly 1.6% between 1950 and 1958. It is also notable that rural income/capita during this period actually *decreased* more than 5%. More than 60% of the labor force over the 1950s worked in agriculture (Ahmed and Amjad 1984, p. 18). We can draw

two implications from this. First, that industrial boom did not cause a boom in the agricultural sector (for example, through expanded demand for agricultural products). And second, a small group of people became very rich during this time despite the fact that there was a decline in income for the majority of the laboring population. Pakistan's Second Five Year Plan, spanning the years 1960-1965, recognized that the 1950s were marked by a contradiction between the urban industrial thrust of economic policy and the agrarian foundations of the Pakistani economy. The capitalist class in Pakistan at this stage, therefore, was nowhere near capable of exerting the kind of pressure on the state that Chibber (2003) talks about in the Indian context.

To understand the evolution of political power in Pakistan it is important to make a distinction between the elected and non-elected parts of the state. Immediately after Pakistan had attained independence in 1947, the state was faced with multiple crisis that it simply did not have the capacity to effectively manage: the enormous displacement and migration of people across the new Indo-Pak border, a war over the disputed territory of Kashmir, and a lack of legitimacy on the international stage were just some of the many related crises Pakistan faced. The Muslim League, the nationalist party that had campaigned for the creation of Pakistan, ironically did not have a strong presence in the areas of British India that became Pakistan. As a result of the weakness of civil political parties and the lack of organizational capacity of the Pakistani state, power in the crucial years after 1947 was gathered in the hands of the professional bureaucracy, who were mostly either Punjabi or migrants (*muhajir*) from Urdu-speaking regions in north India.

Over the course of the 1950s, the elected branches of government in Pakistan lost power to the military and the bureaucracy. It is tempting to dismiss the parliamentary activity that occurred from between 1947 and the 1958 coup as a mere "facade" that masked the reality of

actual rule by the “military-bureaucratic oligarchy” (Alavi 1972). But it is important to take also recognize the difference between outright military rule and periods in Pakistani history where politicians and political parties are operational. In the 1950s, a series of autocratic dismissals of provincial and federal cabinets by bureaucrats, a strong and tightly centralized bureaucracy, and the active role of soldiers in multiple spheres of governance are clear indicators of the relative weakness of political parties and politicians (Sayeed 1960, 1967).

To sum up, several contradictions marked the Pakistani state form in the 1950s. Recognizing these contradictions can guide further exploration into evolution of the Pakistani state in the 1950s that led to the acceptance of the IBDF Agreement. First, there was the contradiction between economic policy, which favored industrial and urban interests, and the agrarian base of the Pakistani economy. Second, there was the contradiction between elected and non-elected portions of the Pakistani state, a contradiction that is still alive and well in contemporary Pakistan. Indeed, March 2013 was the first time a democratically elected parliament completed a full session in office. All previously elected parliaments were dismissed autocratically before completing their full term. To understand the specificity of the Pakistani form of the developmental state, we must understand the *political geography* of the economic and democratic contradictions mentioned above.

I begin with the geography of the contradiction between elected and non-elected factions of the Pakistani state. A fundamental contradiction existed between liberal theories of legitimate democratic representation Pakistan inherited from the British, population geography and the location of power. This contradiction actually predated the formal establishment of Pakistan. The “Pakistan Movement” was spearheaded in British India by the Muslim League in explicit opposition to the all-India nationalism expressed by the Congress Party. The Muslim League,

arguably up until the 1940s, had its most numerous and solid support in parts of British India where Muslims were a minority. Headed by the lawyer Mohammad Ali Jinnah, the Muslim League was composed largely of what Hamza Alavi (1988) called the Muslim ‘salarial’: educated, middle-class, civil servants who derived social standing from the scarce positions they occupied as ‘native’ subjects in the British Indian state. The Muslim salariat feared that the Muslim community would be overrun by the numerically superior ‘Hindu community’ in an independent India, and endorsed the slogan for ‘Pakistan’ in the Lahore Resolution of 1940 (Jalal 1990).

The demand for Pakistan presented was not a paradoxical as long as the Muslim League position was read as a demand for greater representation of the Muslim population *within* a unified Indian constitutional set up. It is unclear exactly what the Muslim League leaders had in mind, but by 1946 ‘Pakistan’ had become a full-throated battle-cry for a separate state, composed of the territories of British India that had a majority-Muslim population. This strategy revealed a fundamental contradiction of political geography: support for Pakistan came predominantly from Muslim-minority provinces that were decidedly *not* destined to become part of a new Muslim state. Jinnah and the Muslim League soon realized that in order to be taken seriously as a representative of Indian Muslims, the powerful, populous, and prosperous Muslim-majority province of Punjab must be counted amongst their supporters.

This contradiction in the political geography of federalism continues to haunt Pakistan, and takes the form of a fear of the “Punjabization” of Pakistan (Talbot 2002). Mohammad Waseem (2011) argues that the federal form in Pakistan (and in pre-Pakistan Muslim League politics in India) has always been “majority-restraining”. For example, the demand of the Muslim League within Indian nationalist politics was originally conceived of as a form of parity

in the central government between Muslims and non-Muslims. This parity was not proportional to the Indian population represented, which was at most 25% of the actual proportion of the Indian state. Importantly, the demand for parity was made not on the liberal political notion of “one person, one vote”, but rather on the idea that Muslims constituted a nation in India by virtue of their supposedly essential civilizational differences with non-Muslim Indians. After 1947 the “majority-restraining” politics of federalism continued, but this time with actors in West Pakistan and especially Punjab trying to restrain the demographic majority of Bengalis (East Pakistan). To understand this postcolonial ethnic conflict, we must trace the historical concentration of political power in Punjab.

Under the British Raj, Punjab provided a steady stream of food and recruits for the army. This led to the cultivation of a rural Punjabi landed aristocracy aligned with military and civil elites: a triad that would powerfully shape the future of Pakistan (Jalal 1990; Aziz 2008). Indeed, the colonial ‘Punjab school’ of administration adopted in the region was a ‘semi-military, despotic form of government’ (Talbot 1988, p. 34). Henry and John Lawrence were two British brothers that essentially ran the entire region, supported by civilian and military officials invested with both administrative and judicial powers. Even after the passage of the Punjab code of Civil Procedure (1862) and the Punjab Laws Act (1872), authoritarianism was a hallmark of life in Punjab that stretched well beyond the 19th century (Mathur, 1986). In the 1937 elections, for example, only one quarter of the electorate consisted of ‘non-agrarian’ castes (Talbot, 1988). The political landscape of future Pakistan was further weakened by the Jinnah-Sikandar Pact of 1937.

This subsumed Jinnah’s All-India Muslim League beneath the Unionist Party, which consisted mainly of rural elites loyal to the British. And this meant a nationalist party never developed a grassroots presence in Pakistan the way the Congress did for India. Instead, political

power based on party politics was captured very soon after partition by the landed aristocrats of Punjab. Even this limited political power was soon usurped by a partnership of the bureaucracy and the Army in 1953, as we have already seen.

The bureaucracy and the military are unelected institutions of the state with deep roots in the province of the Punjab. In Pakistani political discourse, these powerful non-elected branches of the state, and especially the Army, are referred to as “the establishment”. On October 7, 1958, President Iskandar Mirza, a career bureaucrat, dissolved the newly minted 1956 Constitution of Pakistan, dismissed the national and provincial assemblies, and declared martial law. Mirza appointed General Ayub Khan as Chief Martial Law Administrator, confident that the elite bureaucracy and the army would share power while continuing to exclude elected politicians. Three weeks later, General Ayub Khan cemented the place of the military as the dominant partner in “the Establishment” by dismissing Mirza from the Presidency and exiling him from Pakistan. Ayub assumed the title of President for himself.

The literature on center-province tensions in the Pakistani polity has focused on the main regional-ethnic fracture in the Pakistani state formation as between Bengalis and Punjabis. The very good reason for this is of the successful revolution of Bengalis which resulted in the establishment of the independent state of Bangladesh in 1971. The complaints from East Pakistan, composed of the eastern (more Muslim) portion of the united province of Bengal, presented an especially acute challenge to the ideology on which Pakistan was founded: that the common religion of Islam constituted a united and distinct nation. The expression of regional identities, therefore, was perceived by the central state as “anti-Pakistan”. East Pakistan, however, had a strong and deep regional identity that arguably transcended religious community and was tied closely to language, culture, and geography.

There were many warning signs of the coming center-province conflict, but only two will be detailed here. In 1948 and 1952 there were language riots in Dhaka, East Pakistan in response to declaration of the central government that Urdu would be Pakistan's one and only official language. Bengali speaking students were especially outraged at this declaration because it limited their access to government jobs, which were already dominated by West Pakistanis, especially Urdu-speaking *muhajirs* and Punjabis. Second were the results of the first elections held in Pakistan on the basis of universal suffrage, the provincial legislative assembly elections in East Pakistan in 1954. There was a complete rout of the Muslim League in favor of a regionalist collection of parties called the United Front. The Governor-General of Pakistan, displeased at the results and the growing tension between East Pakistan and the central government, dismissed the United Front government and executive. The province was then governed directly by the central government through an appointed Governor for one year.

One Unit: "the dream of the bureaucracy"

Regional tensions, inextricably bound up with ethnic and linguistic identity, put enormous strain on the Pakistani state from its very inception, and arguably even within the constitution of the Pakistan Movement (Noman 1988). A technocratic and top-down solution to regional centrifugal tensions came in the form of the consolidation of the provincial governments of Western Pakistan into One Unit in October 1955. The One Unit plan was the logical modernist response to the political challenges of regionalism and specifically to the problem of the demographic weight of Bengal (East Pakistan) in the existing federal structure. Under the new federal structure, West Pakistan and East Pakistan would have parity, even though East Pakistan still contained more than half of the population. The "One Unit" plan was backed mainly by Punjabis,

the bureaucracy and the army, and opposed by regional elites in the western wing as well as Bengalis in the eastern wing. The idea was simple; if regional tensions are being expressed through provincial governments, why not get rid of the provincial governments? A unitary government structure should produce a unitary national territory. The “One-Unit” plan, which lasted until 1970, was thus a constitutional strategy to ensure that Bengalis would not dominate the Pakistani federation, as well as to suppress ethnic identity politics in the other provinces of the western wing, especially Sindh.

One Unit had distinct implication for river infrastructure as well. Haines notes that the barrage at Kotri only picked up steam after One Unit was declared. The establishment of One Unit meant that representatives from Punjab and other West Pakistani provinces could now raise questions on the status of construction of Kotri barrage, and that its progress was likely to be held up by competing rural and radical interests in Sindh. Further, the barrage was explicitly celebrated as a “national” project, not a Sindhi project during the foundation-stone ceremonies (Haines 2011a, 2011b). Part of the appeal of the One Unit system to a modernist mind was the notion that it would be administratively more efficient to manage a territory through a centralized apparatus. This type of thinking was especially true for the management of watersheds – as we have discussed in the context of the Lilienthal Proposal of 1951 and the negotiation of the Indus Waters Treaty from 1952-1954. The complementarity of the One Unit administrative reorganization with technocratic principles of watershed administration was not lost on contemporary observers. An editorial from the New York Times printed on November 7, 1955 cheers Ayub on:

There were several good reasons for this move [to establish One Unit]....In some fields *unified effort* was imperative to replace regional rivalry. Irrigation is the most

conspicuous of these, since the life of the whole country depends upon the wise and constructive use of the water supply...Pakistan is making an earnest effort to establish good government and deserves the good wishes of sympathetic friends (New York Times 1955).

The establishment of One Unit did not go uncontested, even within Punjab. One of its most outspoken critics was the fiery leftist landlord, Mian Mohammad Iftikhar-ud-Din. Iftikhar-ud-Din was a member of the provincial assembly of Punjab, and was an influential, if ultimately unpersuasive, voice in the formative years of the Pakistani state. Addressing the Constituent Assembly of Pakistan on September 8, 1955, Iftikhar-ud-Din roundly condemned the One Unit plan as undemocratic project of the “ruling class”.

The truth is...that the plan envisaged in the [One-Unit] Bill reflects *the dream of the bureaucracy*...Ten [administrative] commissioners will be controlled by officials with wide powers....Well, Sir, if that is so, then it is all the more *undesirable from the democratic point of view to have One Unit*...They [commissioners] will function without check and advice of an elected local assembly. It will lead to an absolute bureaucratic government...the truth is that, the present rules, no matter what they say, want at best an administratively controlled democracy, which is a contradiction in terms and what the people of Pakistan want to have, is a democratically controlled administration which to them was the real purpose of having Pakistan (Iftikhar-ud-Din 1971, p. 456)

In the same address, Iftikhar-ud-Din explicitly contested the naturalization of the political unit of West Pakistan by reference to the unity of the Indus Basin.

It has been said that West Pakistan is an open hand of benediction, with its five rivers, like fingers converging into one palm. I submit, Sir, that let that hand of benediction remain open. Don't close into a mailed fist to frighten the people by herding them under One Unit (ibid, p. 456).

Iftikhar-ud-Din predicted that the One Unit plan, despite being presented as a plan of national unity, would ultimately heighten the politics of regionalism within West Pakistan by not allowing the smaller provinces an independent voice. As we will see in greater depth in the next

chapter, in the context of technical debates in the early 1970s on the eve of the dissolution of the One Unit, he was correct.

So far I have argued that the contradictions in the evolution of the Pakistani state are rooted in the political geography of federalism in the Pakistani polity – the uneven distribution of political power as expressed through the control of the bureaucracy and the Army versus the distribution of populations. Ayub Khan’s developmental regime must be understood as arising from, and attempting to resolve, these contradictions of postcolonial state and society in 1950s Pakistan.

#### Ayub Khan and the passive revolution in Pakistan

Ayub Khan’s regime explicitly presented itself as necessary to transcend the contradictions highlighted above. On October 8, 1958, the day he seized power, Ayub Khan made a radio broadcast to the nation. His message to the nation was clear – democratic politics and politicians were threatening the coherence of the nation and he would not tolerate it.

Let me announce in unequivocal terms that our ultimate aim is to *restore democracy but of the type that people can understand and work*...I must also ask you to work hard and put in your best effort. This is the period when our State has to be built and this can only happen if people work. *Slogan-mongering can never take the place of hard sweat*...A word for the *disruptionists, political opportunists, smugglers, black-marketeers and other such social vermin, sharks and leeches. The soldiers and the people are sick of the sight of you*. So it will be good for your health to turn a new leaf and begin to behave, otherwise retribution will be swift and sure (Khan 1961, p. 4).

It would be difficult to find a more clear expression of anti-politics. Ayub dismisses democratic politics as mere “slogan-mongering”, and warns politicians, as well as other “social vermin, sharks and leeches” that the “soldiers and the people are sick” at the sight of them.

Furthermore, Ayub warns these undesirable elements that if they don't "turn a new leaf and behave", "retribution will be swift and sure". Ayub's attitude towards politicians did not change over the course of this decade long rule. The "Basic Democracy" system that he initiated, based on non-party elections, was designed to limit the possibilities for oppositional democratic politics and to coopt local level leaders into the military state apparatus. The solution the regime of October 8 presented to the contradiction of elected vs. non-elected arms of the state was therefore simple: the elected branches must be suppressed, until such time that a democracy can be invented that "people can understand and work,".

Ayub does not rely on classic liberal notions of representative and accountable government to justify his intervention – indeed, he cannot. But he also does not rely on that bugbear of Pakistani politics, Islam. Instead, Ayub enrolls the notion of "development" generally, and more specifically, "science" and "engineering" to legitimize his regime. Thus his justification for considering West Pakistan as "one-unit" is not that it represents the wishes of the people who live there, but rather that this is best way to "achieve the maximum results", by which he means economic growth.

The contradiction between center and province, as mentioned above, was "ethicized" in the Pakistani state, with Punjab and Punjabis perceived as unfairly dominant. Even though he himself was not Punjabi, Ayub's attitudes to the decentralization of power were shot through with racism, chauvinism, and autocracy. A quote from his autobiography, published while he was still in office, is illustrative of the racist views held by many in the West Pakistani elite that exacerbated ethicized center-province tensions in Pakistan.

East Bengalis, who constitute the bulk of the population, probably belong to the very original Indian races. *It would be no exaggeration to say that up to the creation of*

*Pakistan, they had not known any real freedom or sovereignty...they have been and still are under considerable Hindu cultural and linguistic influence. As such they have all the inhibitions of down-trodden races and have not yet found it possible to adjust psychologically to the requirements of new-born freedom. Their popular complexes, exclusiveness, suspicion and a sort of defensive aggressiveness probably emerges from this historical background...The population in West Pakistan, on the other hand, is probably the greatest mixtures of races found anywhere in the world...Strategically and economically, too, this area is destined to stand or fall as a whole...Lying as it does in the basin of the Indus river and its tributaries, its future economic development must be considered as whole to achieve the maximum results. All this indicates, therefore, that West Pakistan, in order to develop properly and prove a bulwark of defense...must be welded in to one unit and all artificial provincial boundaries removed, regardless of any prejudices to the contrary, which are more the creation of politicians than real (Khan 1967, p. 187, emphasis added).*

The dismissive attitude towards Bengalis is summed up in the first part of the quote, where their entire history is painted as one of servility and submission. For this reason, Ayub argues, the Bengalis “have not yet found it possible to adjust to the requirements of new-born freedom”. The inhabitants of the Indus Valley, on the other hand, are “probably the greatest mixture of races found anywhere in the world”. By setting up this racial hierarchy, Ayub is accomplishing two objectives. The first is to justify the continued political domination of West Pakistan over East Pakistan, despite the fact that the majority of the population lived in East Pakistan. The second objective Ayub is accomplishing is setting up a train of logic that conflates the diverse regions of West Pakistan into “one unit” – “this area” Ayub says, “is destined to stand or fall as a whole”.

Ayub argues, in classic technocratic idiom that is still very common today, that the Indus itself imposes a unity over the region that demands that its “future economic development must be considered as a whole to achieve maximum results”. This allows him to argue that all regional loyalties are “more the creation of politicians than real.” Thus Ayub’s answer to the contradiction between central power and regional autonomy is clear – the west wing of Pakistan

is rightfully dominant and should continue to be so, and furthermore, it is dangerous to acknowledge regional or ethnic diversity within the west wing.

Ayub saw his regime as enabling the work of engineers and scientists in way that democratic governments did not. In a speech to the West Pakistan Engineering conference on February 25, 1959, he praises the achievements of Pakistani engineers, but urges them to reach higher in the “new environment”.

The country fully recognizes the importance of your profession and the contribution that you have made in the development of Pakistan... The progress we have been able to achieve in extending irrigation facilities, in establishing new power stations, in laying new roads and in building new colonies, has, in very large measure, been due to the hard work put in by our engineers... [but] a great responsibility still rests on the engineer who should now be able to discharge it with a greater sense of purpose and achievement *in the new environment, free from political pressure...* (Khan 1961a, p. 59).

Because Ayub’s regime has eliminated politics from administration and government, engineers “should not be able to discharge” their responsibilities towards the nation “with a greater sense of purpose and achievement.” Engineering and politics are, in other words, mutually exclusive activities. Or at least they should be. For engineers who may have ideas about influencing policy, Ayub issues a fatherly warning.

In order to give his best, it is essential that the engineer should *concentrate his energies on the specialized sphere of operation for which he has been trained...* If he does so in a diligent, honest and constructive manner, the results that he would achieve in the progress of building up the country should be sufficient reward for his labour and there would be *no room or need for his insistence on participation in the formulation of policies...* The engineers of the provinces should, however, be prepared to consider themselves part of technical talent of the whole country and *not of a region or province alone...* (ibid, pp. 50-60, emphasis added).

If an engineer is doing what they are supposed to do then there simply will be “no room or need” for their “insistence on participation” in the politics of the country. Furthermore, Ayub viewed engineers as a national force, and not just because of the effects of their work in laying down vital infrastructure. They are a national force because they are part of a pool of “technical talent” that works on the nation as a unit, without undue regard to regional loyalties. Ayub is clearly in favor of the “cold, rational” approach that engineering ostensibly brings to problem-solving. But what remarkable is how this approach is explicitly tied to a message of anti-politics that justifies his regime on developmental grounds, as opposed to democratic, popular, or theocratic ones. Consider the following quote from a speech Ayub delivered to a body of scientists on August 4, 1959.

One thing is certain – the days of poetic and sentimental approach are gone. A different kind of society has to emerge with a cultural discipline enforced by Science and rational thinking based on logic and scientific reasoning. Our spiritual values, so dear to us, must be knit with Science into a fabric of our own design. *An under-developed country like Pakistan can solve its problems only through the massive use of Science and scientific knowledge.* Science provides the only sure path to prosperity and offers the main hope for raising the standard of living of the millions (Khan 1961b, p. 8).

Ayub Khan’s regime assumed a specific form in 1958, which it maintained with little change throughout his ten year rule. The one facet in which the regime significantly changed its rhetoric was with regard to its secular credentials. As we saw above, the Ayub regime did form links with militant Islamic outfits to further its anti-communist goals, especially in terms of suppressing the protest movements in East Pakistan. Ayub’s regime was ant-political and centralizing. These moves were justified on the basis of a cold, rational and ostensibly apolitical application of science and engineering. My point is that this form of anti-political state developmentalism can be better understood as an attempted resolution or suppression of the

contradictions of the Pakistani state form that heightened during the 1950s. The character of this regime is crucial to explaining why the Indus Waters Treaty was signed in 1960. So is the Ayub regime's swing towards supporting the agrarian economy, which for most of the 1950s been exploited to support the urban industrial economy.

Ayub Khan was fully aware that the international financial resources being mobilized by the World Bank were crucial to the signing of the Treaty. The IBDF Agreement was not a coincidental part of the Indus Waters Treaty, or merely something to sweeten the pot for Pakistan. It was an essential part of the agreement, in the sense that the agreement would not have been signed without it. Ayub also knew that not only was it important to support the agricultural sector to boost the growth of the overall economy, but that the agricultural economy, especially in Punjab, faced an existential threat from the Indus dispute. Almost a year before he signed the IWT, Ayub made a speech to an agrarian audience on October 12, 1959 in Lyallpur (today Faisalabad).

*Another threat to our agricultural production had developed as a result of the Canal Waters Dispute with India. By God's grace our efforts have borne fruit, and the problem of the Canal Waters is well on its way to being solved. In this connection the World Bank and our friends abroad who promised to help us deserve our thanks. The World Bank and friendly countries have indicated assistance to the tune of Rs. 500 crores toward the construction of replacement works following the solution of the Canal Water issue. This was an issue which if it had remained unsolved would have given rise to a situation fraught with dangerous possibilities (ibid, p. 39).*

Several weeks before he signed the IWT in Karachi, on September 4, 1960, Ayub made a radio broadcast to the nation. In this speech, Ayub placed great stress on the fact that great financial and technical resources were being made available to Pakistan through the IWT. This is relevant to my argument because it fits with the general model of justification of Ayub's regime

– oriented on apolitical development, not on democratic principles of legitimacy of representation of popular will.

There have been innumerable occasions on which it seemed that the talks had run into what appeared to be complete deadlock. When I assumed responsibility for the Government of the country in October, 1958, I undertook an urgent assessment of the facts, acquainted myself with the issues underlying this dispute and reached certain definite and firm conclusions...the circumstances...underlined the imperative necessity of a speedy solution of this dangerous dispute... We had no alternative but to make a genuine and determined efforts to assist the International Bank *to find an engineering solution...a solution with which we could live and which would provide financial and technical resources* to enable us to take the waters of the western rivers to feed our canals taking off from the eastern rivers which would become dry ditches after their water had been taken away by India...[I am] *deeply grateful to the friendly Powers whose contribution to the Indus Basin Development Fund are a vital factor in making the terms of settlement acceptable* to us...(Khan 1961c, pp. 17-20).

To sum up, Ayub Khan's 1958 military coup adopted a form and rhetoric designed to suppress or displace the major contradictions of the Pakistani state in the 1950s. These contradictions were between the elected and unelected branches of the state apparatus, between the central state and regional elites, and between the agrarian and industrial sectors of the economy. The formula of "development" was offered by the military regime in an attempt to transcend the first two contradictions. Ayub favored an ostensibly apolitical type of development, by which he meant that democratic politics would not be allowed to interfere with his regime's judgments of what constituted development. As we saw from the above, this framing of development, along with an explicitly racialist historiography, allowed him to justify the centralization of power in the hands not only of West Pakistan, and more specifically, the Punjabi-dominated Army.

Ayub Khan was a favorite of Cold War social scientist Samuel Huntington (cf. Huntington 2006, pp. 250-254). Huntington, following a long line of colonial thought, thought

that “simple societies” (decolonizing countries) did not have the institutional capacity to handle democracy. Huntington argued that Army coups in decolonizing countries should not be considered a “source of evil”, because “organizational capacit[y]...make intervention by the military more dramatic, more dangerous, and yet also more potentially productive than intervention by any other social force,” (ibid, p. 240). A firm hand was required to lead a nation full of the political energy of undesirable segments of society, such as students and intellectuals, through the current rough patch and onto the greener pastures promised by History. Ayub thought of himself and his regime in similar terms. The following excerpt is taken from a speech Ayub made to the Administrative Staff College on December 24, 1960.

...human society developed from the stage of cave-man to the family structure; from family structure to feudalism; from feudalism to capitalism; and from capitalism it has blossomed into diverse material channels like communism, socialism and the *concept of the welfare State*. *In Pakistan, we have not yet reached even the stage of capitalism. We have, therefore, to make a big jump and develop into a social welfare State* which in fact is the inevitable demand of the ideology on the basis of which this country has come into being (Khan 1961c, p. 72).

The “big jump” Ayub mentions is nothing other than state-led rapid development that would allow Pakistan to bypass capitalism and proceed directly to the “welfare State”. His developmental state was a transitory phase on the way to a full-fledged welfare state, presumably modeled on the capitalist democracies of Europe and its settler colonies. A key aspect of Ayub’s developmental state was its fascination with technocrat-led development and its mistrust of democratic politics, especially party-based politics, and politicians. And, of course, as a military regime, Ayub’s government could exert great control over the conditions of any sort of electoral exercise that might make it vulnerable to democratic forks in the country. This is an important

point of distinction from the much more intensely studied developmental state in next-door India (Chibber 2003; Sanyal 2007; Chatterjee 2011).

Ayub's vision of the developmental state was the condition of possibility for the acceptance of Indian uses of the Western Rivers. Ayub's philosophy of science, engineering, and apolitical development held that Pakistan's status as a downstream riparian could effectively be displaced through the river development works promised by the IBDF Agreement. The IBDF, in turn, would not have been possible without the mobilization of national finance-capitals by the World. Thus a critical articulation between the international political economy of finance and the contradictions of the Pakistani state-form came together to make possible the construction of the world's largest integrated irrigation infrastructure.

Large infrastructure projects can be theorized in relation to capitalist accumulation and region in several ways. The resources required to construct infrastructure are often too large, and the returns on the investment too unpredictable, for individual capitalists to mobilize on their own. In other words, too much money is required at one point in time than capitalists have the ability or willingness to offer. This necessitates the involvement of a) the state and b) a credit system to get the infrastructural project off the ground (Harvey 2007). But to reduce the link between region formation and infrastructure to the conditions of possibility for economic production is not adequate. The social implications of large-scale infrastructure cannot be limited to political economy.

The intercession of the state in the provision of infrastructure was an ideological project as much as it was a political economic one. In the first half of the 20<sup>th</sup> century faith in the power of technological infrastructures was celebrated by most political thinkers, although a minority of skeptics consistently expressed fears of "technological domination" (Winner 1979). The

agreement of most people on the question of the relationship between technology and progress lent large-scale infrastructure the aura of being apolitical. The provision and smooth workings of infrastructure such as water and electricity supply infrastructure is often understood as the very definition of modernity (Swyngedouw 1999; Edwards 2003). Sociologists of science have explored the materiality of state formation through the construction of infrastructure (Carroll 2006, 2012; Mukerji 2009) and highlight that nations must be constructed as much as they are imagined. Political scientists have looked at the impacts large-scale infrastructures have on agrarian and peasant communities, specifically in Egypt (Mitchell 2002) and the Southeast Asian highlands (Scott 2009). Infrastructure is “by definition invisible, part of the background for other kinds of work,” (Star 1999, p.380). The “other kinds of work” I have engaged in this chapter include both the political economic, geographic, and ideological contradictions that infrastructure both (attempts to) resolve and yet recreates.

Consider, for example, the rhetoric around extending the infrastructure of electrification into “backward areas” in the United States and the Soviet Union. The best known example in the U.S. is the Tennessee Valley Authority (TVA) of 1933. David Lilienthal, the prominent head of the TVA and later a spokesperson and consultant for the international development industry, wrote about the non-quantifiable impacts electrification would bring to the “backward” Tennessee Valley. It would, literally and metaphorically, bring them light. These people, Lilienthal implied, could and would become modern and democratic, if only their lives and work were electrified. The title of Lilienthal’s 1944 book is telling in this regard; *TVA: Democracy on the March*. In the Soviet Union, Lenin famously declared that “Communism is power of the Soviets plus electrification of the country”. Faith in the transformative power of state-planned and executed technology extended to planning elites in the newly independent countries of Asia

and Africa. As I have discussed in this chapter, infrastructure played an important role at a historic conjuncture in the development of the Pakistani state. The financing of infrastructure was tied up with the passive revolution of a military-bureaucratic elite that propagated an ideology of apolitical technocratic developmentalism.

But even Ayub, with all his seeming faith in science and technology's ability to suppress politics, realized that hydraulic regionalism could not simply be engineered away. There is a moment of ambivalence towards the end of Ayub's broadcast to the nation weeks before he signed the IWT, however. At this point, the question of limited Indian uses on the Western Rivers had been all but settled in the course of the negotiations. But it is clear that the Indian uses were causing Ayub anxiety, even though they had already been agreed to. To express this anxiety about Indo-Pakistan relations, as is still so often done today, the question of Kashmir is simultaneously raised and deferred. This is an early version of the cry for "confidence-building measures" between Pakistan and India that observers of the territorial politics of Kashmir have observed wearily for decades.

*The very fact that we will have to be content with the waters of three western rivers will underline the importance for us of having physical control on the upper reaches of these rivers to secure their maximum utilization for the ever growing needs of West Pakistan. The solution of Kashmir issue, therefore, acquires a new sense of urgency. I am firmly of the hope that this settlement of canal waters will lead to sympathetic and realistic appreciation of our stand on Kashmir (Khan 1961c, p. 21).*

I draw on the methodological example of Gramscian dialectics by studying the relationship between uneven development at multiple scales and state formation in Pakistan in the 1950s. At the international scale (Chapter 3), the crucial factor was the uneven power of different actors, state and non-state, to mobilize finance capital, and the Cold War logics that

animated the investment and foreign aid decision of state elites. At the national level, the crucial factor highlighted was the uneven development of political institutions and the military-bureaucratic elite and centripetal regional forces. These developments articulated around the node of the IBDF, which was presented as a politically neutral, modernizing technological infrastructure that could displace the downstream dynamic between Pakistan and India.

This chapter has employed Gramsci's notion of passive revolution as a methodological frame to better understand the evolution of the Pakistani state in the 1950s. The key advantage of this approach is that it puts state formation in the context of inter-state dynamics and the uneven dynamics of capitalist growth. For example, Gray (2011) understands the emergence of a neoliberal state in Korea in the late 20<sup>th</sup> century as a passive revolution taking place in the context of international pressures and changes in domestic relations of production – particularly the rise of a “strong society” and democratization of South Korean society. Viewing Ayub's regimes as a passive revolution takes the relevant international context to be Cold War developmentalism, and the relevant domestic question to be the politics of region. In Pakistan, as in Gramsci's own analysis in his essay *The Southern Question* and in his “Notes on Italian History”, regional questions rise to the forefront of state formation because of the uneven power of regions within a state's territory.

The past two chapters have focused on the role of technocratic developmentalism at a crucial stage in the evolution of the Pakistani state and the transformation of the Indus Rivers. As I have argued in this chapter, the infrastructural transformation of the Indus Rivers in Pakistan, as well as the reorganization of the geography of political administration in Pakistan, were part of the same process of technocrat and Punjab-led passive revolution. In the next chapter, I turn

my attention to the dialectic interaction of technocratic developmentalism and hydraulic regionalism expressed by downstream regional elites.

## CHAPTER 5: INFRASTRUCTURE AND REGION

The dynamics of uneven development and passive revolution allow an appreciation of the crucial role of infrastructure in articulating hydraulic regionalism within Pakistan. This chapter continues the historical narrative of Chapters 3 and 4 into the 1960s and up to the modern day. But whereas the last two chapters focused on the technocratic developmentalism aspect of Indus hydropolitics, in this chapter I focus on how hydraulic regionalism interrupts and challenges the technocrat-led plans of development. I make my argument through three periods of Sindh/Punjab tension: 1) the 1920s under the British colonial state, 2) the 1970s when One Unit was breaking apart, and 3) in contemporary times. My purpose in taking these three examples, at roughly half-century intervals, is to demonstrate the *structured* nature of the interaction between downstream hydraulic regionalism and technocratic watershed developmentalism. The Sindh/Punjab upstream/downstream dynamic dates from the early 20<sup>th</sup> century, when the first large river infrastructure projects were initiated on the Indus by the British.

My purpose in drawing on the British-era case study is to place historical bounds on the structure of hydraulic regionalism. While upstream/downstream conflicts did not start with British colonization of the Indus, this is when they first assumed the dialectic relationship with technocratic developmentalism that I have identified. Furthermore, the advent of large scale river control works (as opposed to seasonally operational inundation canals) facilitated a massive expansion of irrigation in the Indus Basin. This intensive, year-round use of Indus waters took the tension between upstream and downstream to a qualitatively new level. In this sense of a historically specific geopolitical and economic relationship between regions, then, Sindh was not downstream to Punjab before the advent of British infrastructure and irrigation projects on the Indus Rivers. Thus, the dialectic between hydraulic regionalism and technocratic

developmentalism must be understood as a process of unequal power and vulnerability that is not determined solely by topographical differences or political boundaries, but also by technology and political economy. I explore in this chapter the dynamic relationship between river infrastructure and region-formation through historical expressions of hydraulic regionalism.

One influential theory of region-formation from a political economy perspective is Harvey's (2003, 2007) notion that the "molecular processes" of capitalism work to create regions through the social and built environment. In Harvey's formulation, regional assemblages of social and physical infrastructure are not only functional to the accumulation of capital, but necessary for it. For example, a functioning road and telecommunication network and an adequate educational system can be considered essential for the accumulation of capital in a certain region. Without these social and physical infrastructures, sited production is not competitive – and this impacts producers looking to make profits and workers looking to earn a wage. Thus infrastructures, in so far as they make a certain type of production possible, can forge a regional alliance between classes that would be antagonistic in a world where spatial connections didn't matter. In Harvey's formulation, however, it is difficult to understand how regions that share the same infrastructure develop into separate regions. To better understand how this happens, I return to the Gramscian notion of dominant regions which he discussed in his *Notes on Italian History* (discussed in Chapter 4).

For Gramsci, regions are not produced only, or even primarily, for the functionality of capitalist accumulation. In his discussion of the role of the region of Piedmont in the Italian Risorgimento Gramsci stresses the importance of promulgating a progressive nationalist and populist ideology that unifies different regions under one state. So although the region of Piedmont did successfully unify the Italian peninsula, it failed to realize the radical "national-

popular” aspirations Gramsci held for the Italian state. A unitary state was created, in other words, not but a unitary nation. Deep intellectual and cultural schisms remained between North and South, as well as city and country, throughout Italy. This Gramscian appreciation of regional difference, combined with Harvey’s political economic deduction of the link between infrastructure and region, inform the analysis of this chapter.

My argument is that large-scale infrastructure, while enhancing the capacity of the state, does not necessarily simultaneously construct the nation. The rhetoric of nation-building that accompanies the construction of large-scale river infrastructure is striking (Klingensmith; Evenden 2009; Harris and Alatout 2010). However, I follow Carroll (2006) in emphasizing the difference between state and nation formation. While river infrastructure has hydraulically integrated the Indus Basin into Pakistan, it has not created a smooth national space – indeed, quite the opposite. As we will see in this chapter, region-formation is not solely in the hands of the state. Geographic-spatial factors, such as a downstream location on a river, can play an important part in the formation of regions and regional identity (Whitehead et al. 2006; Harris 2011; Sneddon and Fox 2012).

#### Hydraulic regionalism on the Indus during the colonial period

Like with Bengal, much of the regional tension between Punjab and Sindh has revolved around disproportionate Punjabi presence in the unelected bastion of power in the Pakistani state, the bureaucracy and the Army. But Sindh is downstream to Punjab on the Indus, which generates a political geographic dynamic not directly rooted in the institutions of the Army or the bureaucracy. It is important to understand that this regional tension is not located in any sort of competition for state jobs, as Alavi (1988) theorizes the politics of ethnic conflict in Pakistan.

The tension between Sindh and Punjab has to do with forces that predate the Pakistani state: technology, economy, and the geography of the Indus itself.

To underscore this point, I turn to legal politics and history of the pre-Independence Indus between the provinces and princely states of Punjab, Bahawalpur, Bikaner and Sindh (a part of the Bombay province until 1935). Disputes around water rights arose alongside planned river control projects – the infrastructure of the river. In 1919, the Sutlej Valley Tripartite Agreement apportioned water between Punjab, Bahawalpur and Bikaner, and paved the way for the Sutlej Valley Project which was approved in December 1921. But the province of Bombay, who was notably not a party to the Tripartite Agreement, managed to secure approval for the Sukkur Barrage almost within a year, in January 1923. Aware to the possibility that action was required to secure its claim on Indus waters, the government of Punjab aggressively pursued three further projects; Bhakra Dam on the Sutlej (on which much discussion is yet to come), the Trimmu link several miles downstream from the Jhelum-Chenab confluence, and the Thal desert colonization project (Aloys 1967).

The government of Bombay realized that this slew of projects in Punjab would eventually have a negative impact on the operation of Sukkur Barrage, and took its complaint to the imperial government. Another concern specific to irrigation practices in Sindh was in regards to inundation canals. Inundation canals operate only when the river is at a certain level, and are therefore especially vulnerable to upstream withdrawals. Inundation irrigation had been occurring in Sindh, where farmers had adapted their practices to the deltaic phase of the Indus, long before the British arrived. We will return to the specific importance of inundation canals below.

In 1921, the British appointed the Indus Discharge Committee to make accurate measurements and to ascertain how the water of the Indus could be effectively and fairly distributed. This Committee, which was headed by Sir Thomas Ward, the Inspector General of Irrigation delivered its verdict in 1929. The data collected by this committee would frame the ongoing discussion about state rights to the Indus. The Discharge Committee's award cautioned that all future projects in Punjab should take the water demands of Sukkur into account (Committee of the Central Board of Irrigation 1950, p.2). Two officers were deputed in 1930 to ascertain whether or not a project at Bhakra would negatively impact irrigation operations at Sukkur. They concluded that it would not, and Bombay withdrew its complaint against Punjab's Bhakra project in 1934 (ibid, p. 11).

The Governor-General of India at this stage requested the Central Board of Irrigation to convene a Committee on the Distribution of the Water of the Indus (called the "Anderson Committee" after its Chairman) which delivered its report in 1935. The Committee reapportioned water amongst the provinces of Bombay (Sindh), Bahawalpur, Bikaner, Punjab and Khairpur. The committee did not enunciate any general principle which underlay its appropriation, but said that all allocations were made on the basis of the merit of individual cases. Aloys' evaluation of the Committee's work is that "all parties gained something, and Punjab gained the most," (Aloys 1967, p. 124). What is significant to point out though is that, similar to Ward and the Indus Discharge Commission, the Anderson Committee came out strongly in favor of protecting existing uses at Sukkur. On the question of building storages on the Indus Rivers (read: Bhakra Dam), the report stated as follows:

...small storage schemes of a capacity not exceeding half a million foot acres on the affluents of the Indus, Jhelum, Chenab, Ravi, Beas and Sutlej rivers, for the storage of

water during months of July and August, maybe undertaken by any Provincial or State Government entitled to do so, without the formal sanction of any other authority. But all other interested parties should be informed of the main details of the scheme prior to its being undertaken (Committee of the Central Board of Irrigation, p. 24).

The Anderson Committee also reported that it was acceptable for the Punjab to divert water from the Chenab in to the Sutlej, so that there would be sufficient water in the Sutlej in the early kharif season, but not at the expense of uses at Sukkur.

The next committee of the British formed to investigate questions of Indus River allocation operated under a changed constitutional context. The Government of India Act of 1935 gave greater autonomy to provincial governments in a number of areas, including irrigation. The Indus Commission, commonly called the Rau Commission, was convened to consider the province of Sind's complaints against Punjabi river control structures, existing and planned. Among the projects highlighted by the Government of Sindh were the three Punjabi projects discussed above; Trimmu (already in operation by 1945, and now called the Haveli Project), the Thal Project, and Bhakra Dam.

The Rau Commission was convened in 1941 and delivered its report in 1945 after field investigations and deliberations with representatives of Punjab and Sindh. Unlike the Anderson Committee, the Rau Commission conducted a thorough investigation of "general principles for distribution of the waters of inter-Provincial rivers, which seemed to us to emerge from a study of the practice in other countries," (Indus Waters Commission 1950, p. 10). The Rau Commission first clarified the difference between water rights as between individual riparian owners, between provincial governments and riparian owners, and finally between two provincial governments. The Indus dispute between Sindh and Punjab fell, clearly, into the last category. The Rau Commission categorically ruled out the principle of absolute territorial

integrity also referred to in international water law as the Harmon Doctrine. The principle of absolute territorial integrity states a sovereign state can do with rivers that pass through territory whatever it pleases.

The [Government of India Act of 1935] therefore recognizes the principle that no Province can be given an entirely free hand in respect of a common source of water such as an inter-Provincial river. This is in accordance with the trend in international law as well as the law administered in all Federations with respect to the rights of different States in an inter-State river (ibid, p. 21).

The Committee drew on the sparse existing body of international water law, including the Nile Commission of 1926, precedents from the U.S., and the proceedings of legal conferences. Relying especially on cases from the U.S., the governing international law with respect to the rights of different States in an international river was found to be “equitable apportionment, that is to say, that every riparian State is entitled to a fair share of the waters of an inter-State river...the river is for the common benefit of the whole community through whose territories it flows even those territories may be divided by political frontiers,” (ibid, p. 38). The committee went on to declare that the principle of equitable apportionment had to be modified to the situation at hand, which dealt with the protection of existing uses of inundation canals in Sindh (ibid, p. 50).

Inundation canals as a technology seemed to the Rau commission to be “by their very nature, an obstacle to equitable apportionment”, because they would not irrigate fields below a certain level of the river, even if there is water flowing in the river. “Not only is there inequity here,” chides the Report, “but there is also waste; for inundation canals take only a very small fraction of the water required to maintain the river levels necessary for their working, the rest being wasted to sea,” (ibid, pp.50-51). Ultimately, however, the legal principle appropriate for

governing the dispute at hand ruled in protection of existing uses of inundation canals. As it is relevant to the discussion of change in the legal principles governing the rights of States to inter-State rivers, it is worth quoting the Committee Report at length

Undoubtedly inundation canals are a wasteful anachronism and the sooner they are replaced by weir-controlled systems, the better. But many miles of such canals are still in existence (Sindh has over 3,000 miles including distributaries) and large numbers of people have for generations depended upon them for their livelihood. It maybe that they they and their Province cannot yet afford to install a better and, in the in the beginning more expensive system of irrigation. In the meantime, are they to be deprived of their living, merely because an upper Province needs the water? If the upper Province wishes to take the water let it pay adequate compensation in cash or in kind (ibid, p. 52).

While the Committee's Report was not officially accepted by either Punjab or Sindh, the provinces signed an agreement shortly thereafter that held to the principles enunciated by the Rau Commission. Punjab would be allowed to pursue its development projects but only after it had provided financial assistance to the government of Sindh in constructing two barrages at Guddu and Hajpur. The legal proceedings of British India were disrupted by independence for India and Pakistan and the subsequent internationalization of the Indus Rivers. Very little discussion of Sindh's right or the Sindh-Punjab relations is visible from the record of the Indus dispute negotiations between Pakistan and India, aside from a few references to the legal principles the British delivered with respect to Sindh's rights.

#### Uneven agrarian developments in the Indus Valley, 1950-1970

Gramsci's political theories, as has already been noted, are especially keen on the dynamics between developed and undeveloped regions within a national territory, referred to by Gramsci on different occasions as city/country question. But far from seeing uneven development as a

phenomenon related exclusively to urban areas and their hinterlands, Gramsci (1971, p. 92) was appreciative of the multi-scalar nature of uneven development over space:

During the Risorgimento, moreover, there already appeared, embryonically, the historical relationship between North and South, similar to that between a great city and a great rural area. As this relationship was, in fact, not the normal organic one between a province and an industrial capital, but emerged between two vast territories of very different and civil and cultural tradition, the features and the elements of a conflict of nationalities were accentuated.

A major theme in Gramsci's *The Southern Question* and his *Prison Notebooks* is the failure of Italian progressive movement as a whole to successfully tackle, or even deeply consider, the question of how uneven economic development could frustrate radical and communist political goals. Gramsci was especially attuned to the cultural dilemmas of uneven development – specifically, the dismissive stereotypes held by northern Italian workers about southern Italians in general, especially peasants. In a similar vein, Gramsci was aware that workers and peasants from a given region might prove more loyal to their regional elites than to geographically dispersed fellow workers and peasants. While much of Gramsci's writing had a focus on the cultural and political ramifications of uneven development, Gramsci was always attuned to the economics of uneven development as well. He analyzed the cultural politics of southern Italy in the context of it being a “semi-colonial market” for northern Italian industrial capital (Gramsci 1971, p. 94; Kipfer 2013). Following Gramsci's cue, then, this section of the chapter focuses on tracing the geography of uneven development in the Indus Basin, and especially between upstream Punjab and downstream Sindh, roughly from 1947 to 1970.

The tension between Sindh and Punjab, which began with colonial infrastructures, continued into independence. Daniel Haines' (2011a, 2011b) recent work on river politics in

Sindh in the mid-20<sup>th</sup> century discusses the regional tensions provoked by the construction of river control structures in Sindh. Planners in British India had planned three major river control structure in Sindh: the Lloyd Barrage at Sukkur, the Kotri Barrage on the lower Indus and the Guddu barrage on the upper Indus. Only the barrage at Sukkur was completed, in 1932, before the province of Sindh joined the new sovereign state of Pakistan. Progress on the Kotri Barrage (also called the Ghulam Muhammad Barrage) was slow under the provincial government of Sindh because of the sensitive issue of how the lands the barrage irrigated would be distributed.

Radical demands for the redistribution of the land to the poor clashed with powerful and conservative landed interests. The central government, although in a rush to see the barrage completed to facilitate the refugee settlement crisis, was constitutionally powerless to interfere. After independence Pakistan relied on the Government of India Act of 1935 to provide a constitutional framework. Under this Act, responsibility for irrigation and land came under the purview of the provincial government, not the central government. Underlying the political tension between the provinces of Punjab and Sindh were structural differences in their agrarian structure. Although data is scarce, what data is available suggests that the irrigated agrarian economies of Punjab and Sindh were significantly different in structure.

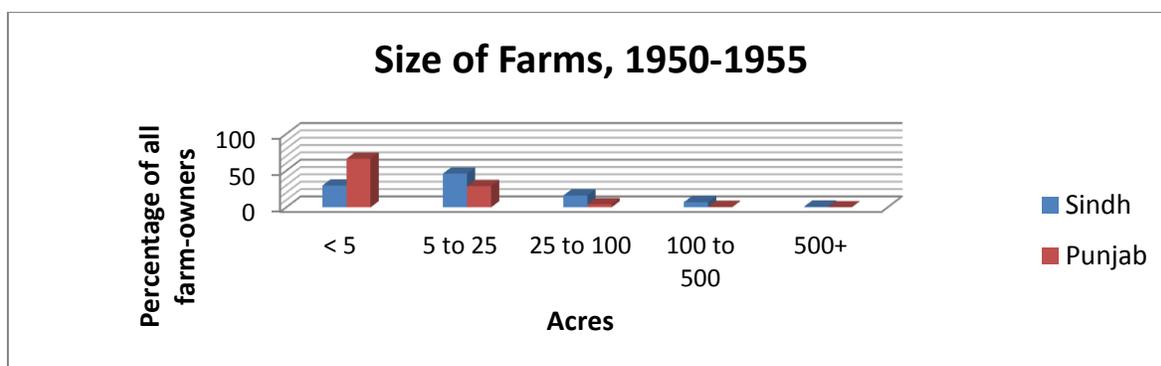


Figure 11: Size of Farms in Sindh and Punjab, 1950-1955 (Zaidi 2005, p. 19)

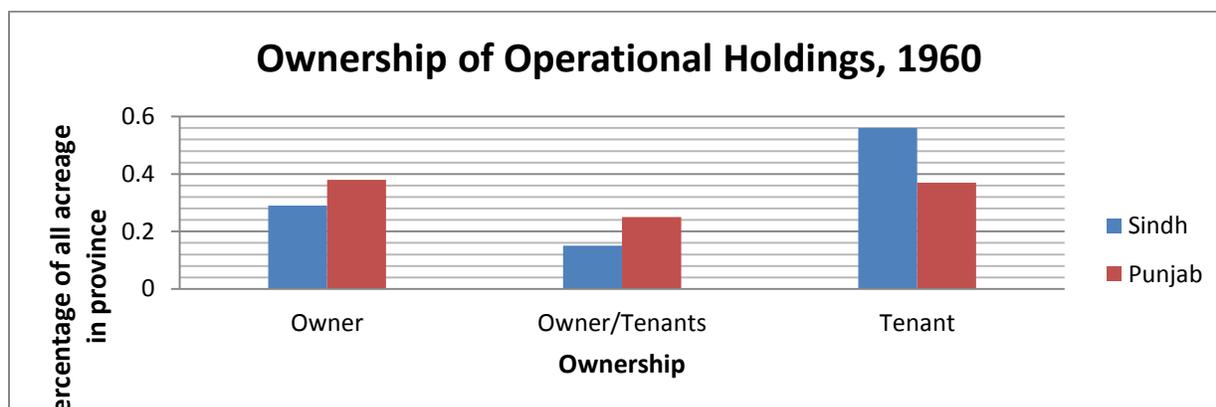


Figure 12: Ownership structure of farms in Sindh and Punjab, 1960 (Zaidi 2005, p. 36)

As can be seen from Figure 11, Punjab had a greater percentage of farm owners on farms that were 5 acres or less. And from Figure 12, we can see that the structure of tenure in Sindh was geared more heavily towards a landlord-tenant structure than in Punjab. These differences in agrarian structure, however, were more of degree than of kind. While large landlords were more a feature of the Sindhi agrarian scene, their political influence was by no means missing from the fields of Punjab (Ali 1988; Gilmartin 1988; Talbot 1988). Nevertheless, the greater presence of large landlords in Sindh enabled rhetoric in Punjab that portrayed Sind as a backward region, in need of development from a more developed central state (Haines 2011a, 2011b).

Ayub Khan's propaganda proclaimed the 1960s to be Pakistan's "decade of development". Indeed, this was a remarkable period of growth in the economic history of Pakistan, especially in the agricultural sector under what has come to be known the "Green Revolution", the technological transformation of agricultural sector production in the 1960s and 1970s in Asia. The most emphasized aspect of the Green Revolution is that it increased the production of food: the output of wheat in Pakistan increased by 91% and rice by 141% between 1960 and 1970. The Green Revolution in Pakistan came in two phases: 1959-1964, and 1965-1970. In the first phase, agriculture grew at a rate of 3.7%, driven mainly by an expansion in

irrigation facilities, most notably tubewells. Agricultural production grew at an even faster pace in the second phase, at a rate of 6.3%, propelled by the technologies of high yielding variety seeds, chemical fertilizers, and pesticides (Zaidi 2005). Although a given unit of land was producing more food, however, it would be mistaken to assume increased agricultural productivity. For that to be true output would have to increase with respect to all inputs; and the Green Revolution depended critically on increased inputs, such as water and chemical fertilizers.

The Green Revolution concentrated economic power in two ways; horizontally across regions and vertically across class structures. Rich farms became richer, because they could utilize the capital-intensive technology package of the Green Revolution. Poor farmers became poorer, because their farms could not compete with the more productive farmers. Agrarian workers or those who did not formally own land perhaps suffered the greatest loss in security of livelihood, as their labor came increasingly to be replaced by machines. This process set into motion complex chains of circular and permanent migration from the Pakistani countryside to urban centers, both in Pakistan and in the Gulf (Rouse 1983; Gardezi 1996; Rahman 2012).

The province of Punjab, and to a much lesser degree, agrarian Sindh reaped the majority of the benefits of the Green Revolution. The technologies the Green Revolution ushered in were dependent on water, and Punjabi farmers in the well watered plains of the Indus built on their initial advantage. In 1968, 91% of the country's 76,000 tubewells were in Punjab. Even within Punjab, however, the spread of benefits was highly concentrated to a handful of districts and to an elite class of landowners. For example, the distribution of tubewells was highly uneven with 70% of tubewells installed by farmers owning more than 25 acres, compared to only 4% tubewells belonging to farmers owning fewer than 13 acres. Tractors were another Green Revolution technology that was highly subsidized and encouraged by the government, yet was

distributed unevenly. In the early 1970s, 88% of all tractors in the country were in the districts of Multan, Lahore, Multan, and Bahawalpur. Furthermore, 75% of all privately owned tractors were on farms that had sunk tubewells. Three districts in Punjab constitute the geographic heart of the Green Revolution in Pakistan: Faisalabad, Sahiwal, and Multan. These districts had an economic growth rate of 8.9% between 1959/60 and 1964/65: twice the national rate (Zaidi 2005 pp.30-32).

The distributional impact of the Green Revolution was also highly uneven across classes. One manifestation of this was the decline in tenurial security for cultivators. As agricultural production became more lucrative, landowners decided to dismiss their tenants, sink money into technological investments, and engage in what is officially referred to as “self-cultivation”. In reality, this involves hiring wage-workers for cultivation, instead of tenants, which hold some occupancy and usufruct rights to the land. The decline in tenurial rights is significant. The number of tenant farms was cut by half between 1960-1990, and subsequently the landless rural population in Pakistan swelled to between 30-49 million, or about 40% of the rural population. Indeed, from 1960-1990, concentration in landownership has increased and rural household income and secure employment for a large segment of the population has fallen (Niazi 2004).

All advances in agricultural production during the Green Revolution were dependent on the increased availability of water. In the first five years of the 1960s's, about 25,000 tubewells were installed to double the farm area serviced by tubewells. Even the new seed technology was dependent on the timely application of water to have effect. Between 1964/5 and 1969/70, 45,000 more tubewells were installed, increasing the area serviced by tubewells six-fold over the course of a decade. Overall, the enhanced availability of water, either through private tubewells or public canals, is estimated to contribute about half of the total increase in agricultural output

during the Green Revolution in Pakistan. Fertilizer inputs also increased dramatically; 235% between 1965/66 and 1971/72 (Zaidi 2005, pp.28-29).

The Green Revolution was revolutionary not only because it multiplied outputs in the agrarian sphere; it was equally revolutionary for multiplying inputs, especially water. Whereas before the canal irrigation system was designed to be protective and to ensure a minimum amount of water was extensively distributed, after the Green Revolution, water for irrigation became not a means of protection but of survival. The key to enhanced productivity through new technologies was access to water, most notably the tubewell. Farms either had to upgrade to the new technology package to stay competitive, or walk away from their tenurial or smallholder status and either migrate or join the growing pool of landless agrarian laborers.

Water demand increased, became more of a necessity, and was concentrated geographically and socially as a result of the Green Revolution and the increasing capitalization of agricultural production that came along with it. This transformation of agriculture in Pakistan was not only about tubewells, however; the extension and intensification of irrigation at this time was also in part enabled by an ongoing re-engineering of the Indus Rivers. As I discussed in Chapter 6, a vast amount of finance was mobilized at the international level to sink into building massive river infrastructure in Pakistan. Much of this infrastructure was referred to as “replacement works”, because these works were meant to help Pakistan replace the water it would lose after a transition period when India would claim exclusive rights to the waters of the Eastern Rivers. But the IBDF works were significant on the national scale as well, especially in terms of upstream/downstream relations between the provinces of Punjab and Sindh.

Tarbela Dam and the Akhtar Husain Committee

The dispute over water allocation between Sindh and Punjab, which began in the early 20<sup>th</sup> century, was not successfully submerged by the establishment of the One Unit as planned. As discussed above, One Unit was an administrative reform that merged the provinces that constituted West Pakistan into one unitary structure. This reform was partly enacted by the bureaucratic-military dominated government to suppress the expression of region-based politics, especially in East Pakistan (now Bangladesh).

National water allocation controversies in Pakistan in the 1960s (and after) are directly related to the Indus Waters Treaty and the Indus Basin Development Fund Agreement. The World Bank plan for the development of the Indus in Pakistan proposed that the Western Rivers be managed as two irrigation zones – the Indus zone and the Jhelum-Chenab zone. The Tarbela dam would regulate supply on the Indus, and the Mangla dam would regulate supply on the Jhelum. Design work on the Mangla dam began in the 1950s, and the dam itself was built with funding from the Indus Basin Development Fund between 1962 and 1967. Tarbela dam was completed in 1976, after the World Bank included it in the IBDF in 1965.

In 1968, in the midst of urban and peasant unrest, the government of West Pakistan convened the Water Allocation and Rates Committee under the chairmanship of Akhtar Hussain. The committee submitted its report on June 30, 1970 – the day before One Unit was dissolved and provincial governments re-established. At the time the Committee met, 1968-1970, the Tarbela dam was under construction. The main points of debate within the Committee concerned rights to storages at Tarbela. Punjab insisted it needed water from Tarbela to compensate it for the loss of the three Eastern Rivers to India. Sindh, on other hand, argued that Punjab should rely on storages from Mangla dam on the Jhelum, the flow of the Chenab, and groundwater for its “replacement” water.

While Sindh relied on the Sindh-Punjab Agreement of 1945 to argue that it was guaranteed 75% of the flow of the Indus River; Punjab countered that it was entitled to more water than this arrangement would leave it. Thus, in an ironic twist, Sindh deployed the type of politicized downstream arguments employed by Pakistani negotiators (many of them Punjabi) during the Indus basin dispute with India a decade earlier. And in the context of Sindh-Punjab disputes, Punjab deployed the type of apolitical, technocratic development neutralizations of downstream.

The controversial final report of the Akhtar Committee favored the point of view that the Punjab was entitled to a large share of Indus main-stem waters, which prompted four members to submit notes of dissent to the final report. In the fieriest note of dissent, S.K. Baloch, a Committee member from Sind, confronted the accusation that the allocation ratio it favored was not in violation of the Indus Basin Development Fund Agreement.

With regard to the Indus Basin Settlement Plan, I consider it very necessary to mention that the Plan represents view-points *of certain Pakistan Authorities* and have (sic) no international binding either with India under the Indus Waters Treaty or with any other country or the World Bank itself. The World Bank and the other friendly countries agreeing to finance the Settlement Plan, as proposed *by certain Pakistani Authorities*, does not make the latter's proposals as sacrosanct. The only binding international commitment is the Water Treaty with India under which the three Eastern Rivers were given away. *What we do with the Western Rivers is something for Pakistan itself to decide and cannot become a subject of matter of any international commitment.* The entitlements of the various projects as in 1947, dependent on the three eastern rivers, have to be satisfied from Mangla storage in view of the Indus Treaty (Baloch 1970, p. 24).

The reference to “certain Pakistani Authorities” is an allusion to the Punjabi-dominated military-bureaucratic oligarchy that had been in power since 1958 (and arguably as early as 1953 or even 1947 - see Chapter 4). The dominant theme in the four notes of dissent is that the Committee was a thinly disguised vehicle for Punjab to claim a greater share of Indus main-stem

waters than was its due. The evidence presented for this theory was the composition of the committee – only four non-Punjabis out of a total membership of fifteen. Baloch argued that the tumultuous political developments taking place in the country could not be separated from the work of the Committee:

After the announcement of the dismemberment of One Unit, *the Committee completely lost its representative character* as the number of members hailing from Punjab was eleven, from Sind two and from N.W.F.P only one. Baluchistan was not represented at all... The tenor of the proceedings of the Committee clearly show that *the Committee was interested more in preparing the Punjab case rather than in sorting out the question of allocations of irrigation supplies among the various Provinces...* In fact, *the 'majority' decisions mentioned on the Draft Report were actually 'minority' decisions* as out of four Provinces of the West Wing, they represent the view-point of only one viz. Punjab. The cries of Sind and N.W.F.P. were a voice in the wilderness (ibid, pp.25-26).

The dissenting notes of A.M.Shaikh and Sarwar Jan Khan echo this sentiment, and argue that the committee should have instead been focused on helping “backward, smaller and under-represented” provinces achieve the same level of irrigation intensity that had already been achieved in Punjab.

Baloch’s note of dissent is an extremely revealing assertion of the rights of regions experiencing uneven development, ‘merely’ perceived or otherwise, to claim redress from the central state. The majority of the members of the Committee approved the report on the basis of its technical and engineering merits. Baloch argues that while a ‘majority’ of the Committee approved the report, this should be seen as a “minority decision” because the approval only “represent[ed] the view-point of only [province] viz. Punjab”. The echo of majority-constraining federalism, a major theme in the political evolution of Pakistan (see Chapter 4), is hard to miss. Baloch argued that the fact that the final report favored Punjab made something starkly clear:

“that this Committee was a group of technical experts, having no regional affiliations, is utterly fictitious and has been proved as such.”

The report of the Akhtar Hussain Committee had no effect, because the report was unceremoniously dismissed by the new governmental set up. A new commission was convened in 1970, under the Chairmanship of Fazle Akbar. In its brief to the Fazle Akbar Commission, the Government of Punjab expresses its displeasure at the fact that the report of the Akhtar Hussain Committee was not considered:

This [Akhtar Hussain] Committee had some of the most eminent Administrators and Engineers as its members and spent considerable time in analyzing the various problems. It is a tragedy of circumstances that the Committee report was submitted at a time when the atmosphere in West Pakistan was highly charged under the stresses of breaking up of One Unit into four Provinces (Government of Punjab 1971, p. 61).

The Punjab Brief argued that the dual principles most important in the allocation of irrigation water were efficiency and effectiveness. Reverting to the logic of the One Unit, the Punjab Brief argues that regionalism was a distortion of the watershed principle, and that “river allocation has therefore to be to acres and not to political boundaries,” (ibid, p.7). The Brief argues that even if Sindh were to be allocated a generous amount of water it would go to waste because of the “feudal” and unproductive distribution of land and the structure of tenure there (ibid, p. 17). It was more important, warned the brief, to funnel water to the owner-occupying peasant households of Punjab, who were “on the brink of revolution,” (ibid, p. 19).

Elements of this argument should be familiar: the politics of downstream and of political regions in general, are a dangerous distraction that can be overcome with the correct application of science and technology. This argument was deployed in the negotiation of the Indus between Pakistan and India between 1952-1954 (Chapter 3) and the consolidation of

the four provinces into One Unit (Chapter 4). The notes of dissent to the Akhtar Hussain report, and the Punjab Brief to the Fazle Akbar Commission, demonstrate that the politics of regional identity and the exhortations to follow a technocratic, apolitical path to development cannot be separated. The ethos of engineering arises out of and in response to the concreteness of uneven historical-geographical development. This is as true in the 1950s and 1960s as it is to the contemporary terrain of inter-provincial hydro-political controversy in Pakistan, to which I now turn.

#### Kalabagh and the continuing politics of downstream

The 1960s, known in Pakistan as the “decade of development”, was a time of rapid economic growth and dislocation in Pakistan, especially in the agrarian regions and cities of the Indus Basin. Ultimately, however, the pace of change and the uneven social and regional distribution of the benefits from economic growth made Ayub Khan’s continued rule intolerable to a wide cross-section of Pakistani society, in both East and West Pakistan. Ultimately, neither the Akhtar Hussain Commission nor the Fazle Akbar Commission were accepted by the government. It was not until 1991 that a statutory arrangement on the allocation of Indus waters was agreed upon. This was the culmination of more than seventy years of adjudication, especially between Sindh and Punjab, over the appropriate allocation of Indus waters between regions. The table below summarizes these efforts (Table 6).

| <b>Inter-provincial Treaties/commissions</b> | <b>Year</b> |
|----------------------------------------------|-------------|
| Anderson Committee                           | 1935        |
| Indus Commission                             | 1942        |
| Sindh-Punjab Draft Agreement                 | 1945        |
| Indus Waters Treaty                          | 1960        |
| Akhtar Hussain Committee                     | 1968        |

|                         |      |
|-------------------------|------|
| Fazle Akbar Commission  | 1970 |
| Anwar-ul-Haq Commission | 1981 |
| Haleem Commission       | 1983 |
| Indus Water Accord      | 1991 |

**Table 6: History of Indus Waters adjudication**

However, the Indus Water Accord, and the establishment of a semi-autonomous agency to enforce the accord, the Indus River System Authority, has not spelled the end of downstream/upstream tension on the Indus between Punjab and Sindh. Contemporary controversies revolve around two major nodes: the construction the Kalabagh Dam and disputes about the allocation of water between provinces, especially Punjab and Sindh. Inter-provincial disputes have been discussed in Chapter 3, in the context of the politics of automation. In what follows, I discuss the Kalabagh case.

No major water projects have been constructed in Pakistan since the completion of Tarbela Dam in the early 1970s. This is not from lack of trying, as the case of the proposed Kalabagh Dam shows. The Kalabagh Dam is the most prominent flashpoint of interprovincial water disputes in Pakistan. Any discussion of either water or interprovincial tension in Pakistan, whether with a bureaucrat, shopkeeper, housewife or student, eventually turns to Kalabagh Dam.

The Kalabagh Dam has been in consideration since 1953. The premier federal engineering agency in Pakistan, the Water and Power Development Authority completed a feasibility study of the project in 1984 and circulated it to provincial governments. The four provinces of Pakistan have sharply divided views on whether or not the dam should be built. While Punjab has always strongly supported Kalabagh, the provincial assemblies of Sindh, Khyber-Pakthunkhwa and Baluchistan passed unanimous resolutions against the project in December 1988, October 1994 and June 1994, respectively (Express Tribune 2012a).

Punjab, historically strongly in favor of the Kalabagh Dam, frames its argument about the dam in terms of efficiency. This position promotes the efficiency of harnessing Indus waters (not letting waters go to “waste” by flowing into the Arabian Sea), food security, energy security, and the need to regulate and complement the storage capacity of Tarbela dam, upstream on the Indus. The costs to the province are relatively small; the loss of 24,500 acres of land and the estimated displacement of 48,500 people. Three out of the four districts that are planned recipients of irrigation water are in Punjab. While the reservoir created by the dam would be located in Khyber-Pakhtoonkhwa, the hydroelectric power generation plant is proposed to be sited within Punjab’s boundaries. This has clear revenue implications for provincial governments, as per Clause 2 of Article 161 of the Constitution of Pakistan:

The net profits earned by the Federal Government, or any undertaking established or administered by the Federal Government from the bulk generation of power at a hydro-electric station shall be paid to the Province in which the hydro-electric station is situated.

The provincial assembly of Khyber-Pakhtunkhwa passed an official resolution rejecting the construction of Kalabagh Dam in October 1994. The main threat perceived by Khyber-Pakhtunkhwa is that of vulnerability to inundation, specifically for the city of Nowshera, with an estimated population of over 200,000 people. If the protective dykes on the Indus River are breached, it would spell disaster for the inhabitants of this city. Moreover, even if the integrity of the dykes are maintained, there is the likelihood that waterlogging in the area will increase and adversely impact the agricultural productivity of the region. In addition, crucial infrastructure like roads, railway lines, and bridges will be submerged, and operation of the Mardan Salinity Control and Reclamation project would be compromised. The direct displacement of people in this province is likely to be in the neighborhood of 34,500 people (Feyyaz 2011; Kazi 2003).

While virtually all of the province of Baluchistan is not in the drainage basin of the Indus River, it does nevertheless draw water through the Pat Feeder canal that flows from Gudu Barrage and irrigates about 300,000 acres in the province. The Balochistan provincial assembly also officially lodged its opposition to Kalabagh Dam in June 1994, partly because of the possibility that increased withdrawals of river water upstream will reduce the amount available to Baluchistan through the Pat Feeder canal. It is also possible that Baluchistan has opposed the Kalabagh Dam in solidarity with the other smaller provinces of Pakistan.

Within the four provinces, the main downstream/upstream oppositional dynamic is between Sindh and Punjab, as I have demonstrated with the long history of inter-provincial conflict discussed above. Sindh was the first province to unanimously reject the Kalabagh Dam project in December 1988. Sindh is also a highly agricultural province, and relies on the Indus for its water needs even more than Punjab. This is because it has very little useable groundwater and because it receives even less rain than Punjab; an average of merely 5 inches per year. The reservations of Sindh about the Kalabagh are multiple, but have in common the assumption that there simply isn't enough water in the Indus River system to justify the building of another dam.

While those who favor the construction of Kalabagh point to the "wasted" water of the Indus (an average of 35 MAF flowed into the Arabian Sea from the Indus between 1976 and 2002), Sindh's position is that these flows are necessary for the environmental health of the Indus delta, on which much life, including the livelihoods of hundreds of thousands of fisherman, depends. Indeed, since the 2000s, there have been years when there has been as little as 0.8 MAF flowing into the sea. The 1991 Water Accord stipulates that 10 MAF should be released each year to the delta as necessary environmental flows, and the Sindh Forestry Department puts necessary annual environmental flows at 27 MAF (Khan 2003, p. 177). Sindh

is also apprehensive that Kalabagh dam will allow Punjab to divert water from the main stem of the Indus eastwards in to the areas watered by the Jhelum and Chenab rivers (Feyyaz 2011; Khan 2003; Kazi 2003).

Sindh and Khyber-Pakhtoonwa's apprehensions have been dismissed by various technocratic commentators as unfounded and without technical basis (Malik 2003; Feyyaz 2011). Proponents of the dam claim that there is more than enough water in the system to go around and that allocation of Indus waters to the provinces is guaranteed by the 1991 Water Accord. Moreover, the amount of water that the Kalabagh Dam would be abstracting from the system, 6.1 MAF, is unlikely to have any impact on seawater intrusion in the Indus Delta (Malik 2003, p. 173), which is related to tidal rhythms and rising ocean levels more generally.

A study conducted by an international panel of experts claimed that the environmental needs of the delta would be met by a) ensuring a constant flow of 500 cubic feet/second (3.6 MAF/year), and b) ensuring that a "total volume of 25 MAF in any 5 year period be released in a concentrated way as flood flow," (Gonzalez et al. 2005, p. 2). While the experts agreed on the necessity of environmental flows for the purposes of preventing salinity in the delta, maintaining coastal stability and ensuring the health of fisheries and mangrove forests, the total flow they arrived at is significantly lower than Sindh's insistence on an annual flow of at least 10 MAF per year, as tentatively stipulated in the 1991 Water Accord.

Following the initial rejection of the dam by three of Pakistan's provinces in the late 1980s, two decades of political leadership, civilian and military, tried but were unable to implement the Kalabagh Dam project against the opposition of Sindh, Baluchistan, and Khyber-Pakhtoonkhwa. When the Pakistan People's Party led government came into power in 2008, they declared they would not pursue the Kalabagh Dam project. But in the aftermath of the 2010

floods, then Prime Minister made a widely publicized remark about how the catastrophe would have been mitigated had Kalabagh been in existence to retain some of the floodwaters (Bhatti 2012).

On August 8, 2012, the latest chapter in the Kalabagh saga played out in the halls of the Lahore High Court, as the Water and Power Development Authority (WAPDA) told the Court the complaints of Baluchistan, Sindh, and Khyber-Pakhtoonkhwa concerning the construction of Kalabagh Dam were unfounded. WAPDA cited international studies to refute Khyber-Pakhtunkhwa's claims that Nowshera would be submerged and to contest Sindh's complaints that seawater intrusion, as a result of the construction of the dam, was a real threat to its deltaic integrity (Express Tribune 2012a, 2012b). The Lahore High Court has urged the government to pursue the matter through detailed technical studies, and to recommend the more active role of the Council of Common Interests as a forum to discuss, debate, and build consensus amongst the provinces concerning the construction of Kalabagh Dam.

The engineers I interviewed in Lahore and Punjab, with one exception, were in favor of building the Kalabagh Dam. When I asked why it was that Kalabagh had not been built, the answer, more often than not, was "politics got in the way". My interview with Amjad Agha was representative of this dominant attitude among Punjabi engineers. Mr. Agha was president of the engineering consulting company ACE at the time that I interviewed him in 2012, and had worked many years at hubs of Pakistani engineering expertise like WAPDA and National Engineering Services Pakistan (NESPAK).

Mr. Agha had been personally involved in the concept and design of Kalabagh from 1980 to 1984. The design of the dam, he told me, had been declared by every imaginable international expert on dams as a first-rate project: "Every single expert we consulted approved the design,".

The problem, he declared, was that “no strong leader has taken it upon themselves to make sure Kalabagh gets built, not even Zia-ul-Haq (military dictator in the 1980s),”. Mr. Agha told me he had heard that Musharraf (military dictator in the 2000s) had once expressed an interest in “talking to Sindhi newspaper editors” to request them not to “make an issue out of Kalabagh,” but that ultimately, Musharraf had also not given the issue enough attention.

The need for a “strong man” to make development happen in the face of politics is a theme that brings together political ideology and technocracy. I will discuss this theme in greater detail in Chapter 8. For now I want to emphasize that most of the engineers, and in fact most people in the middle and upper-middle class milieu of Lahore I encountered, held views similar if not identical to Amjad Agha: Kalabagh was technically sound, nationally necessary, and the politics of the downstream passions the situation aroused should be transcended with a mix of techno-science and political will.

With Kalabagh, similar to the debates around the water allocation committees in the early 1970s, technology was not opposed to or separate from politics – it constitutes a form of politics that can only be understood in the context of uneven development and the contradictions of political geography in Pakistan. Out of all the engineers and other technocrats from Punjab that I interviewed, Dr. Shafi (see Chapter 8) was the only one willing to concede that the controversial Kalabagh dam should not be built, because it simply was not politically feasible. Instead, the solution was to focus on smaller, off-channel storage structures along canals in Punjab. Dr. Shafi was the exception that proved the rule, however.

A conversation I had after the interview with Dr. Shafi drove this point home. During my fieldwork, family and friends routinely inquired about how my interviews were going and what I was learning. I shared with my uncle (a retired Army engineer) Dr. Shafi’s point of view on

Kalabagh. He asked me to repeat myself, then shook his head and said in his long career he had never met any “technical person” who held an “Anti-Kalabagh” position. There must, my uncle concluded, be something wrong with the man.

In this chapter I have examined debates about infrastructure development on the formation and articulation of downstream regions. I have argued that downstream regions are produced as much through political debates around infrastructure development as they do around the political economy enabled by infrastructure. Thus regions are produced not only as effects of the grounded economy, but also by debates centered on the geopolitics of downstream. In the case of Pakistan, these debates play out in the context of state formation. In the early 1970s, the geopolitics of downstream played out over a contest over the unfinished Tarbela dam – specifically, over which province would be able to claim the lion’s share of the waters the dam would store. In the current day, the geopolitics of downstream takes the shape over yet another imagined dam - the Kalabagh Dam on the Indus. In this case, the question is whether or not the dam should be built at all.

In both debates, the province of Punjab (or its representatives) favored the “technocratic approach”, in which a river-basin approach that does not recognize regional differences, especially the difference of downstream location. Thus a technocratic approach is not divorced from politics - quite the opposite. This finding joins a growing critical strand of research within water resources geography that examines the naturalization of the concept of integrated river-basin development as a scalar narrative strategy of political actors (Swyngedouw 2004, 2009; Sneddon and Fox 2006, 2011; Molle 2009; Harris and Alatout 2010; Mustafa 2013). In Pakistan the question of water development and rights to the Indus stoke strong expressions of patriotism or state-nationalism as well as regional or ethnic nationalism. Indeed, as can be seen from my

discussion of the attitudes of Punjabi engineers, the necessity of the dam for the survival of the nation is portrayed as an issue of common-sense – anyone who disagrees must be “anti-Pakistan”. This is a very strong position towards what might appear to some to be a rather dull issue – river infrastructure. I return to a greater examination of these attitudes in Chapters 8 and 9.

As a way of concluding this chapter, however, I want to revisit the reason I included a discussion of colonial upstream/downstream tension between Punjab. By going back to the advent of modern large-scale infrastructure development on the Indus Rivers, my objective is to pinpoint a time when the historical relationship between intensive uses of the river (embodied in river control infrastructure), hydraulically conceived political entities, and the technocratic management of rivers was first given shape. By examining two other instances of the dialectic of technocracy and hydraulic regionalism, my objective was to show the relative permanence of this relationship over time. In other words, I hope to have demonstrated a structured relationship, which remains relatively stable over time. To paraphrase Gramsci (1971, pp. 177-178), my objective has been to parse the structural from the “conjunctural”, or to develop “socio-historical criticism” attuned to broad movements of history and geography, rather than “political criticism” focused on day-to-day shifts of power.

So far in this dissertation, I have isolated the dynamic of hydraulic regionalism and technocratic developmentalism as a technologically and spatially modified relationship between productive regions from numerous shifts in political power and political boundaries. Chapters 3 and 4 focused on the international and national conjunctures which led to a technocrat watershed development view of the Indus in the middle of the 20<sup>th</sup> century, and Chapter 5 focused on the interruption of the technocratic tendency by the politics of downstream or hydraulic regionalism.

In the remaining chapters, I examine this same structure in the context of international legal arbitration (Chapters 6 and 7) and ethnographic inquiry (Chapters 8 and 9), via a closer engagement with the theories of the philosopher of technology Langdon Winner (1978, 1980, 1988).

CHAPTER 6: THE LEGAL GEOPOLITICS OF THE INDUS RIVERS, 2005-2013<sup>7</sup>

As discussed in Chapter 1, it is widely accepted that many parts of the world are fast approaching, or even in the midst of, a “water crisis”. Perhaps nowhere has this diagnosis quickened pulses and inflamed passions more than in the Indus Basin in Pakistan and northwest India. Planners, politicians and scholars in both countries tend to advocate technological solutions to water problems; dams, telemetry, use metering, drip-irrigation, lined canals, etc. At first, it is difficult to imagine a more reasonable way to proceed. Surely listening closely to engineers is the only rational way to tackle technical problems like water supply?

I turn my attention in this chapter and the next to the recent international legal geopolitics of the Indus Waters Treaty. I focus on two cases of international arbitration over the legitimacy of Indian structures on the Western Rivers of the Indus. The disputed structures were the Baglihar project, on which a determination was delivered in 2007, and the Kishenganga project, on which a partial determination was delivered in 2013. In this chapter, I argue that international law is an arena in which the downstream can be explicitly politicized. In this setting, the socio-spatial power structure that inheres in upstream/downstream relations is not suppressed, but highlighted. But, as I show, this politicization is contingent on the venue in which international law is being enacted. Law, politics and technology are not isolated fields, but give each other meaning in particular concrete circumstances.

Scholars of science and technology have argued that treating technological artifacts as apolitical is not tenable. Rather than treating technology as neutral tools that obediently carry out the task for which they have been designed, the argument goes, we should ascertain the meaning of the technology through the social context in which it is operating. Langdon Winner (1980)

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<sup>7</sup> A version of this chapter was published as Akhter (2013).

finds this argument compelling, but argues that it does not go far enough in recognizing the material qualities of the artifact in itself: “Rather than insist that we immediately reduce everything to the interplay of social forces, [a theory of technological artifacts] insists that we pay attention to the characteristics of technical objects and the meaning of those characteristics,” (Winner 1980, p. 123).

Winner highlights one type of artifact politics “instances in which the invention, design, or arrangement of a specific technical device or system becomes a way of settling an issue in a particular community,” (ibid, p. 123). He uses the introduction of low-height overpasses (although see Woolgar and Cooper 1999), reaper manufacturing equipment, and the mechanical tomato harvester at various times in the United States as examples to make his point that artifacts have political effects. For example, the low height of the overpasses over the Long Island parkway were supposedly designed by Robert Moses with the express intention of making it impossible for public buses to pass beneath them. This would have the effect of restricting access the access to some areas for the type of people (disproportionately poor and black) who rode public buses. The tomato harvester and improved methods of reaper manufacturing were both capital-intensive technologies that hugely shaped the employment prospects for thousands of skilled and unskilled workers, and had a decisive impact on the politics of labor relations in mid-20<sup>th</sup> century agrarian California and late 19<sup>th</sup> century Chicago. Drawing on these examples, Winner can make the argument that the application of technology has effects on issues that are decidedly political: racial segregation and discrimination, the employment rate and labor militancy.

Winner sketches some policy implications from his discussion of the politics of technological design. The starting point is to acknowledge that the technology “influence how

people are going to work, communicate, travel, consume, and so forth over a very long time,”. Winner’s recommendation is to pay special attention to the “very first time a particular instrument, system, or technique is introduced,” because the “original flexibility” society has with respect to design choice “vanishes for all practical purposes once the initial commitments are made”. Thus, “the same careful attention one would give to the rules, roles, and relationships of politics must also be given to such things as the building of highways, the creation of television networks, and the tailoring of seemingly insignificant features on new machines,”. Society, composed of “different people [who] are differently situated and possess unequal degrees of power as well as unequal levels of awareness,” is therefore advised to pay careful and deliberate attention to the matter of technological choice,” (ibid, pp. 127-128).

In this chapter, I take Winner’s insights on the politics of technological choice forward in several ways. First, I add depth to his observation that society is characterized by relations of unequal power. I do this by noting that unequal power relations are themselves are inextricable from differential structures of knowledge and knowing. These different ways of knowing become especially important, as discussed in the last chapter, when the object of knowledge is located in a non-human nature. For example, historical specificities of institutional form impact the ways in which mosquito management techniques in urban Arizona are adopted and deployed (Shaw et al. 2010; Robbins et al. 2008) and how producers make resource use decisions in the arid grass and shrublands of Rajasthan (Robbins 1998). The case I work with in this chapter concerns contested design choices regarding dams built by India in the last decade on the Western Rivers of the Indus in Kashmir. My argument is not about the world views of lawyers or engineers in general, but about specific venues where the deliberations of lawyers or engineers are structured.

To illustrate the discussion of technology, politics, and structured professional discourses, I discuss two river control projects whose legitimacy under the Indus Waters Treaty (IWT) have been contested in the past decade in a pair of high-profile cases of international adjudication; the Baglihar decision of 2007 and the Kishenganga decision of 2013. The former was delivered by Swiss civil engineer and professor, who served as a “Neutral Expert” at the request of the World Bank. “Neutral Expert” is a term of art of the Indus Waters Treaty (IWT): it is the person selected to adjudicate a specific type of difference in interpretation of the IWT between India and Pakistan. The latter decision was delivered by a seven-member Court of Arbitration that convened at the Permanent Court of Arbitration at The Hague, Netherlands. Six of the members of the Court of Arbitration were eminent international jurists and one was a senior civil engineer. I analyze the Baglihar decision first, and then turn to the Kishenganga decision.

My argument is not only that dam design has particular geopolitical effects, after Winner. I go a step further and argue that that these geopolitical effects are shaped by the structured ways in which the interpretation of technology is conditioned by profession and disciplinary background. Thus, we will see in the course of this chapter that forums that self-consciously adopt a *legal* interpretation of technology, as opposed to a strictly (and ostensibly apolitical) technical or engineering interpretation, are more able to capture the geopolitical and political nuances of the artifacts of politics.

### Engineering justice: The Baglihar Decision of 2007

Recall that the IWT is a unique water treaty partly because it allocates the Indus by geography, not volume of water. The IWT divides the waters of the Indus and its five eastern tributaries into three “Western Rivers”, allocated to Pakistan, and three “Eastern Rivers”, allocated to India.

Important exceptions to this general separation are highlighted in the appendices of the IWT and include India's qualified rights to use the waters of the Western Rivers. This qualified right is at the heart of the two contentious projects analyzed in this chapter: the Baglihar and Kishenganga hydroelectric power projects.

In 2005, for the first time in nearly half a century of the life of the IWT, a case was submitted for international arbitration. Pakistan contested India's Baglihar project on the Chenab in Indian-occupied Kashmir. The Baglihar Decision was delivered in 2007, and it is to an analysis of its geopolitical implications that we now turn. The initial official response from both India and Pakistan to the Baglihar Decision in 2007 was welcoming. The adjudication process was declared a success by the governments of both Pakistan and India, as well as the World Bank.

The Baglihar dam is located on the main stem of the Chenab River, roughly 110 miles east of the Pakistani border. In its first stage, the plant is designed to generate 450 megawatts (MW) of power, and India has plans to ramp up the capacity of the dam to 900 MW in a second stage. The original Indian design called for about 400 million cubic meters of gross storage, or about 0.35 million acre-feet (MAF). Although the Baglihar Hydroelectric Power Project was envisioned by India as early as the 1950s, plans were not formally shared with Pakistan for its construction until 1992. Pakistan expressed objections to the dam, but India nevertheless began construction in 2000. On January 15, 2005, Pakistan invoked its right as granted by the Indus Waters Treaty to request arbitration of the issue by a so-called Neutral Expert appointed by the World Bank. The World Bank appointed Raymond Lafitte, a professor of Civil Engineering in Switzerland, as the Neutral Expert. Pakistan and India approved.

On February 12, 2007, after two years of deliberation, Lafitte delivered his decision on the Baglihar case. Lafitte's interpretive efforts focused on Paragraph 8 of Annexure D of the Treaty.

Annexure D presents conditions for the generation of hydroelectric power on the Western Rivers by India, and Paragraph 8 is broken into eight sections that specify design constraints for any new run-of-the-river hydroelectric plant. “Run-of-the-river” is a term with a specific meaning in the IWT, but we can think of it as a dam whose primary purpose is not storage. The Baglihar decision consisted of six separate determinations concerning Pakistan’s objections to design features regarding storage capacity, power intake tunnels, and design and height of spillways. Lafitte’s first determination was to side with Indian calculations for Maximum Design Flood – a crucial benchmark with which to gauge the appropriate height of the dam. He also determined that:

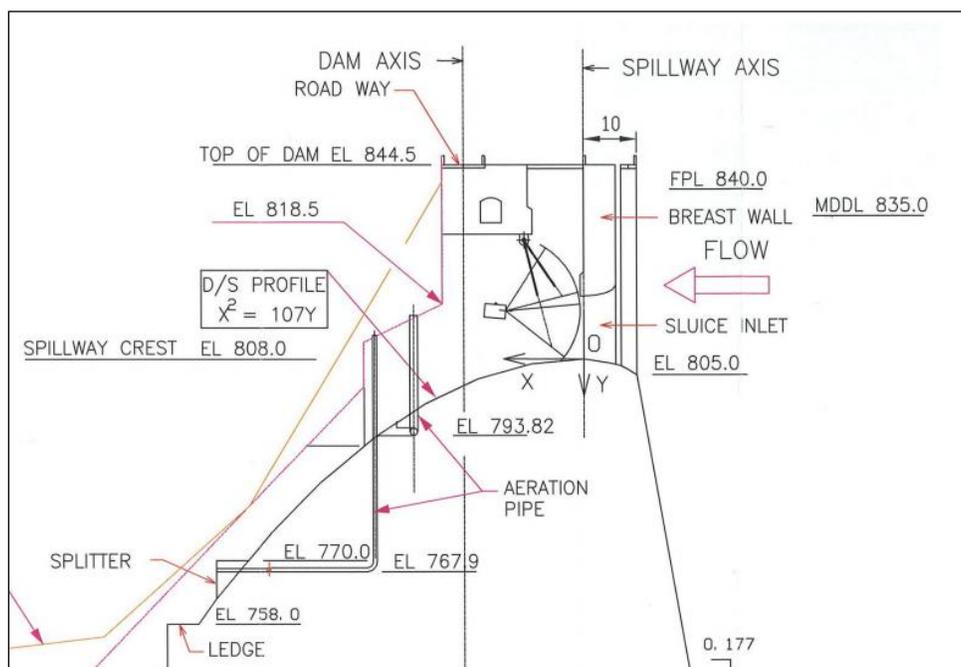
1. Gated spillways were appropriate;
2. The height of the sluice spillways, located below the “dead level” of the dam, should be even lower than what India designed, by about 8 meters;
3. The freeboard above Full Pondage level should be lowered from 4.5m to 3m, following international comparisons (p.14);
4. The maximum pondage should be fixed at 33 mcm (million cubic meters), a figure closer to India’s 38 mcm than to Pakistan’s suggested 6 mcm; and
5. Power intake should be raised by 3m, based on considerations of technical efficiency and sustainability of the structure, especially with regards to siltation (pp. 18-19).

This is all well and good, but what do these technical details have to do with geopolitics? Surely this is a matter for technical people to sort out amongst themselves in appropriately technical language? While the micro-details of dam design may seem beyond the pale of geopolitics, nothing could be further from the truth.

### Spillways and water control

For purposes of clarity, I focus the analysis below on the question of spillway height; specifically on the sluice spillways designed for controlling sediment and managing large flood events. India proposed to locate sluice spillways on the Baglihar structure at 808 meters above sea level, as

compared to a dam crest height of 844.5 meters above sea level. Pakistan objected that even if these spillways were necessary, they were located too low on the dam. The height of sluice spillways was contested because this seemingly mundane design feature has stark geopolitical implications for upstream/downstream dynamics. While sluice spillways improve the economic life of the dam by enabling flushing of silt, they also give the upstream riparian greater capacity to control the flow of water. The economic life of dams and other river control structures is shortened by the slow accumulation of sediment in reservoirs. Sedimentation is an especially acute problem in Himalayan rivers because, geologically speaking, these mountains are young and prone to erosion. Drawdown flushing is a technique whereby sediment accumulated at the bottom of a reservoir is flushed into the channel downstream of the dam. This is accomplished by drawing down the level of water in the reservoir and opening spillways that have been placed at a low level on the dam.



**Figure 13: Profile of the crest of the Baglihar structure. Note the sluice inlet and spillway crest at an elevation slightly above 800 feet (Lafitte 2007).**

Lafitte determined that the spillways were necessary and appropriately placed. Indeed, he argued that the spillway outlets should be located even lower, at about 800 meters above sea level. This determination was arrived at through a review of international best practice in dam design, and Lafitte's rationale was that his decision assured optimal sediment management capacity, which in turn would maximize the economic life of the dam. On the question of gated spillways, Lafitte decided they were acceptable because a non-gated spillway would necessitate a higher dam and "...a purely economic comparison always favors a gated spillway," (Lafitte 2007, p.9). To bolster his decision, he further argues that a non-gated spillway would represent a "loss of 9% in energy production throughout the life of the plant," (ibid, p.9). The decision to lower the spillways was defended by drawing on research conducted by the International Commission of Large Dams. Lafitte states that his concern was not the threat of controlling floodwaters, something that could be of concern to the downstream riparian, as much as it was the imperative to maintain the capacity of "live storage" in the dam by ensuring effective de-sedimentation. Lafitte's decision on the appropriate pondage capacity was made on the basis that the purpose of pondage is to regulate power supply, which was the basis of India's calculations, not to regulate river flow, as was Pakistan's claim (ibid, pp.16-17).

To understand the downstream perspective on the geopolitics of spillway height, imagine a paper cup in your hand is the reservoir behind the Baglihar structure. A spillway is the equivalent of a hole cut out of the cup small enough to cover with your thumb. Pakistan would have preferred a simple "over-flow" approach to reservoir management – the spillway would not be a hole at all, but the lip of the cup. This way no one is afforded effective control over the flow of water – when the cup is full, water will simply flow over. A hole at the bottom of the cup, however, gives whoever is holding the cup a great degree of control over the flow of water; by

virtue of when, and for how long, their thumb covers the hole. The lower the hole, the more control you have over water flow. This is an imperfect analogy, because it does not capture the upstream riparian's relationship with sediment. But I hope it effectively illustrates the downstream perspective.

The geopolitics of dam design come to the light most clearly in the issue of the height of spillways on a dam. India preferred to have the spillways at a lower height on the dam, while Pakistan argued that the sluices and spillways should be at a higher height. As we saw, Lafitte determined that gated spillways were permissible and that the height of the sluice spillways should actually be lowered to ensure better maintenance and therefore a longer life for the dam. These design features were contested so heavily by Pakistan and India because lower and gated spillways have geopolitical and developmental effects that can come into contradiction. Lower sluice spillways improve the economic life of the dam as they allow more efficient flushing of silt that accumulates behind a dam over time. But lower and gated spillways also give the upstream riparian greater capacity to *control* the flow of water.

Lafitte concluded the summary of his decision by reflecting on the unusual role he had been called on to play. Lafitte argues, in effect, that one needn't worry about the politics of his decision.

The Neutral Expert considers that his decision has not been rendered against one or the other Party. His opinion is, in fact, that specific parties emerge successfully from the treatment of this difference [between Pakistan and India]: the Authors of the Treaty. The Treaty is the successful document (ibid, p.20).

There are no winners or losers; Lafitte seems to be saying – there is only the Treaty itself. In order to understand the contemporary geopolitics of the IWT, we must turn from the legal

decision to the specificities of the legal text itself, as well as the “Authors of the Treaty” Lafitte applauds. Legal text is important and powerful in a way that other discourses are not. Legal text has a political, even moral, authority that gives it the aura of autonomy. This is also true of international law, although the relationship with state sovereignty is more complex than with domestic law. I engage legal text, and legal methods of interpreting text, more fully in the next chapter. My argument there will treat legal interpretation according to its own rules, as it were, to better understand the way lawyers engage with history. For the analysis at hand, however, the point to be emphasized is that although legal text is authoritative, this does not necessarily mean that it was arrived at in a way that reflects consensus between disputants unambiguously. I draw on drafts of a relevant portion of the IWT to make this point concrete.

#### Spillways and Paragraph 8(e) of Annexure D

Recall that the Baglihar Decision revolved around Paragraph 8 of Annexure D of the IWT.

Subsection “E” of Paragraph 8 deals with the height of spillways and reads as follows:

If the conditions at the site of a Plant make a gates spillway necessary, the bottom level of the gates in normal closed position shall be located at the highest level *consistent with sound and economical design and satisfactory construction and operation* of the works (Indus Waters Treaty of 1960, emphasis in original).

This final form of paragraph E was not arrived at without conflict. A memo dated April 15, 1960 addressed to General Raymond Wheeler, the senior engineer mediating on behalf of the World Bank, lays out the point of dispute between the Pakistani and the Indian negotiators:

“In the case of a gated spillway, the bottom level of the gates at normal closed position shall:

By Mr. Hamid [Pakistani representative]:  
*not be more than five feet below* the minimum designed level of the Operating Pool.

or

By Mr. Kalra [Indian representative]:  
 be located at the highest level *consistent with satisfactory construction and operation of the works* connected to the power plant,” ([Indus Basin Working Party] 1960, April 15, p. 3; text in brackets added).

The choice was between a quantitative restriction on the level of gates, preferred by Pakistani negotiators, and a more flexible restriction based on the state-of-the-art principles of dam design. The Indian choice was presented again to General Wheeler of the World Bank in a draft memo dated April 21, 1960. A picture of the memo (Figure 2) is necessary to convey the contingency of legal text and the power of the World Bank in determining the final form of the Indus Waters Treaty. The picture clearly shows the words “economical and” penned in to the treaty draft before the words “satisfactory construction and operation.”

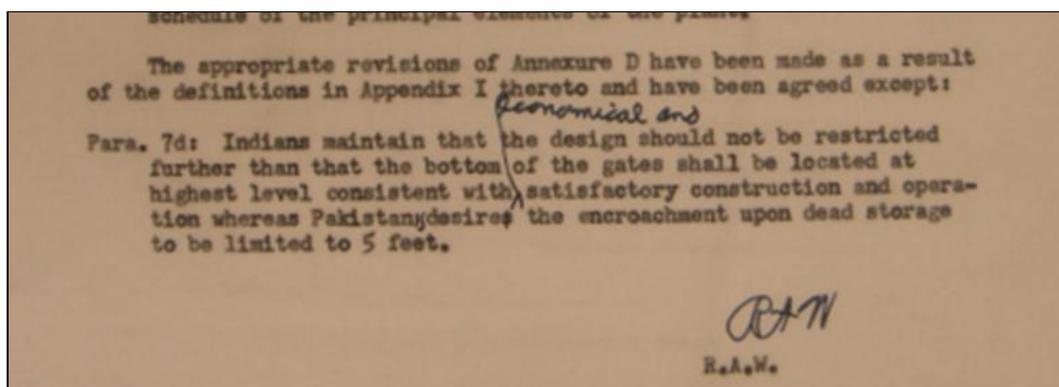


Figure 14: General Wheeler makes a lasting edit in paragraph 8(e) of Annexure D of the IWT (Wheeler 1960, April 21)

By April 23, 1960, India’s wording was chosen over Pakistan for gated spillway provision – and the final version of provision 8(e) required consistency not only “satisfactory construction”, but “economical construction” as well (see Figure 2). Recall that this precise wording was the crucial enabler of Lafitte’s decision to treat the question of spillway height in

favor of the capital logic as opposed to the territorial logic. General Wheeler had made a lasting, and crucial, edit to the treaty.

The above argument demonstrated how the interpretation of dam design by the Neutral Expert rendered invisible crucial geopolitical aspects of the downstream geographical relation. The interpretation of the Neutral Expert was literally “by-the-book”, though, and was rigorously justified through reference to the actual words of the IWT. I showed, however, that the presumption that the words of a treaty convey some sort of consensual agreement between disputing parties is not necessarily true. In the case of the IWT, the representatives of the World Bank exercised a great amount of discretion concerning the final wording of the treaty. I now turn to a treatment of the same question of dam design by the Court of Arbitration, which was convened in 2010 to hear Pakistan’s complaint about the Indian construction of the Kishenganga Hydro-Electric Power Plant.

#### Kishenganga and the Court of Arbitration

The Kishenganga Hydro-Electric Project is located on a tributary of the Jhelum River in Indian-administered Kashmir. The Kishenganga project generates energy by dropping water 2,500 metres through a series of tunnels. The tunnels begin from the Kishenganga River (called the Neelum River in Pakistan and Pakistan-administered Kashmir) and end 25 kilometres to the south, near Wullar Lake. On May 17, 2010, Pakistan requested arbitration by a Council of Arbitration (the Council) to be convened by a procedure detailed in the IWT. The seven-member Council was composed of eminent jurists and one professor of engineering. Pakistan presented the Council with two central objections.

First, Pakistan argued that the diversion of the Kishenganga was not permitted under the IWT primarily on the grounds that it would interfere with “already existing” uses in Pakistani territory. Second, Pakistan argued that even if this diversion was permitted, the drawdown flushing technique Kishenganga was designed to employ was not permitted by the IWT. The Council took the first objection as a matter of determining whether the operation of Pakistan’s Neelum-Jhelum Hydro-Electric Project, about 70 kilometers to the east (and downstream) of Wullar Lake was an “already existing” use protected by the IWT. They decided not only that the Neelum project in Pakistan did not constitute an “already existing” use, but that the diversion of the Kishenganga River for the purposes of power generation was permitted. My focus is on the second objection regarding the appropriateness of dam design for drawdown flushing.

The Indian legal team argued that Laffite’s ruling in the Baglihar decision should serve as an “authoritative precedent” on the question of the permissibility of drawdown flushing. As far as the Court was concerned, however, Laffite’s determination carried no “general precedential value beyond the scope of the particular matter before him,” (Schwebel et al 2013: 177). The Council made their ruling public on February 18, 2013. In stark contrast to Laffite’s determination, which was justified largely on economic and technical grounds, the Court argued that India’s right to hydropower generation was not absolute but had to be balanced against Pakistan’s right to the uninterrupted flow of the waters of the Western Rivers.

The penultimate paragraph of the ruling on the Kishenganga project states that “any exercise of design involves consideration of a variety of factors – not all of them technical. Hydrologic, geologic, social, economic, environmental and regulatory considerations are all directly relevant...”. The Court also found that drawdown flushing was not necessary to generate of hydropower, in light of feasible sedimentation management options, and therefore was not

permissible under Annexure D of the IWT. In arguing that drawdown flushing is impermissible, the Court found “no reason why the factors favouring the feasibility of [alternative sediment management methods] would not apply equally to other sites on the Western Rivers...” (ibid 199). In other words, the Court asserted that its decision was precedent-setting. This will be a significant factor shaping Indus geopolitics in the next decade.

While delivering the Kishenganga decision of 2013 the Court took into account the geopolitical effects of dam design. The Neutral Expert, delivering the Baglihar decision of 2007, did not take these geopolitical effects into account. So what? My purpose is not to evaluate whether Pakistan or India is “winning” the ongoing game of Indus hydro-politics. Rather, I want to step outside the conventional nationalist mode of geopolitical analysis to argue that technological artifacts like dams have (geo) political effects that exceed the category of the nation-state. In the words of one scholar of technology, hydraulic infrastructures like dams are always “thick with politics” (Bijker 2007). The legal geopolitics of the Indus I have discussed above demonstrates that the political nature of technology is more visible in some contexts than in others, and that it is not necessary that the governance of technology remain out-of-bounds for non-engineers. By comparing the rulings of the Neutral Expert and the Court, I have argued that the design of technological artifacts have political effects at least partly as a result of the institutional forum in which that technology is being interpreted.

Furthermore, this is a fact that geopolitical actors are well aware of. During the Kishenganga arbitration, the Indian legal team objected that Pakistan had not followed appropriate procedure by submitting the dispute to the Court. Because it was an “inherently technical” question (Schwebel et al. 2013, p. 106), India argued that Kishenganga dispute should have been submitted to a Neutral Expert, as Baglihar had. The Court determined that even

though the dispute was of a technical nature that did not mean that a Court, *once convened*, could not hear the case. This ruling of the Court opens up some indeterminacy for the adjudication of future questions as it recognizes that technical questions are not out of the competence of non-engineers. Thus it is likely that in the future Pakistan will rush to convene a Court to hear its complaints. This is because there is a greater chance that the political nature of downstream will be recognized by a Court of Arbitration than it would by a Neutral Expert.

How autonomous is the law from the structured interests of society, like the power of money or militaries? A liberal stream within Marxist thought has argued that the law must at least appear to be even-handed in its treatment of the rich and poor, strong and weak, alike. Otherwise law would lose legitimacy in the eyes of the people meant to subject to it, and without legitimacy law loses its “law-ness” and becomes coercion (cf. Thompson 1975; Horowitz 1977). Therefore, the law must actually be fair at least some of the time, even if just to keep up appearances. This way of thinking about the law suggests that progressive confrontations in the arena of courts would be worthwhile. Another, more skeptical, strand of thought holds that the law operates as undisguised class power and is, at best, a distraction for those committed to progressive social change.

In this vein, Kim and Wainwright (2010) analyze a 2002 court case brought by Korean farmers against an international seed company. Farmers accused the seed company of selling defective seeds that failed and left the farmers high and dry. The company blamed climactic conditions out of their control on the poor performance of the seeds. During the trial, farmers depended on their practical knowledge and experience to make the case that it could not have been bad weather that caused the seed failure, because the performance of other seeds they had planted did not corroborate this. The seed company presented the results of controlled laboratory

experiments to back its defense. The trial was decided on the part of the seed company, partly because the practical knowledge presented by farmers was not seen to be as legitimate as the laboratory knowledge of the seed company. Kim and Wainwright see in this outcome of this trial a stacking of the deck against knowledges not produced by capitalists, and draw on a Gramscian theory of law to argue that “the banal fact that this conflict over seeds became a legal dispute at all reflect bourgeois hegemony,” (ibid, p. 732). However, the question of law as a progressive force in society is not as simple as declaring law to be either worthwhile or a waste of time.

At the beginning of this chapter, I drew on the ideas of Langdon Winner (1980) to argue that artifacts have politics. Based on this insight, Langdon Winner argued that special care has to be taken by society when adopting large-scale technological systems for the first time. This is because one technologies are adopted, there is a tendency to transform existing social arrangements in a way that is functional to the new technology (Winner 1977). Winner, although concerned with “society’s” decisions about technology, does not break up open the black box of social decision making. In this chapter, I have looked at one of the forums where decisions about technological design are actually made – international legal arbitrations on the legitimacy of dams. I contrasted how the Neutral Expert of the Baglihar case and the Court of Arbitration of the Kishenganga case examined a specific contested dam design feature. I hope to have developed Winner’s theories in a direction that examines that moves beyond the acknowledgment that technologies have politics, to an exploration of how those politics can be elaborated and made visible.

## CHAPTER 7: LAW AND HISTORICAL RECORDS: THE KISHENGANGA DECISION

I have argued in previous chapters that a dynamic relationship between the contradictory tendencies of a downstream hydraulic regionalism and a technocratic watershed governance provide an underlying structure to the geopolitics of the Indus River. I have shown how hydraulic regionalism has arisen over roughly the past century, through the voices of experts, bureaucrats, and politicians. But hydraulic regionalism is also expressed in legal environments, as the last chapter showed with respect to the geopolitics of dam design. In this chapter, I again draw on the Kishenganga Decision of 2013, but to examine how international jurists and lawyers engage historical records to give expression the tendencies of downstream hydraulic regionalism (in the case of Pakistani lawyers) or technocratic developmentalism (in the case of Indian lawyers). A discussion of the forces that shape the professional discourse of international lawyers is crucial to this task.

The seminal work of international legal scholar Martin Koskenniemi (1989, 2011) has contributed greatly to the task of analyzing international law as a structured discourse. What structures international legal arguments is the “liberal impulse to escape politics” (Koskenniemi 2011, p. 38). Koskenniemi argues that international legal arguments must refer either to actual practice (the concrete, what states actually *do*) or desirable ideals (the normative, what states *should* do) to enable the claim that international law is actually *law*, not mere politics. “This dichotomy reigns because it seems possible to defend one’s legal argument only showing either its closeness to, or its difference from, state practice,” (ibid, p. 39).

But exclusive appeal to either the concrete or the ideal is susceptible to accusations of politicization. These former can be characterized as mere apologia for state practice and the latter

as utopian statements – the twin bugbears of international law. As a consequence, in the actual practice of international law, it is impossible to adjudicate between these arguments without recourse to a political judgment. Thus the structure of international legal argument produces what it was designed to avoid in the first place; the infection of law by politics.

My analysis of the Kishenganga Decision of 2013 takes as its first step Koskenniemi's argument that international legal decisions and deliberation is inevitably based on political principles and considerations. This does not mean that I understand law simply as a façade for politics – some understanding of the international legal principles of argument and adjudication is necessary, because these constitute the “rules of the game” of the setting in which my source material, the Kishenganga Decision, was produced. I do not have any formal legal training aside from a graduate seminar in public international law, and my own reading of international legal jurisprudence. My task is made easier, however, by the fact that the subfield of law I am dealing with is international law.

International law is notoriously considered the least “law-like” of all branches of law, primarily because of the lack of a coercive authority to implement the law (Mieville 2006; Carter and Wiener 2011). The audience for international legal theory is not restricted to international lawyers, but also includes diplomats, political scientists, political geographers, and scholars of international relations – not to mention environmental and human rights activists. This has made the language of international legal theory more accessible to a non-lawyer and has eased my access to it despite a lack of sustained legal training. My aim is to appreciate the internal logic of the field of international legal theory without ascribing to that logic.

Legal reasoning is interesting because it seems to provide a rigorous method of qualitative analysis. Social scientists, historians, and lawyers share an understanding that interpretation is an

elusive part of their craft. But lawyers, perhaps as a function of their practical functions and the professional imperative to establish legal certainty, work with “rules” of interpretation. This allows me to read the arguments and determinations of international law as relatively “hard” interpretive science. The urge to both recognize interpretation as an art, and yet to comprehend understand it scientifically, is captured in two quotes from legal scholars on the nature of interpretation in international law:

This also implies that the statement that interpretation is ‘to some extent an art, not an exact science’ is only partly true: it is an art in that one cannot learn to interpret by mechanistically following a set of rules. Some people are better at it than others, in much the same way as some have a greater talent than others for playing the violin or chasing tennis balls on a clay court. This is, however, where the analogy quickly ends: it clouds the issue to insist on the artistic nature of the enterprise of interpretation (Klabbers 2003, p. 272).

...it had been said rather too glibly that interpretation was an art; the question was whether there are any rules for practicing that art (Chairman of the International Law Commission, quoted in Merkouris 2010, p. 23) .

As this analysis deals with the use of the travaux in international legal argument and arbitration, I hope it would also be of interest to legal scholars of treaty interpretation. Before turning to the Kishenganga ruling of 2013, I discuss international legal principles and controversies of treaty interpretation.

### Treaty interpretation: principles and controversies

The appropriate method of the interpretation of treaties is a topic of long-running controversy amongst international legal scholars. Of course, explaining what is meant by ‘interpretation’ is not limited to the legal sciences. How to engage in a methodological exposition of

“interpretation” is a problem faced in broad swathes of the social sciences and humanities as well (MacKian 2009; Scott and Keates 2001). What, after all, are we doing when we “interpret” text? Interpretative social scientists and scholars of culture might well argue that the question is not relevant to an evaluation of the results of interpretive practice- the resulting analysis itself will tell us whether the interpretation behind it was convincing and/or legitimate. It may even be undesirable to specify a method of interpretation, as this would place artificial barriers and blinders on future practitioners of the art of interpretation.

Seeing interpretation as an “art”, as opposed to a science, is one of the reasons we have problems explaining what exactly interpretation is (Klabbers 2003; Merkouris 2010). Would we try to develop rules as to how to interpret a novel, a painting, or a musical score? Or would the attempt to formulate such rules be legitimately seen as offensive, or at least misguided? The discourse and practice of treaty interpretation is fertile ground for investigation because international legal scholars share a methodological anxiety regarding “interpretation”, especially of texts, with many social scientists and historians.

Three major approaches to treaty interpretation are highlighted by international legal scholars. The *subjective* view holds that the purpose of interpreting a treaty is to determine the intention of the signatories of the treaty. The *objective* view holds that the primary purpose of interpretation is to determine the meaning of the text of the treaty. And the *teleological* view is that the correct interpretation is that which furthers the objective and purpose of the treaty (Sinclair 1969). These approaches are not mutually exclusive. Interpretation in any given concrete example will probably use a combination of these approaches, even while giving more weight to one of them. For example the subjective and objective approaches are both focused on determining the intention of the treat drafters- the latter just accords the text of the treaty an

authoritative position in this regard. While these approaches to treaty interpretation are recognized by most international lawyers, the question of whether or not there are (or should be) *rules* for the interpretation of treaty is much more controversial. In the middle of the 20<sup>th</sup> century, international lawyers and diplomats engaged this controversy while codifying the customary law on treaties.

The Vienna Convention on the Law of Treaties (henceforth, the VC) was adopted on May 22, 1969 by the International Law Commission, after two decades of deliberation. One participant reported on a colleague's efforts to prepare drafts of the articles relating to treaty interpretation to: "[t]he subject was a vast and difficult one and he was anxious not to penetrate too deeply into the realm of logic and what might be described as the art of interpretation," (quoted in Merkouris 2010, p. 22). Despite this trepidation, Articles 31 and 32 of the VC contain rules of interpretation that were agreed upon by the International Law Commission. The articles are widely accepted by international legal scholars, state representatives as the law of treaty interpretation. Even countries that have not ratified the VC have publicly declared that they will nevertheless abide by it as customary international law (Gardiner 2008). In addition to state representatives, the International Court of Justice, the World Trade Organization's dispute settlement body, the Permanent Court of Arbitration, and the European Court of Justice all rely heavily on the rules of treaty interpretation laid out in the VC (Klabbers 2010).

As much of the analysis that follows will concern the legal rationales for making and arbitrating international legal arguments, it is necessary to consider the rules of treaty interpretation as they are stated in the VC. Article 31 reads as follows;

#### Article 31: General rule of interpretation

1. A treaty shall be interpreted in *good faith* in accordance with the *ordinary meaning* to be given to the terms of the treaty in their *context* and in the light of its *object and purpose*.
2. The *context* for the purpose of the interpretation of a treaty shall comprise, in addition to the text, including its preamble and annexes:
  - (a) any agreement relating to the treaty which was made between all the parties in connection with the conclusion of the treaty;
  - (b) any instrument which was made by one or more parties in connection with the conclusion of the treaty and accepted by the other parties as an instrument related to the treaty.
3. There shall be taken into account, together with the context:
  - (a) any subsequent agreement between the parties regarding the interpretation of the treaty or the application of its provisions;
  - (b) any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation;
  - (c) any *relevant rules of international law* applicable in the relations between the parties.
4. A *special meaning* shall be given to a term if it is established that the parties so intended.

The terms in italics mean something specific in the language of international law. These meanings will be explained as they emerge in my analysis of treaty interpretation below. Article 31 means that the VC comes down clearly in favor an objectivist and teleological approach to treaty interpretation (Sinclair 1969; Schwebel 1997). The first part of 31(1) contains the first mention of an authoritative means of interpretation is the “ordinary meaning” of the “terms of the treaty” – a textual approach. “Ordinary meaning” is, just as it sounds, a highly ambiguous terms that rests on a subjective judgment of what is an “ordinary” use of language.

The second part of 31(1) goes on to emphasize that the text must be seen “in context”, and in light of the treaty’s “object and purpose”. “Object and purpose” refer to the intended aims of the treaty, or the general underlying principles of the treaty. What is meant by “context” is

explained in 31(2), and is limited to text produced in association with the body of the treaty. This associated text includes the preamble, annexes, and any agreements that the parties entered into at the time of the conclusion of the treaty. 31(3) lists factors to be considered in any interpretation in addition to context; subsequent agreements or practices of the parties in relation to the application of the treaty, and the relevant customary international law. Thus we see inscribed in Article 31 an objective (textual) and teleological (object and purpose) approach to interpretation.

Article 32, however, offers “recourse” to “supplementary means of interpretation”, when this is to “confirm” or “determine” “the meaning resulting from the application of Article 31”.

Article 32 reads as follows:

Article 32: Supplementary means of interpretation

Recourse may be had to supplementary means of interpretation, including the *preparatory work of the treaty* and the *circumstances of its conclusion*, in order to confirm the meaning resulting from the application of article 31, or to determine the meaning when the interpretation according to article 31:

- (a) leaves the meaning ambiguous or obscure; or
- (b) leads to a result which is manifestly absurd or unreasonable.

32(a) and 32(b) list the conditions of using supplementary works to “determine” the meaning of a treaty when the interpretation according to Article 31 is ambiguous, obscure, or would lead to an outcome that was “manifestly absurd or unreasonable,”. Specific mention is also made of two supplementary means of interpretation. These are the preparatory work of the treaty, also known as the *travaux préparatoires*, and the “circumstances of conclusion” of the treaty. The role of the travaux in treaty interpretation, analogous to “legislative history” in

domestic law, has been the subject of some discussion in the international legal literature. One debate regards the possibility of an interpretation based on the travaux overturning, or correcting, an interpretation based on the ordinary meaning of the terms of the treaty.

Articles 31 and 32 of the VC seem to relegate use of the travaux to merely “confirmatory” purposes. What this suggests is a rigid hierarchy in which “textualists” will always have the upper hand over “subjectivists”, who would have resort to the travaux to flesh out the intentions of the treaty drafters. Stephen Schwebel (a name to remember for the upcoming analysis), asks: may a court “bring the travaux to correct- or indeed from the outset to inform and influence- what otherwise would be its understanding of the meaning of the treaty provisions at issue?” (Schwebel 1997, p.543). From the text of the Articles, which explicitly identify the travaux as “supplementary”, the answer seems clear-cut: no, the travaux cannot “correct” an interpretation based on the ordinary meaning of the terms of the treaty.

But Schwebel and others (Sinclair 1969; Gardiner 2008) argue that, in practice, recourse to the travaux is inescapable at all stages of treaty interpretation. For example, recourse to the travaux is often made in the arguments presented to a court before they even examine the text of the treaty. Furthermore, Schwebel draws on the travaux of the VC to argue that the legitimacy of the travaux as a means of interpretation was a source of considerable ambivalence for delegates. Finally, it has been argued (from a strictly textualist perspective) that unless it is conceded that the travaux can do no more than “confirm” the interpretation based on Article 31, recourse to it would be ineffective. It might even be logically impossible, as the travaux is only supposed to be consulted in moments of ambiguity (Merkouris 2010). This would make Article 32 a lifeless appendage, and according to a canon of international law, no part of a treaty can be interpreted as “surplusage” – or meaningless to the purpose of the treaty.

Thus, the controversy around the VC's rules of interpretation in the VC circle back into a discussion about how those rules should be interpreted! As Schwebel argues, one way out of this circular discussion is to recognize that the VC was meant to codify customary law, and to deny a prominent role to the travaux in the interpretative process "can hardly be said to be reflective of customary international law if it does not in fact fairly reflect State practice and judicial precedent," (Schwebel 1997, p. 547). Observation and analysis of the "concrete", or actual State practice, is one way to improve our understanding of the VC in action, not merely law-on-the-books.

So far I have discussed some principles and controversies in the international law of treaty interpretation. The rules of treaty interpretation, as laid out in Articles 31 and 32 of the VC were examined in depth, and the controversy around the travaux as a means of treaty interpretation was discussed. This necessary background knowledge of international law is crucial to understanding the legal reasoning and procedures followed by international lawyers in any concrete case. I turn to one such concrete case of international adjudication, the Kishenganga case, in the next section (see Chapter 4 for background information on the case).

#### Lawyers and the historical record

The Kishenganga Hydro-Electric Project is located on a tributary of the Jhelum River in Indian-administered Kashmir. The Kishenganga project generates energy by dropping water 2,500 metres through a series of tunnels. The tunnels begin from the Kishenganga River (called the Neelum River in Pakistan and Pakistan-administered Kashmir) and end 25 kilometers to the south, near Wullar Lake. On May 17, 2010, Pakistan requested arbitration by a Council of Arbitration (the Council) to be convened by a procedure detailed in the IWT. The seven-member

Council was composed of eminent jurists and one professor of engineering. Pakistan presented the Council with two central objections.

First, Pakistan argued that the diversion of the Kishenganga was not permitted under the IWT primarily on the grounds that it would interfere with “already existing” uses in Pakistani territory. Second, Pakistan argued that even if this diversion was permitted, the drawdown flushing technique Kishenganga was designed to employ was not permitted by the IWT. The Council took the first objection as a matter of determining whether the operation of Pakistan’s Neelum-Jhelum Hydro-Electric Project, about 70 kilometers to the east (and downstream) of Wullar Lake was an “already existing” use protected by the IWT. They decided not only that the Neelum project in Pakistan did not constitute an “already existing” use, but that the diversion of the Kishenganga River for the purposes of power generation was permitted.

The Kishenganga ruling provides an excellent opportunity to observe the role of the *travaux* in legal historiography. Legal counsels for Pakistan, India, and the arbitrators themselves draw liberally on the *travaux* to make arguments, guide their reasoning, or justify their determinations. The *travaux* is invoked only in specific moments, however, and for specific purposes. I argue that the legal interpretation adopted by each party, and which frames their engagement with the historical record, is an expression of the dynamic between hydraulic regionalism and technocratic developmentalism. I also observe, as a historical geographer, that the *travaux* is mined almost exclusively for evidence of *agreement* between the parties. This leaves undisturbed a rich vein in the *travaux* that is of interest to historical geographers or other historical social scientists: evidence of dissent, conflict, and opposition.

Determining the object and purpose of the treaty, or the foundational principles that it aims to put in effect, was a rich source of controversy between Pakistan and India during the Kishenganga proceedings. As the Court noted in its ruling;

Underlying the Parties' disagreement on hydro-electric projects such as the KHEP is a more fundamental divergence about the principles established by the Treaty for the use of the waters of the Western Rivers. (Schwebel et al. 2013, p. 55).

The legal counsels of Pakistan and India drew on the travaux to support their arguments about the fundamental purpose of the IWT. As noted by the Court in the quote above, the issue fundamentally came down to determining what legitimate uses India could make of the Western Rivers. Pakistan insisted that the main purpose of the IWT was to assure protection to the Pakistan as the downstream riparian – meaning that the object and purpose of the IWT was to oblige India to “let flow” and “not permit any interference with” the water of the Western Rivers. This reading of the IWT was defended by reference to the first part of Article 3 of the IWT, which reads as follows:

- 1) Pakistan shall receive for *unrestricted use* all of those waters of the Western Rivers which *India is under obligation to let flow* under the provisions of Paragraph (2).
- 2) *India shall be under an obligation to let flow all the waters of the Western Rivers, and shall not permit any interference with these waters, except for the following uses, restricted (except as provided in item (c) (ii) of Paragraph 5 of Annexure C) in the case of each of the river, The Indus, The Jhelum and The Chenab, to the drainage basin thereof:*
  - a. Domestic Use;
  - b. Non-Consumptive Use;
  - c. Agricultural Use, as set out in Annexure C; and
  - d. Generation of hydro-electric power, as set out in Annexure D

Indian arguments, however, pointed out that the Pakistani reading of Article 3 made ineffective the provisions laid out in Article 3.2., which begins “India shall be under an obligation....” Why would these specific uses be detailed, unless it was to make clear that India had rights to use of the Western Rivers? In India’s reading, the emphasis on the above article would be that India’s obligation is restricted to “those waters of the Western Rivers which India is under obligation to let flow”. In other words, there were waters of the Western Rivers that India was *not* under any obligation to let flow, and those waters were specified in Article 3.2.

India interpreted the fundamental purpose of the IWT to be to enable “the most complete and satisfactory utilization of the water”. Based on this interpretation, the development of hydro-power generation capacity on the Western Rivers was a desired effect of the IWT. India’s interpretation relies heavily on the preamble to the IWT, which states:

*The Government of India and the Government of Pakistan, being equally desirous of attaining the most complete and satisfactory utilization of the waters of the Indus system of rivers and recognizing the need, therefore, of fixing and delimiting, in a spirit of goodwill and friendship, the rights and obligations of each in relation to the other concerning the use of these waters and of making provision of the settlement, in a cooperative spirit, of all such questions as may hereafter arise in regard to the interpretation or application of the provision agreed upon herein, have resolved to conclude a Treaty in furtherance of these objectives... (Indus Waters Treaty 1960).*

Pakistan points to the phrase after the second comma in the preamble, which states that there is a need for “fixing and delimiting” the “rights and obligation of each in relation to the other,” in support of its interpretation of the primary objective of the IWT.

The contesting interpretations of the Treaty can be summed up in the principle to “let flow” the waters versus the principle of achieving “complete and satisfactory utilization” of the rivers. The phrasing of both the preamble and Article 3 of the treaty lends itself to both Pakistan

and India's interpretation. Both countries also state that the travaux supports their interpretation. The Kishenganga Decision enables an examination of the dynamic between downstream hydraulic regionalism and technocratic developmentalism from a different angle.

Pakistani lawyers, in response to the infrastructural intervention on the Western Rivers by India, turn to the historical record of the negotiation to reconstruct Pakistan as a vulnerable, downstream territory (see also Chapter 2). The international legal principle which attaches to downstream hydraulic regionalism in the context of the IWT is the principle to "let flow". Indian lawyers, on the other hand, turn to the historical record in order to express the technocratic developmentalist ideal of maximum development, irrespective of political geography. The international legal principle that expresses the technocratic developmentalist tendency is the principle of achieving "complete and satisfactory utilization". Thus we witness on the international scale the same dynamic explored in earlier chapters on the national scale within Pakistan. Let us examine how each country approached the travaux to make their arguments concerning the objective and purpose of the IWT in turn, starting with Pakistan.

#### *Pakistani lawyers and the historical record*

Pakistan's legal strategy was aligned with the "subjectivist" approach to interpretation. This approach, as discussed above, lends itself to greater recourse to the travaux. Three documents from the negotiation history of the IWT are offered by Pakistan as supporting evidence for its interpretation that the major principle governing the IWT was the obligation of India to "let flow" the waters of the Western Rivers. The first is the 1954 World Bank Proposal, which suggested a "division of waters" as the way forward with the negotiation. On February 5, 1954, Eugene Black sent identical letters to the Indian and Pakistani heads of government which

included a proposed a new understanding from which to proceed with the negotiations. Let us examine this pivotal document more closely.

The 13-page letter can be divided into three sections; an introduction, the statement of the proposal, and some comments on the proposal. The introduction justifies the World Bank taking it upon itself to even offer up a proposal, as its role was supposed to be limited to providing its “good offices”. The catalyst for the greater substantial involvement of the Bank was the observation that there was a huge difference in the water-sharing formulas proposed by each country. The Indian and Pakistani plans, developed in the years 1952-1954, can be compared by looking at the tables below.

|          | Western Rivers | Eastern Rivers |
|----------|----------------|----------------|
| India    | 7%             | 100%           |
| Pakistan | 93%            | 0%             |

*India's Proposed Split of Indus River Waters*

|          | Western Rivers | Eastern Rivers |
|----------|----------------|----------------|
| India    | 0%             | 30%            |
| Pakistan | 100%           | 70%            |

*Pakistan's Proposal Split of Indus Rivers Waters*

Black identifies “three basic difficulties” which frustrated the reaching of an agreement on a “fair division of the waters”. One difficulty “lies in the fact that water supplies and storage potentialities are inadequate to the needs of the basin,”. Another was the tension between Pakistan’s insistence on the protection of existing and planned future uses and India’s right to the use the waters of the Indus to develop its own territory. The third difficulty mentioned by Black tackles the impracticality of running the Indus as a single unit, as it had been managed during

British rule. The idea of joint administration of the Indus formed a cornerstone of the plan

Lilienthal proposed in 1951. Black notes that:

...although the [negotiators] are planning on the basis of the development of the Indus Basin as an economic unit, *two sovereign states are involved*. This greatly limits the practical potentialities of planning. A comprehensive plan can achieve maximum efficiency, economy and usefulness when it is developed and administered by a single authority. Under such an authority, decisions can be made promptly, plans can be readily changed to meet new circumstances and accommodations made to meet emergencies....[The countries] may also...be *reluctant to have works regulating water supplies on which they depend constructed in territory controlled by another country...* (Black 1951, September 6).

Black reluctantly acknowledges that the dream to run the international basis as an integrated unit is not practical, given the state of Indian-Pakistan relations. This strengthens Pakistan's point that a basic premise that was agreed upon during the negotiation of the IWT was the operational independence of river resources in each country. Now we turn to the actual proposal. Black describes two principles that underlie the Bank proposal. The first is a concession to the Indian position, "the principle that historic withdrawals of water must be continued, but not necessarily from existing sources". It is the second principle, however, which the Pakistani legal team draws on to argue that the operational independence of each countries Indus irrigation system was crucial to the Treaty:

The Bank proposal also embodies the principle that, in view of existing circumstances, *allocation of supplies to the two countries should be such as to afford the greatest possible freedom of action by each country in the operation, maintenance and future development of its irrigation facilities*. It is desirable, so far as practicable, *to avoid control by India over waters on which Pakistan will be dependent*, and to enable each country to control the works supplying the water allocated to it and determine in its own interests the apportionment of waters within its own territories... There is every reason to believe that leaving each country free to develop its own water resources in the light of its

own needs and resources, and without having to obtain the agreement of the other at each point, will in the long run most effectively promote the efficient development of the whole system.

Black emphasizes that India and Pakistan should have functional independence with regards to the Indus. To this end, the Bank proposed that entire flow of the Western Rivers would be allocated to Pakistan, and the entire flow of the Eastern Rivers would be allocated to India. Black notes that it is unlikely, given that the “mountainous topography is unfavorable for irrigation development”, that flows of the Indus main-stem into Pakistan would be threatened by India. Black goes on to note that India would have to provide explicit guarantees that the flow of the Jhelum and especially the Chenab into Pakistan would not be interrupted. Pakistan’s case is further bolstered by text in the section of the letter titled “Comments on the Proposal”.

Highlighting the distinct advantages offered by the Bank Plan, Black says:

...each country will be independent of the other in the operation of its supplies... This should provide strong incentives to each country to make the most effective use of water, since any efficiency accomplished by works undertaken by either country... will accrue directly to the benefit of that country... By contrast, if the supplies from particular rivers were shared by two countries, the administrative complexity of arranging necessary adjustments... would be formidable... [Furthermore,] the *location of works serving each country on territories under its control, and the assurances against interference by either country with the supplies on which the other depends, should reduce the chances of disputes and tension* and contribute to improved relations.

The 1954 Bank Proposal was the perfect document to support Pakistan’s claims that the obligation of India to “let flow” the waters of the Western Rivers was a major principle in the history of the Treaty (Schwebel et al 2013, p. 60). This document afforded Pakistan the maximum downstream protection ever on the table during the negotiation history.

The second document Pakistan produced from the travaux was the 1957 Heads of Agreement. On June 24, 1954, Eugene Black wrote identical letters to the heads of the Pakistani and Indian delegations which listed eight principles along which the waters of the Indus would be shared. Black asked the delegation heads to inform him within a month “whether or not these Heads of Agreement are acceptable as a basis from which we can proceed further,”. Pakistan points to the very first Head of Agreement to make its case;

1. The *entire flow* of the Western Rivers (Indus, Jhelum and Chenab) would be available for the *exclusive use and benefit of Pakistan*, except for the extent to which historic irrigation uses in the State of Jammu and Kashmir have been met from the flow of these rivers.

Pakistan argues that the principle enshrined in the 1954 Bank Proposal was still in force in 1957; a fact sufficiently supported by the 1957 Heads of Agreement. The third document Pakistan draws from the travaux to make its case to the Kishenganga dispute Court is a letter from William Iliff, a Bank Vice President, to the Pakistani finance minister, Mohammad Shoaib, dated February 6, 1960. In this letter, Iliff walks Shoaib through the process by which the final wording of Article 3 of the IWT was chosen. The following excerpts show the Article went through two iterations before reaching its final form. The first version was:

All the water of the Western Rivers shall be available for the unrestricted use of Pakistan, except as otherwise expressly provided in the Article (Iliff 1960, February 5).

The first version, Black explained, was unsatisfactory because “Pakistan cannot have the ‘unrestricted use’ of the Western Rivers while the waters of those Rivers are actually flowing in

upstream territory outside the control of Pakistan. The wording of Article 3(1) was therefore changed to

All the water of the Western Rivers, while flowing in Pakistan, shall be available for the unrestricted use of Pakistan, except as otherwise expressly provided in this article (ibid, emphasis in original).

Upon reflection, Black rejected this iteration of the Article was rejected as well. He realized that “this approach was likely to lead us straight into the political issues relating to Kashmir, which we are seeking to avoid.” Finally, the final wording of the Article was decided upon Black himself, which has already been discussed above. Pakistan’s use of this letter, however, draws from the following assurance conveyed by Black:

I am satisfied that there is no doubt and no reservation in the mind of any one, either in the Indian delegation, or the Bank, that the present language of Article III(1) and (2) imposes the treaty obligation on India to allow to flow down all the waters of the Western Rivers, except those required for the uses to be permitted under the terms of Article III(2). This has been the intention of the language and I think the language satisfied the intention (ibid, emphasis in original).

Black envisioned all the waters of the Western Rivers to flow to Pakistan, *except* those uses which were permitted by Article 3(2). Pakistan’s argument, predictably, does not put any stress on the exception. The Court summarizes of Pakistan’s argument based on the travaux in the following words: “In sum, for Pakistan, concern over India’s control of the waters was a constant element of the Treaty-drafting process,” (Schwebel et al 2013, p. 62).

*Indian lawyers and the historical record*

While Pakistan's position leaned toward the "subjectivist" approach, India's argument stressed that the Preface and the treaty provided the appropriate means of interpretation. India firmly grounded its approach in an orthodox reading of the VC (Schwebel et al. 2013, p. 59), which does not put much weight on consulting the travaux. Nevertheless counsel for India made recourse to the travaux to confirm its understanding of the fundamental principle of the IWT. India argued that the object and purpose of the IWT was to promote the economic development of the Indus Basin, and therefore the treaty should be interpreted so as to give effect to this.

A November, 1951 letter Black wrote to the Prime Ministers of Pakistan and India supports India's argument concerning the objective of the treaty. Black was prompted to write this letter after Lilienthal's article, in which the ultimate objective of fully developing the Indus basin was held to be the best route to peace and stability in the region. Black explained his view of what he thought any agreement of the Indus dispute between Pakistan and India should lead to:

The water resources of the Indus basin should be cooperatively developed and used in such manner as most effectively to *promote the economic development of the Indus basin viewed as a unit.*

One point critical to India's case was that the IWT was always envisioned as an instrument to foster the generation of hydro-power, not just to facilitate irrigation. Indian arguments drew on the 1959 Heads of Agreement to make this point. This document clearly states that the "division of waters" entails giving rights to the flows of the Western Rivers to Pakistan, excepting certain permitted uses by India. One of these permitted uses was "Hydel uses not involving consumptive use of water". The Indian legal team also made reference was also

made to the 1960 press release the Bank made upon the signing of the IWT, in which Indian rights to generate hydro-electric power from the flow of the Western Rivers was mentioned.

### *The Court's interpretation*

The Court determines the object and purpose of the treaty through a consideration of the legal meaning of paragraph 15(iii) of Annexure D of the IWT. This paragraph states that Indian hydroelectric plants on the Western Rivers could operate “only to the extent that the *then existing* Agricultural Use or hydro-electric use by Pakistan... would not be adversely affected.”. Pakistan argued that that the correct interpretation of the term “then existing” should include any use of the water of the Western Rivers existing at the time that the Indian structure started operation. India argued that the “then existing” referred to uses existing at the time India informed Pakistan of its intention to build a structure. After first analyzing the syntax and grammar of paragraph 15(iii) to determine the “ordinary meaning” of the terms therein, the Court turned to the “context”. The court follows the VC’s definition of “context” to include only “other parts of the Treaty’s text” – the preamble, the annexes, and the headings under which articles were grouped. The purpose of considering the context in this way was to avoid looking at paragraph 15(iii) in a “textual vacuum”.

Turning from the text and the context to a consideration of the object and purpose of the IWT, the Court arrives at a balance between the Pakistani and Indian interpretations. Interestingly, none of the travaux-based arguments presented by Pakistan and India concerning the object and purpose of the IWT are considered at all. Nor does the Court turn to the travaux to make its own determination. It relies entirely on the text of the IWT itself. The Court acknowledges that India has rights to develop hydro power generation facilities on the Western

Rivers. But it also recognizes that one of the main purposes of the IWT was to assure Pakistan a measure of protection as the downstream riparian.

Thus, on the one hand, the Treaty establishes that Pakistan enjoys unrestricted use of those waters of the Western Rivers which it is entitled to receive. On the other hand, the Treaty's specifications in respect of India's hydro-electric uses on the Western Rivers are inconsistent with denying to India the capacity to generate electricity from power plants built in conformity with the Treaty (Schwebel et al 2013, p. 154).

In sum, the Pakistani legal team drew extensively on the travaux to make its case that the main purpose of the IWT was to assure the operational independence of both states with respect to the Indus Rivers. This constitutes a politicized conception of the river, in which downstream vulnerability are at the forefront. The Indian legal team relied less on the travaux to make its case that the object and purpose of the IWT is primarily to promote economic development and utilization of the Indus Rivers. In its decision, the Court does not give much weight to arguments based on the travaux, but draws on the text of the IWT itself to highlight the tension between Pakistan and India's interpretation. As was discussed in Chapter 4, the ruling of the Court balanced these interpretations by acknowledging India's right to build on the Western River, but with restrictions of dam design to limit the capability of the upstream riparian to control flows to the downstream.

#### Discussion of lawyers' approach to the historical record

Three observations can be made of the style of engagement with the historical record employed by the parties and the court in the Kishenganga dispute. These are: (1) the focus on points of

agreement as valid evidence; (2) the quest to determine intention, and (3) the very restricted understanding of “context”.

The Pakistani legal team draws on the travaux exclusively to make a legal argument. This has the effect of seeing the various documents in the negotiation archives as unconnected to each other. Documents, or even just phrases within documents, are presented as free-floating and autonomous statements of fact, instead of a stream of correspondence to be understood within the larger discursive process. For example, even though Pakistan places great stress on the 1954 document, the negotiation record reveals that Pakistani negotiators at the time were extremely wary of committing to this document. This reluctance to commit to the 1954 Bank Proposal was in stark contrast to India’s quick acceptance of the principles contained therein. It was actually not until December 22, 1958 that the head of the Pakistan delegation wrote Iliff to “...remove any possible doubts, my Government [does] now accept without condition or reservation the Bank Proposal of February 5, 1954...” (Mueenuddin 1958, December 22). Similarly, although the Pakistani legal team relies on the 1957 Heads of Agreement, the Pakistani government expressed significant resistance to this document at the time. In a letter dated August 16, 1957, the Pakistani government argues that the wording of the Heads of Agreement should be changed.

It is essential to provide that no works would be constructed in areas under the control of India which might interfere or make it possible to interfere with the natural flow of the Western Rivers...this head of agreement should also state that the entire flow of the Eastern Rivers (Mueenuddin 1957, July 25).

This opposition to the wording of the 1957 Heads of Agreements actually indicates that the Pakistani government was not satisfied with the wording contained therein. This, in turn, would weaken the Pakistani case that the 1957 Heads represented a moment of substantial and

relevant agreement between all parties about the general principles along which the IWT would be negotiated.

The same observation applies to India's recourse to the travaux. Instead of trying to understand documents as they relate to the negotiation process, pieces of text are studied in isolation. And similar to Pakistani legal argument, the exploration of the negotiation records was marked primarily by a search for evidence of agreement between the parties. Although the arguments they are making are opposed, the style and purpose with which the archives approached are the same. This is, not surprising, since both teams are engaged in the same task; making a legally compelling case before a Court. Pakistan's aim was to highlight the principle of protecting downstream and historical uses, while India's was to highlight the principle of optimal development of the Indus Basin. Both parties approached the travaux with purpose of establishing the *shared intent* of the parties. This is expected because the objectivist, subjectivist, and the teleological approaches to treaty interpretation all stress that only those documents from the travaux that convey a common understanding between parties constitute legal evidence (Gardiner 2008).

The focus on shared intent in legal historiography is a restrictive approach to the travaux. By looking only at intent of the parties as they are embodied in text, underlying *structural* features of the discourse of negotiation are missed. A dynamic and shifting set of assumptions forms of what the Indus Basin was, is, and should be form the conditions of production of all the text that forms the travaux of the IWT. These structural features of the discourse cannot be determined by looking at the fragments of text in isolation – the focus must be on how these fragments relate to each other, and how this relationship changes over time. Second, by looking only at moments of agreement like the 1951 letter, the 1954 Bank Proposal, or the Heads of

Agreement, the majority of the text that constitutes the travaux is left unconsidered. These texts capture moments of tension, opposition, conflict, ambiguity, ambivalence, idealism, admiration and contempt between the negotiators and the officers of the World Bank. While they may not be relevant to a practice of professional legal historiography, they are vitally important for scholars to identify continuity and rupture in the structure of the negotiation process.

Finally, there is the question of context. The Court restricts its notion of “context” to just text that is not in the main body of the treaty, like the preface, annexures and treaty drafts. But the records maintained by the World Bank are not simply a drafting history – they record all textual correspondence between the parties and the Bank that were considered at the time to be relevant to the Indus dispute. This includes internal memos, wires, reports, drafts, press releases, clippings from the press, hydrological data, propaganda, hand-drawn sketches and coffee-stained notes of meetings, and much, much more. And, of course, “context” does not have to be limited to text. “Context” to a historically minded social scientist is usually conceived in much more expansive terms. Context, as a means of interpretation of text, can be more broadly conceived as the totality of social relations that gave rise to the text and to the meaning that is imparted to the text. Seeing context in this way throws open the door to analyzing text not as an autonomous and internally coherent system, but as something that is produced in and in is a part of the socially constituted world.

This chapter has analyzed and made methodological observations regarding how Indian and Pakistani lawyers engaged with the historical record of the negotiation of the Indus Waters Treaty, or the travaux. This analysis has shown that the structured dynamic between downstream hydraulic regionalism and technocratic utopianism is in play at the international scale in the current day. The principles of “let flow” and “satisfactory utilization” are both contained in the

text of the IWT despite, and as the Court observed, the possibility of them coming into contradiction. The Court's decision was to balance these principles – permitting India to build the dam, but limiting Indian ability to alter the flow of the Western Rivers through dam design (see Chapter 6). This, however, does not mean the underlying structure which gave rise to this conflict has gone away – indeed, we can expect to observe many more cases of legal geopolitics, in the Indus Basin and beyond, in the decades to come. The next chapter returns to the theme of “data politics”, first broached in Chapter 2, through a historical and ethnographic lens.

## CHAPTER 8: THE POLITICS OF MEASUREMENT: TELEMETRY AND TRUST

In Chapter 2, I touched on the politicization of data in the context of the Indus water negotiation in the years 1952-1954. I argued that even water flow data, which would seem to be the most objective and “apolitical” way to represent the Indus Rivers, was not impervious to politicization. In the context of verifying water data on the border of India and Pakistan in the early 1950s, the political issue that quickly rose to the surface was the question of territory. The belief that technical data measurements transcend politics still animates discussion of water politics today. In the inter-provincial and international hydro-politics of Pakistan today, planners and international development organizations place much stress on the role that automatic remote water measurement devices should play in facilitating peaceful and efficient water management (World Bank 1994; Briscoe and Qamar 2006). I rely on interview data to discuss the success, or lack thereof, of technology known as telemetry in diffusing the water politics of the Indus in Pakistan.

This chapter continues the themes of simplified representations of nature, technocratic imperatives, and the political geography of water that I broached in Chapter 2. In the current chapter, however, I broaden my source material beyond the negotiation of the Indus Waters Treaty to include materials from the British colonial period and ethnographic materials from field work I conducted in Pakistan in 2012. Thus I show that the unsuccessful de-politicization of water politics is not restricted to the “official” international legal disputes that unfolded in distant capitals more than half a century ago. These issues are relevant on the ground in Pakistan today, and have been important at least since the British initiated the scientific management of irrigation canal waters in the Indus (Ali 1988; Gilmartin 1994).

The key issue in this chapter is the promise held out by automatic measuring devices to exorcise politics from inter-regional water management. The appeal of water metering devices, which go under various names, is the promise of excluding humans from administration, and by extension, politics from nature. Humans, after all, come with such undesirable traits as irrationality, passion, carelessness and conflicting loyalties. The dream of a river managed entirely by machines, or by machine-like people (the ideal engineer), has however been frustrated for more than a century. This has not dampened the enthusiasm of technocrats for automation of river measurement functions on the Indus.

The “agency” of the water meter to autonomously shape historical and political outcome has been discussed by Carroll (2012) in the context of state-formation in California and Loftus (2006) in the context of urban water supply reforms in South Africa. Carroll adopts a Latourian network approach to argue that the water meter is an object around which science and government in early 20<sup>th</sup> century California were co-produced. Loftus, drawing on Marxist theories of reification and technology, argues that the “dictatorship of the water meter” in regulating the daily rhythms of urban South African is both powerful and subject to democratic contest.

Contrary to these authors, my argument in this chapter is that while strategies of water metering in the Indus have long been promoted by international and national experts, water meters and the data they produce have failed to transcend the political geographic tensions and contradictions which marked the rule of the British and Pakistani states over the Indus. I do not argue that water meters and debates about water data are meaningless, however. Indeed, echoing Carroll (2006), I want to demonstrate the importance of measurement in the process of modern state formation. What my analysis in this chapter shows, however, is that the importance of data

and measurement technology is largely rhetorical. By this mean the importance of water metering technology lies in the fact that it constitutes the form which hydro-political disputes take, rather than assuming an autonomous historical and political agency. I begin my story with one R.C. Kennedy, a British irrigation engineer who earned some professional fame for his work in the Indus irrigation canals.

### Imperial Engineering<sup>8</sup>

R.C. Kennedy was a colonial British irrigation engineer. In 1890, Kennedy was searching for a way to design the “stable-regime” as a part of the ambitious British project to canalize the Indus Rivers in Punjab. The ideal canal, the argument went, would balance the scouring of its bed by winter currents with silt carried down from the Himalayas in the summer. When a canal displayed this balance over the long run, it was said to operate under a stable regime. Kennedy found that the velocity at which a stable regime was ensured depended on canal depth and the material qualities of the eroded material. Kennedy’s experiments on Indian canals yielded a formula for canal slope still reported in textbooks today, and ensured his status as one of the leading colonial irrigation engineers.

Kennedy’s stature and position was one of the reasons the Indian Irrigation Commission (IIC), a body convened by the imperial government to investigate the prospects of irrigation in India for famine relief , interviewed him. The Indian Irrigation Commission released its report in 1903. The excerpt below comes from the interaction of the IIC with Kennedy, who was Superintending Engineer of irrigation in Punjab at the time. The Commission was convened to investigate the possibilities of canal irrigation to protect the countryside from famine. Upon his

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<sup>8</sup> This section draws on a working paper co-authored with Kerri-Jean Ormerod.

return to India after a tour in the U.S. West, Kennedy wrote a memo to the IIC urging some specific reforms.

Kennedy's statement to the IIC has to be placed in context of the global networks that linked the irrigation engineers in arid areas of the world together at the beginning of the 19<sup>th</sup> century. Kennedy proposed two major reforms to improve the performance of irrigation systems in India: the lining of leaky canals and the implementation of volumetric pricing for irrigation water. The excerpt deals with the latter proposition. Charging by volume of water used, as Kennedy suggested, would mark a break from the existing practice in Punjab of *warabandi*, an indigenous system of water allocation through a rotating time-share. Under *warabandi*, farmers were (and still are) allotted a time-share based on the size of their fields, and take turns watering their fields (cf. Narain 2008). Charges were based on total crop area matured. Here Kennedy speaks on the "causes of [the] present evil system" of water allocation and valuation:

Of course the difficulty has lain in *the want of trustworthy means of measurement*. In America they are far ahead of us in this direction, but their methods will not help us much. They simply use free falls over raised sills, the record being kept and regulated by *a trustworthy "water-master"* selected by the shareholders themselves. Here we have usually no available fall for such sills, *nor have we the man we could trust*. We require *automatic devices which cannot be tampered with*, and which would ensure a steady supply, under all conditions of levels, strictly proportional to the work to be done (Indian Irrigation Commission 1901, p 61).

Kennedy, although impressed with the water management system in the U.S., is skeptical about its application in Punjab. The main features of the U.S. system Kennedy observed was an automatic water flow measuring device, as well as a water master elected by the irrigators themselves. He lists two reasons for his skepticism. The first is that the flat topography of the Punjab would make the measuring device used in the U.S., which depends on a fall in elevation,

impractical. The second reason is the lack of “men we could trust” to administer the system. It is unclear whether Kennedy is referring to a lack of trustworthy men among the Punjabi farmers, or among the colonial irrigation bureaucracy. His suggestion, that fully automated devices “which cannot be tampered with”, would suggest that he was referring to both. The idea that the expansive irrigation system the British were establishing in the Indus Basin was beyond the moral and intellectual capabilities of farmers, and even of the local British administrative bureaucracy, was typical of the engineering ethos in colonial British Punjab (Gilmartin 1994).

The following exchange, between Kennedy and an interviewer of the IIC, is laden heavily with Kennedy’s imperial perspective of Punjabi society. Kennedy is discussing his plan of having automatic measuring devices, or “modules”, keeping track of water volume on the canals. The member of the IIC, however, is unconvinced that merely having better data would lessen the distributional conflict between irrigating farmers sharing the same canal water. The “\*” indicates where I have edited the interview for the sake of relevance to the current analysis.

IIC: How are you to keep the peace between the owners [farmers] on one module?

RK: We can use the present share list of the village for distributing by time and rotation.

\*

IIC: [But] your small man on the water-course may have to pay for his share of the water and get nothing like his share?

RK: Then he would have to say so at the time and his revenue would be assessed on the other man who stole his supply.

IIC: You would have just as much to do to regulate the distribution between the various classes as at present [when there is no use of automated modules]...

\*

IIC: An American farmer is quite able to look after his own interests and he can get expert advice to prove a case against the canal administration. Here [in India] your module will be giving water to 20 or 30 proprietors who are also totally ignorant of all questions of distribution of water and they have no means of bringing it home to the canal administration?

RK: The thing [the module] would record itself as to quantity given and the sharelist properly enforced would do the rest.

IIC: But suppose they dispute your record?

RK: You will never convince them you are giving them their share.

IIC: The American can be convinced?

RK: But many of the American farmers even do not know how to measure water. Their system is a rough one.

(India Irrigation Commission 1901, pp. 62-64)

Kennedy is attracted to the idea of volumetric charges for irrigation water, but he is skeptical about the transferability of American methods. Presumably one of the causes of his skepticism was that Punjabi peasants were seen as neither as educated nor rational as their counterparts in the U.S. West. Kennedy argues instead for an efficient network of machines to record canal outtakes at various positions. When the skeptical interviewer asks about how conflict will be resolved on the canals, Kennedy argues that the “share-list”, which contains the warabandi assignments of farmers would be reverted to. The interviewer can almost be seen scratching their head at this, because the warabandi system is exactly what the modules are supposed to replace. Kennedy’s eventual acknowledgement that even American farmers are not up to the task of self-management concludes this part of the interview on a confusing note.

The discussion above on R.C. Kennedy is notable for two points. First, I want to highlight the global network of which R.C. Kennedy was consciously a part. This network of engineers originated and revolved around the ambitious desert development program of the British imperial state in Punjab, which began in earnest in the 1880s. One feature that drew together the engineers of this period, along with their “ethical position” that applying principles of efficiency and effectiveness must result in social progress, was their epistemology. Gilmartin (1994) argues that a part of the engineering approach to knowledge was that a truth discovered in one part of the world should be true everywhere. A good bridge is a good bridge, no matter where it is. Thus Kennedy’s “stable-regime” formula for keeping canals clean was developed on

the silt-laden rivers of Punjab, but has been printed in irrigation engineering textbooks that circulate globally.

Kennedy was aware that there were limits on the easy transferability of engineering knowledge developed elsewhere. What Kennedy probably did not think about was factors other than cultural and physical geography that interrupted the transferability of the engineering technology and technique; namely, his own perceptions of what society was, how it worked and what it could become. Clearly, in the case of British colonial engineers, the position of belonging to the bureaucracy of a racially marked imperial power ruling over a landscape thickly populated by indigenous farmers influenced their perceptions of the local social landscape.

This brings me to my second point. There are both continuities and discontinuities in the irrigation engineering ethos between the British imperial period and the post-independence era (Haines 2011a, 2011b). It is not disputed that in Punjab irrigation engineers wielded, and still wield, an enormous amount of administrative and magisterial power. The hierarchical, authoritarian and patronizing style of irrigation management in Punjab displayed by Kennedy has persisted up to the present in postcolonial Pakistan (Mustafa 2001, 2002a, 2013).

What I want to explore, however, are the discontinuities; how the passing of almost a century has changed the ways in which irrigation engineers perceive the relationship between technology, nation, region and development in the Indus. The automatic devices Kennedy discussed in his report to the IIC are similar to what would call Telemetric devices automatically measure and transmit data on water levels in canals and reservoirs. Before turning to an evaluation of telemetry, it must be understood how representations of canal water in Pakistan circulate across scale and space. It is the necessity of this circulation to the way water management is handled in Pakistan today that produces the disjuncture between “paper water”

and “wet water” – or actual water and its representation (cf. White 1995). It is this disjuncture that the technology of telemetry is supposed to minimize.

### The circulation of water data

Mr. M.H. Siddiqi, an engineer at the Punjab Irrigation and Power Department whose job includes communication with IRSA, explained to me how water allocation and distribution is a collaborative endeavor between provincial irrigation departments (PID), the Indus River System Authority (IRSA), and the Water and Power Development Authority (WAPDA) during my fieldwork in 2012. IRSA is a regulatory body that is in charge of managing inter-provincial allocation of Indus waters, and WAPDA is the premier federal agency in charge of water and power development in the country.

First, IRSA releases forecasts of water availability and demand that have been developed in consultation with WAPDA and the PIDs at the beginning of each crop season. IRSA then allocates water to each of the provinces, in accordance with the formula laid out in the Indus Water Accord of 1991 (see above). The central offices of the PIDs then allocate water between the different canal commands, and pass down these allocations to the offices of the Chief Engineers (in charge of “zones”), who then pass the allocations down to the Supervising Engineers (in charge of “circles”), who pass them down to the Executive Engineers (in charge of “divisions”).

The allocations made by the PIDs are also shared with local branches of the Agriculture department, who are meant to be consulting with farmers on the appropriateness of the allocations. Every ten days, the PID compiles numbers on the actual withdrawal of water from watercourses; data that is collected at the level of the office of the Executive Engineer.

This data is sent by the irrigation departments back up the ladder to IRSA, which every 10 days compiles the actual withdrawals and compares them with the original allocations. IRSA then adjusts the provincial allocations for the next ten day period, and sends the new allocations down the ladder, to start the process again. WAPDA enters the picture when IRSA informs it that water is to be released from the reservoirs at Mangla or Tarbela. Thus data on water use flows in a circuit every 10 days, from IRSA to the central PID offices, to the watercourses in the fields, then back to the central offices and IRSA. In Punjab, the province that accounts for the bulk of irrigation infrastructure and institutional strength in Pakistan, there are no less than 25 canals that are allocated a certain amount of water every ten days. These 25 canals, along with the branch, distributary, and minor canals that make up the system, traverse the countryside for a collective 23,000 miles and reach farmers through about 58,000 outlets.

Although this elaborate system of water allocation involves all levels of the irrigation bureaucracy, from the head office of IRSA in Islamabad to the dusty village deep in the Punjabi countryside, most criticism of irrigation water management is directed at the operations of the water bureaucracy that operates in closest proximity to farmers and that constitutes the basic operational unit of the irrigation department: the office of the Executive Engineer (XEN). The XEN has tremendous power at the local level, and can be an important player in local politics by virtue of their relationship to local landed elites. Not only does the XEN implement the policies of the irrigation department, he (rarely, if ever, is the XEN a woman) also has legal power to impose fines and adjudicate disputes between farmers, and has enormous official control over the flow of irrigation water (Mustafa 2001, 2002). Sitting with an XEN on a workday can bewilder the uninitiated: the constant swirl of assistants with papers clutched in their hands, the never-ending line of supplicants seeking a favor, the looming wooden placard on the wall embossed

with the name of every XEN that ever served in that division. And rising above it all is the unaffected assuredness of the XEN himself as he makes phone calls, smokes cigarettes and berates an underling or a farmer seeking redress.

Telemetry was introduced in the late 1980s with the help of international development organizations in Pakistan to minimize the disjuncture between the local measurements and central management of the water supply. Telemetry instrumentation and data collection has also been in use, on a demonstration trial basis, on the Nara canal in Sindh since 2004. More recently, in 2010, a similar system was agreed upon in principle between Pakistan and India (Shafique 2010; Siddiqui 2010). After hundreds of thousands of dollars in development funding, is there a perception that this technology is working?

I asked this question to all of the engineers I interviewed. These interviews were conducted in the homes or offices of engineers who occupied, or had occupied, or were otherwise involved, in water management and policy in Pakistan. The quotes I present below are paraphrased and translated from hand-written notes I took during the interviews. I also reflected on the mood and unspoken messages I picked up on within a day after the interview, and I draw on these reflections in some of my analysis.

*Dr. Shafi and the Movement for Justice*

My parents encouraged me to get in touch with Dr. Shafi. My parents had moved back to Pakistan, after living in Saudi Arabia for over thirty years, at around the same time I moved back for my field work, in the first half of 2012. A friend of my parents in Saudi Arabia, a Pakistani agricultural scientist who research focused on date trees, urged them to contact Dr. Shafi when they got settled back in Pakistan, as he was, “a good man, educated, *Arain*,”. *Arain* is the *baradari*, or Punjabi kinship group that my family identifies with. *Arains* are proud of their roots

as small-scale agrarian proprietors, nestled stubbornly between the large landlords on the one hand and the landless agrarian proletariat and service classes on the other. It is a common in Pakistani Punjab to hear remarks on the meteoric rise of Arains over the past several generations, especially into largely urban professions such as law and engineering. Some Arain, like my parents, were not extremely concerned with maintaining Arain networks outside of immediate family. Others, like their friend the date scientist, were passionate about it. Dr. Shafi was disappointed when I told him? I had come to speak to him alone.

Dr. Shafi had a PhD in agricultural sciences from Colorado State University, and had worked internationally for many years. He told me about his stint at WAPDA in the seventies with evident regret, as he felt that the “environment was too corrupt and political” for any substantial work to get done. He was retired, but remained active as a technical and policy advisor for Tehreek-Insaaf (TI), aka the Movement for Justice, the up-and-coming political party headed by former cricketer Imran Khan. Dr. Shafi told me about his involvement with obvious satisfaction, and watched for my reaction closely. At the time that I was doing my fieldwork, the TI was become something of a sensation with the Pakistani urban middle and upper-middle classes, especially among young people. Imran Khan’s rhetoric was a heady mix of nationalism, born-again Islamism and anti-imperialism, but was centered on a discourse of anti-corruption and anti-politics. Imran Khan had been raging at mass rallies and on TV that politicians had done nothing but lie and steal from the *awam*, the people, and his party was for the first time offering something new and radical.

Dr. Shafi’s feeling on telemetry was that the system was simply not working.

The telemetry system has been properly installed, but there are still disputes! This is because of the relationship between water level, which is what the telemetry system actually measures, and total water quantity, which is derived differently by everyone. I think what should be done *is to call in outside experts to arbitrate inter-provincial*

*allocation* for perhaps ten to fifteen years, so that a good pattern is established. After that, IRSA could take over. Telemetry can be an excellent confidence-building system, if it is used properly.

Dr. Shafi's solution of calling in an outside expert to establish "a pattern" was rooted in his political/institutional knowledge and experience of water management. Dr. Shafi picked up on the same problem with telemetry as another one of my interviewees, Mr. Memon (see below). They both disputed the "automatic" nature of telemetric measurement, which implied that there was no room for human error. On the contrary, according to both men, there is still too much room for "subjective factors", such as an engineer's choice of how to derive water levels, in the way water levels are calculated. Dr. Shafi's solution is one that requires an "outside expert" to establish a pattern of what would be perceived as a "fair" way to allocate water and adjudicate disputes between the provinces. After this period of stability, Dr. Shafi was counting on the power of institutional inertia and precedent to smooth things over. This is, in effect, a national-scale version of what occurred in the 1950s with the mediation of the Indus Waters Treaty between India and Pakistan by the World Bank. Being an expert is not enough – an "outside" expert is required to ensure that regional loyalties do not obscure or "politicize" what needs to appear a purely technical decision.

#### *Shafqat Masood and the SWSP*

Shafqat Masood was an invited speaker at the Save Water Save Pakistan meeting I described earlier. He had enthusiastically given me his number and told me to get in touch when I told him I was writing my dissertation on water politics and policy in Pakistan. Mr. Masood had almost forty years of experience in the irrigation sector, of which eight were at the federal level in Pakistan and five were spent as a consultant in Nigeria. Mr. Masood was perhaps my most

enthusiastic interviewee, and the only one I interviewed on more than one occasion. He was thrilled that someone was doing research on what he considered the public policy issue in Pakistan. But he could not hide his disappointment that I was not a more “technical person”. I was, unfortunately, more interested in the historical and social dynamics of water politics, than in perfecting a denouncement of the politicization of water by “non-technical”.

SM: You are an engineer, yes?

MA: Yes, I got my undergraduate degree in industrial engineering.

SM: But do you have any training in hydrology or civil engineering? No? Oh, well...you see, you must know then, that flow measurement is a purely civil engineering process. But all the people assigned to work on design and implementation of the telemetry instruments were electrical engineers! Of course they wouldn't get it right.

The above excerpt shows the first of several iterations of assigning blame for the politicization of water data. In the above version, the politicization of water data is blamed on the disciplinary differences *within* engineering: Of course an electrical engineer would design a telemetric system to measure water level, and not water flow! What is at issue is not automated water-monitoring itself, but the sub-disciplinary lens that has been brought to implement a technological solution. During another moment in our interview, the issue was not discipline as much as it was the inevitable fallibility of a system that allowed humans to exercise judgment at some point.

WAPDA installed the system at a cost of \$400 million, and we [IRSA] took it over for four or five months. There were too many problems, so we just handed it back. The system is of practically no use. This is because some gauging stations [for the measurement of flows] are with Punjab, like Marala, Rasul, and Qadir, others are with WAPDA, like Mangla, Tarbela, and Kabul, and still others with Sindh, like Kotri and Guddu. *The telemetry system was not entirely automatic – the system measures the water*

*level, and then the volume and flow are derived from this by use of a formula. The choice of coefficients for this formula is subjective.*

Mr. Masood implies that the measurement of the telemetric system is modified by the provincial identity of the engineer managing the system. Instead of having one centralized authority generating numbers, there are Sindhis, Punjabis and federal government employees squaring off against each other. Still, the fault is less with the provincial identities here than with the lack of full automation of the telemetry system.

MA: If we were to install the very latest and best telemetry technology, do you think it would work then?

SM: Well, even now, the *system* is fine, but the management of it is not? fine. For example, did you know that the British left operations manuals in which they had three levels of measurements? For a first class measurement, the margin of error would be limited to 3%, and it would be done by the Xen every three months...so you can have specific guidelines, but *if they are not enforced and the people are not professional you won't have the result.*

Finally, we have the last iteration of Mr. Masood's explanation of the politicization of water flow data. The superior efforts of British management are recalled, in what I was beginning to realize was a common trope among contemporary Punjabi engineers. This explanation fits into a larger narrative of organizational and cultural decline in Pakistan, especially since the middle of the 1970s. Mr. Masood proudly told me that he had been offered a position in the U.S. in 1971, but had turned it down because his prospects as a young engineer in Pakistan were extremely bright.

Mr. Masood had been at the center of a media storm in 2010, when he was the chairman of the Indus River System Authority, the semi-autonomous federal authority tasked with allocating water between the four provinces of Pakistan. Since February of 2010, the government

of Sindh had opposed the opening of the Chashma-Jhelum link canal that diverted water from the main-stem of the Indus into the Jhelum and Chenab rivers and onto fields in southwest Punjab. Indeed, the government of Sindh had historically opposed the construction on the CJ link canal, as this was perceived as a violation of the tacit agreement that Punjab would meet its needs from the Jhelum and the Chenab, leaving the main-stem Indus for Sindh. All the Punjabi engineers I spoke to were dismissive of Sindh's claims that Punjab was "stealing their water", although some were more sensitive to Sindhi perceptions of vulnerability than others.

On June 30, 2010, the Chairman of IRSA, who was from the province of Khyber-Pakhtunkhwa, retired, citing health concerns. The media speculated that the real reason was his frustration with the dispute between Sindh and Punjab on the re-opening of the CJ link canal (Express Tribune 2010a). Mr. Masood, who had become the Acting Chairman of IRSA, apparently without consulting the other members of IRSA or anyone else, ordered the reopening of the CJ link canal on July 6th. The next day, the Federal Member and the Member from Sindh resigned in protest – the Member from Baluchistan was out of range of the controversy, taking a six-week vacation (Express Tribune 2010c). There was outrage across Sindh, from farmers' organizations as well as the literati, against the perceived hydro-tyranny of Mr. Masood (Dawn 2010b). Less than a week after the canal had been re-opened, the Prime Minister intervened and declared that the opening of the canal was unauthorized and ordered it reclosed (Express Tribune 2010b). Mr. Masood was both proud and regretful of the incident. Both times that I interviewed him, he retrieved a folder from another room in the house and showed me press cut-outs he had saved that painted him either as a tyrant or a man willing to take unpopular but manifestly rational action. But the experience also perhaps left him a more nuanced view on the relationship between place, knowledge, and water:

Water matters more to you depending on where you are. Village people are more sensitive to water issues than city people. ..Debate on water shortages is much more important if you are in Sindh. They always feel that water shortages are because of Punjab. The level of awareness, of even kids and common people on the street is therefore more advanced.... Take you [gesturing towards author], *you will write something about water politics based on reality as you see it, but people will say 'Aha, but he's a Punjabi'*. If you stand in a room and ask who supports Kalabagh, every Punjabi will raise their hand and every Sindhi will keep their hand down. It shouldn't be like this," (personal interview with author on March 27, 2012).

As it did with all the men I interviewed, the conversation slowly turned to my plans for my own future. Would I settle in Pakistan, or try to stay in the U.S.? "Don't come back here," Mr. Masood warned me. "I tell my own children, there is nothing here anymore. You cannot be an honest person and earn a living, I tell you. It's all politics, *har banda sirf khaney ke chakar mein hain* [everyone is scheming to line their pockets]". I would always reply to these searching questions the same way; as honestly as I could. I do want to live in Pakistan, I said, but thought it wise to start my academic career in the U.S. And anyways, my parents were in Pakistan, and I would come back at some point to take care of them. After I awkwardly mumbled through this prepared story, Mr. Masood had looked at me with what I imagined was a mixture of pride, skepticism and pity. "*Theek hai*, OK. Still, try to settle abroad, things are getting worse and worse here."

### *The Indus Waters Permanent Commission*

The offices of the Indus Waters Permanent Commission are not easy to find. The Commission does not have a website, nor is the address or any contact information listed on any government website. The Commission, despite its important mandate to monitor and implement the IWT, is

surprisingly low-profile. Finally, after asking virtually everyone I met, I tracked the office down to the charmingly named State Life Insurance Office Complex on Lytton Road. The building was dilapidated, crumbling, and unbearably hot and sticky. The electricity had been out for several hours the first time I visited the office in late April. The young engineers, clerks, and “peons” on duty were splayed out on their chairs in rooms submerged in darkness, their computers like paperweights in front of them. After making inquiries, I found out that an interview with Shiraz Memon, the acting Indus Water Permanent Commissioner, might be possible if I waited around for a while. I agreed, smiling tightly as I downed a proffered glass of (probably) unfiltered water, and chatted with a young and trim man named Rashid who had been ordered to keep me company.

He told me that for a man like him, this was a good job. As a federal government job, it offered more prestige and security, and more opportunities for a better posting down the line, than the provincial government job he had been doing previously. His job was to “give protocol” to foreign visitors in Pakistan, mostly officers of the Indian half of the Indus Water Permanent Commission. Why, I asked Rashid, does the office not have a generator? How were people supposed to work? Rashid clicked his tongue, shook his head, and said, “*Majed sahib, mei aap ko kuch pata ta hun. Is dafter mein sub kuch hai, aur kuch nahi hai,*” which means “Mr. Majed, let me tell you something, this organization has everything, and nothing.” He explained that what he meant was that the work of the Commission was clearly very important for the future of the country, but that the position held no attraction for ambitious civil servants. This was because there was simply no money coming in and therefore no chance for employees to skim a little for themselves.

Mr. Memon, the Commissioner, confirmed this quite frankly a little later when I met him in his office (which did have an air-conditioner running on what I presumed was a generator). He shrugged, and said “This is simply not an attractive post. There are no perks. People do not stay here long.” I asked Mr. Memon what he thought about the potential of telemetry to ease tensions between Pakistan and India over sharing the waters of the Indus.

Telemetry won't work. Even if it worked technically, you can easily manipulate the data – telemetry measures water level, not water flow. These systems don't work in the absence of trust between parties. It simply isn't feasible to install this system. We have agreed to it, but actually India is resistant. It claims that it is a sovereign nation, and everyone should just believe whatever it reports.

Mr. Memon went on to describe with contempt the way the Pakistani media unnecessarily politicized any issue dealing with Indus waters. This surprised me, as almost without exception everyone else I spoke to, engineer or not, agreed that the question of Indus sharing was not receiving enough attention. I pushed Mr. Memon to explain to me why it was that the Indus waters question was so politicized, and why, by extension, it was that India and Pakistan did not have the requisite trust to make a telemetry system effective.

People are very sensitive when it comes to anything about India, so they don't understand the give and take that is necessary. The reason water issues are so politicized is that we are dealing with India. If we trusted India, [the building of] Baglihar would not even be an issue. The thing is, the Ministry of Water and Power does not have technical people, they just don't understand the difference between dams and other small structures. Baglihar cannot hurt Pakistan. So, political perceptions matter. Technical people don't really think that India will do anything, or that its construction of dams is a threat. India won't do anything! It [withholding or releasing flood waters] will hurt them more than it hurts us. But the politicians and the military types think otherwise.

Mr. Memon explains the politicization of Indus water issues in two ways. One is to simply say that any issue that involves India will be of a political nature to Pakistanis. The other

is to say that too many non-technical people are getting involved and jumping to uninformed conclusions. The implication is that Indus issues are, at root, fundamentally apolitical, and it is only imperfections in the perceiver of those issues that politicizes them. Mr. Memon's stress on the need for "technical people" was somewhat surprising, given his own non-technical and bureaucratic background. Other engineers I had interviewed, notably Bashir Malik, the founder of "Save Water Save Pakistan", openly sneered at Mr. Memon's appointment as the Indus Commissioner. Indeed, Mr. Malik saw Mr. Memon's appointment as a symptom of the pathological domination of bureaucratic officers over technical people in the water management systems of Pakistan.

Mr. Memon's sensitivity to the issue of "non-technical" people in water management was apparent to me from the first question I asked him. I had thought, perhaps naively, that a good way to start off an interview with members of officialdom would be ask to about their educational backgrounds. These were, after all, men who I thought were proud of their social status as *parhe-likhe* or educated, Pakistanis, and what better way to warm up an interviewee by asking them to recount their achievements? Mr. Memon instantly stiffened at my question, however, and snapped back at me, "What difference does my education make? I thought you wanted to know about the issues?" Faris Qazi, the Deputy Commissioner who had shown me into the office (and the recipient of a freshly minted Master's degree in Engineering from a Malaysian university) crept up to the edge of his seat, on the verge of intervening to smooth things over. Mr. Memon mumbled something about having a certificate in web design; I nodded and asked another question.

Telemetry, or more precisely the perceived failures of telemetry, provides a useful lens to sort through attitudes on politics and technology. Dr. Shafi, the political advisor, was

disappointed with the performance of telemetry, and suggested that an “outside expert” be brought in to adjudicate inter-provincial disputes. Mr. Masood, the former Chairman of IRSA and member of the SWSP, was skeptical of the ability of telemetry to adjudicate inter-provincial disputes, and attributed the failure of the system to its distribution of over different regions (and regional loyalties). And Mr. Memon, the Indus Waters Commissioner, speaking in the context of international telemetry, thought that telemetry was beside the point in the “absence of trust” between Pakistanis and Indians.

What these responses have in common is an acknowledgement that the way that science and engineering work in the concrete world is shaped crucially by geography. The *outside* expert, differences in *regional* loyalty, and absence of trust across national *borders*: all point to the ways in which the correspondence between a measurement and the physical reality of what it is supposed to represent are intertwined with political geographic processes (Livingstone 2003). As Nicholas Blomley (2008) has noted, simplification is complicated. And the simplification or straight-forward quantification, of nature is not complicated only because its object is inherently complex. Simplification is complicated by the very scientific procedures and personnel that are called upon to simplify (Robertston 2012; Lave 2012).

It is notable that technology and measurement as approaches to adjudicate water disputes are spared any negative judgment by Dr. Shafi, Mr. Memon and Mr. Masood. It is not primarily a question of attaining more advanced telemetry technology, although Mr. Masood was emphatic that this should also be done. The primary problem was the intensely political geography in which that telemetry was to be employed. This is different from the sentiment expressed by R.C. Kennedy, who we met earlier in this chapter. Kennedy predicted the failure of telemetry in Punjab to adjudicate disputes on the illiteracy of the peasantry and the corruption of the lower

level irrigation bureaucracy. The upstream/downstream dynamic, or differences over geography, was less apparent in his report to the IIC on irrigation management than it was in the conversations I had with irrigation engineers during my fieldwork. This is not because upstream/downstream dynamics were less important during British rule, but because the contradiction of Pakistani statehood and uneven development has heightened consciousness of regional difference.

## CHAPTER 9: ENGINEERING NATIONALISM

I flew into Lahore in late January of 2012 to conduct fieldwork for my dissertation on the geopolitics of the Indus in Pakistan. My plan was to ask my parents and my army engineer uncle to put me in touch with people who had experience as water administrators. As I mention earlier, I got a few leads this way, but things were moving very slowly and by early March I was decidedly anxious. I decided to write an Op-Ed for Dawn, the leading English-language daily in Pakistan, as a way to announce my interest and my research objectives to anyone who might be interested. I got several bites, but only one of them caught my interest: an invitation from Bashir A. Malik to attend the next Save Water Save Pakistan (SWSP) Forum in a week. The email I received contained the following description of the SWSP:

Save Water Save Pakistan Forum came into existence on 30th January, 2012 pledging a meaningful contribution to national development through generation of ideas and proposals to resolve national issues. The Forum is comprised of senior Engineers, intellectuals and professionals who have performed outstandingly in various fields. We have International Water Experts like Engr. Bashir A. Malik, Former Chief Technical Advisor, United Nations & World Bank and the author of books on “Indus Water Treaty in Retrospect” and “Save Water Save Pakistan”... The basic objective of the Forum is to prepare research papers on vital national issues particularly water and energy sectors and come up with the solutions to these problems. The Forum hopes to build opinion for bringing about a positive change in the present setup. Besides, the Forum will conduct seminars and brainstorming sessions on the topics of national interest.

On the surface, SWSP appears to fit nicely into a category called “civil society”. Usages of term “civil society” have proliferated in recent years, especially since the boom in non-governmental organizations (NGOS), especially after the 1990s. I follow Michael Burroway’s (2003) reading of Gramsci and characterize “civil society” as the social space that exists in a contradictory relationship with the state. For Gramsci, the state was recast as an “integral state”,

which included not only the state apparatus (military and bureaucracy) but also the institutions of civil society (political parties, voluntary associations, religious institutions, unions, educational institutions, the media, and the like). Gramsci's theorization of civil society is tied to his analysis of the failure of communist revolution in Italy. The following is an often-cited passage from Gramsci's prison notebooks:

In Russia the state was everything, civil society was primordial and gelatinous: in the West, there was a proper relation between State and civil society, *and when the State trembled a sturdy structure of civil society was at once revealed*. The State was only the outer ditch, behind which there stood a powerful system of fortresses and earthworks: more or less numerous from one State to the next, it goes without saying—but this precisely necessitated an accurate reconnaissance of each individual country (Gramsci 1971, p.

The way this passage highlights geographical differentiation is important (Jessop 2005). Gramsci argues that even if the capitalist state is defeated in the course of a revolution in liberal western societies, the bourgeois have many defenders in the institutions of civil society that will not let the revolution succeed. This led Gramsci to urge a “war of position” in countries with established civil societies that focused on the battle of ideas and cultural positions. Gramsci's attention to geographical variation in the entrenchment of civil society around the state – “more or less numerous from one State to the next” – has encouraged postcolonial theorists to work with his formulations.

Partha Chatterjee's (2011) influential re-formulation of the state-civil society dynamic is meant to capture the non-European specificities of “post-colonial capitalism”. Chatterjee argues that political movements in India do not occur only within the realm of “civil society” in the same way as they do in European societies. Instead, there exists another realm: that of “political society”. In political society, members of the non-elite (although not all of the non-elite) are

politically mobilized in ways that are connected, but distinct, from political mobilization in “civil society”. Civil society engages in political mobilization in ways that many of us are used to: for example, petitions, voting drives, trade unionism and legal struggles. These are modes of political mobilization that rely on the status of activists as rights-bearing citizens.

Activists in political society, on the other hand, engage in activities that Chatterjee argues are distinctive. These activities are not geared towards forcing the state to respect the inherent political rights of its citizens. Instead, they are geared towards forcing the state to grant temporary exceptions from oppressive law on the basis of entitlements as an under-developed population. The activities of political society are often seen by members of civil society to be “illegal” – a prominent example that Chatterjee refers to is squatting. In struggles for regularization of informal housing, political society does not agitate on the basis of housing rights as citizens – the main tactic is not to pass around a petition, or to fight it out in court. Rather, the method of mobilization is a spectacular display of violence, or putting electoral pressure on an influential member of parliament to create an exception in the law that will regularize the squat. This formulation of Chatterjee ties into his revision of passive revolution as a series of negotiation between different social classes (see Chapter 4). It also draws heavily from the Subaltern Studies foundational thesis of an autonomous and virtually illegible non-elite sector of society.

I want to argue that Chatterjee’s proposal of a “political society” is not the most helpful way to use Gramsci’s understanding of civil society in a non-European context. I do, however, agree with Chatterjee’s urge to recognize the specific geographical-historical origin of theoretical constructs. Indeed, to deploy Gramsci’s historical theories without such modification would be a very un-Gramscian approach (Morton 2011, 2013). However, I believe that Chatterjee does not

appreciate the full import of Gramsci's purpose of theorizing the sphere of civil society – as a *terrain of diverse forms of struggle* – which includes the forms of struggle that Chatterjee includes within “political society”.

The way to modify Gramsci's understanding of civil society is not to declare a new category. Rather, as I have argued before (see Chapter 7), it is to approach Gramsci's categories as methodological guides, not as static categories. Thus civil society is primarily an arena within a given social and national formation in which wars of position are fought out. Wars of position are not defined by class origin. Rather wars of position are those struggles that take place on the level of ideology and conceptions of the world, and the terrain on which these struggles occur is civil society. The task of historical-geographical analysis using this category is to define the determinants of a given war of position in a nationally constituted civil society. To guide my analysis into the politics of the SWSP, I turn yet again to the scholar of science and technology Langdon Winner.

Langdon Winner's political theory of technology emerges partly out of what he calls “the technological imperative”. The technological imperative accompanies the establishment of large-scale technological infrastructure: it is the transformation of social systems, including ideological systems, to meet the needs of a particular technology. For example, many cities are more or less designed around what is functional for automobile technology. Furthermore, the question that concerns most planners is not how to make urban space more pleasant or useful for residents, but how to accommodate more cars. For Winner, the technological imperative is not simply a “functional requirement”, but also a “moral standard,” (Winner 1977, pp. 100-106). In this chapter I examine the politics of the SWSP as a technologically driven “moral standard” in the context of a wider contestations over conceptions of downstream within Pakistani civil society.

Much of the analyses in this chapter are based on ethnographic data generated from observations, interactions and interviews of Pakistani engineers and activists. I conducted interviews in the summers of 2010 and 2012 in the province of Punjab with twenty-two engineers with professional experience in water management in Pakistan. Winner's formulation of technological politics theorizes technocrats and the concept of "technocracy" in the context of the imperatives of large-scale technological systems – not as an organized elite social class. Thus it is not necessary to point to engineers and scientists occupying prominent positions of governmental power – although many of my interviewees did indeed occupy such positions, or had occupied them in the past. In this chapter I analyze the "conceptions of the world" held by water engineers are expressed as "moral standards" of the relationship between society, technology and the Indus River.

I argue that technocratic "moral standards" in Pakistan must be understood within processes of uneven development and nationalist ideology. I have shown in previous chapters in the Indus basin dispute with India, Pakistani state elites emphasize the aspect of downstream that is inescapably polity: the structure of socio-spatial inequality. While Punjab is downstream to India in the international arena, it is upstream to Sindh within the territory of Pakistan. Thus at the national scale, for Punjab to emphasize the socio-spatial power structure of downstream would be to point out the vulnerability of downstream Sindh. This dual position of Punjab, as upstream and downstream at different scales, creates tension in the discourse of technocrats in Punjab. Politicizing downstream at the international scale is conceived as patriotic, but highlighting it at the national scale is construed as a threat to national unity. This chapter draws on ethnographic analysis to argue how the discourse of "techno-nationalism", or the conflation of technological imperatives, nationalism, and state power, emerges out of this scalar contradiction

in the province of Punjab. My case study from a short-lived association of politically engaged engineers active during the time I did my fieldwork in Pakistan.

### Engineers and society

My focus in this chapter is on the relationship between engineers and society. As such this chapter is in conversation with the emerging subfield of “engineering studies” in the discipline of Science and Technology Studies. Understandably, a central question of engineering studies is whether or not the “engineer” is a coherent abstraction (cf. Sayer 1992). In other words, do engineers have enough in common with each other, and enough to differentiate them from other social classes, to merit an analytical category? Is there a risk that by focusing on a group I call “engineers”, I am obscuring more powerful social forces, captured by categories such as “class”, “capital”, or “state”?

An enormous diversity of activities and discourses have gone under the label of “engineer” in the past several hundred years, from the architects of medieval fortifications to the white-collar software programmer of the 21<sup>st</sup> century. Historian of technology Antoine Picon (2004) tackles this very question, and concludes that the best entry-point to the social study of engineers across time and space to be their “ethical position” concerning the twin imperatives of effectiveness and efficiency (Picon 2004). I take seriously the importance of the engineering ethical position in my analysis of water engineers in Pakistan.

Take, for example, the words of engineer Charles D. Marx from his address to the Annual Convention of the American Society of Civil Engineers in 1915. Charles Marx is arguing against depictions of engineers as fixated on the mundane and unconcerned with political or aesthetic

matters. C. Marx also identifies the problem of how to understand the common features of engineering activity amidst the diversity of practices that have been associated with that label.

The monks of the Twelfth Century...saw and felt that the greater the number of timber and stone ties with which they bound adjacent countries together, the greater would become the number of spiritual ties, the more would *recede the causes of war*, the nearer would approach the day of “peace on earth, good will towards men”. *And toward this same end the men in the Profession of Engineering have been laboring...* Take irrigation engineering...The wonders...accomplished are, to many of you, wonders no longer. Is it likely, I ask again, that the men carrying out these works see in them but the piling of one stone upon another, the digging of so many feet of trench, the laying of so many feet of pipe? Believe me, these black cast-or wrought-iron cylinders stand for more than this to the engineer. *He realizes that with every water or drain pipe well laid he is bringing prosperity and happiness, health and vigor, where before existed poverty and misery, sickness and languor...* Again, I ask, is such work destructive of idealism, are such men lacking in ideals (Marx 1915, pp. 1329-1330, 1334)?

C. Marx paints a glowing picture of the engineer as a beacon of progress and enlightenment that most scholars today, in the wake of the anti-humanist critiques of postmodernism and post-structuralism, would interpret with extreme prejudice. And although C. Marx’s words are clearly tailored to maximize the self-esteem of both his audience and himself, it is important not to dismiss them as mere flourish. In the beginning of the 19th century, a specific engineering identity was forming, through conversations, visits, and reports of engineers working in regions experimenting with the enormous engineering challenge of colonizing desert spaces. Irrigation engineers in the U.S. West, India, Australia, Palestine, and Egypt took trips to visit each other and observe the operations of irrigation in different contexts – an activity that challenges a common Eurocentric historiography of the unidirectional transmission of technology (Arnold 2006; for examples of this type of historiography concerning irrigation technology in the early 20th century, see Worster 1985 and Headrick 1988). This developing

engineering ethos was not formed in isolation of state power and national ideologies, however. Some of these themes were highlighted through the words of a British engineer from the 20th century, R.C. Kennedy, an influential figure in the engineering history of the Indus Basin (see Chapter 3).

The discourse of engineers and administrators in the British ruled Indus was one of developing backward regions for the sake of development and civilization. Understandably, for an imperial foreign power, to speak of developing the *nation* was not politically wise. With the coming of independence in Pakistan, the discourse of engineers and administrators concerning development began to feature the nation in a major way (Haines 2011a, 2011b). Even though the autocratic and patronizing practices of development maintained an eerie similarity to imperial practices, the reference to the nation marked a major point of departure. In what follows, I draw on the politics of the SWSP and other groups to see how the Pakistani nation is enrolled in struggles in civil society over the development and distribution of the Indus.

#### Technocratic politics

To return to the invitation I received from SWSP with which I started this chapter. I knew who Bashir A. Malik was because I had read his angry and contemptuous newspaper columns on the water crisis in Pakistan. As someone who had long experience with water politics and administration in Pakistan, including a minor role in the negotiation of the IWT, he was also one of the people I hoped to interview. I immediately accepted the invitation.

The forum meeting took place on March 22, at the club house of a housing society called “Tech Society”, on the outer edges of Lahore, along the picturesque canal that bisects the city. This housing society had been founded for and by engineers several decades ago, and there were few

plots visible that did not yet have houses built on them. The President of the society told me later there were some 700 engineers living there. While the society had tried to restrict the residents to card-carrying engineers, this restriction had recently been loosened to include “good people, with degrees”. The SWSP forum was not only hosted by the Tech Society clubhouse, but was conceived there by the Mr. Malik and several of the resident engineers.

The members of the “Save Water Save Pakistan Forum” present at the event were not spritely. I counted 23 people in the room, excluding journalists, whose average age I guessed at close to 70. Most of the people in attendance were retired men dressed in “pant-shirt,” or western attire. I sat next to a well-dressed man with parted white hair, who was delighted to learn I was a researcher. He introduced himself as Shafqat Masood (whom we met in Chapter 8), a former Chairman of the Indus River System Authority. We chatted for a while, during which time he condemned the government for assigning “non-technical” people to sensitive water management positions. This was a theme he elaborated upon when he took the podium.

India is right now building many dams in Kashmir, not only Kishenganga and Baglihar. But what is the ruling class in Pakistan doing? Nothing! Actually they are complicit in this dam building. They are incompetent. Look at Jamaat Ali Shah [the former Indus Waters Commissioner]. He lets India get away with water theft. He has publically said that he alone is not responsible for allowing the construction of Indian dams, that “someone” else is also responsible. But doesn’t this already show that he is corrupt, that he is complicit?

Bashir Malik had to be assisted to the podium when it came time for him to speak. He threw his head back and washed down several pills before he started. SWSP was not merely a think-tank, he urged us to remember. The forum was engaged on the multiple levels of technics, philosophy and policy. SWSP was better than the numerous think tanks on water issues sponsored by the government because it was independent of political pressures. Malik told a

story about how, as a young man, he spoke truth to power during the Indus Waters Treaty negotiations in which he played a minor and short-lived role.

I was against ceding the Eastern Rivers to India, and I told this to the Head of the Pakistan delegation. I was part of a group of young engineers who were against this. One day the Head took me aside and said ‘Look at India, it’s a big country. Would you fight against such a big country?’ I told him, ‘Yes, I will fight for these rivers,’ and then he said ‘You are just a young boy, you do not understand international politics’, and I was told to return to Pakistan. We must understand that India has been fighting a water war against Pakistan since the very beginning. We cannot trust them – India cut off water supplies to Pakistan on April 1, 1948 – where was their Gandhi and non-violence then? Forget nuclear bombs, India has a ready-made weapon against Pakistan if it controls the waters we need. We cannot count on the government and politicians to do anything, this is not a government, this is just a *tamasha* [show] that Indians are taking advantage of!

The other speakers focused on various other aspects of water politics and management: the necessity of Pakistani dam building, the danger of Indian dams, irrigation efficiency, inter-provincial water allocation disputes, and power production. After the talks finished, I chatted with several of the panelists and audience members over tea and biscuits. One grizzled man, a retired vice president of the prominent engineering firm NESPAK, asked several people, including myself; “Don’t you think it’s time we invade Kashmir and sort this out once and for all?” Although this man was an extreme case, everyone present was passionate and earnest in their analysis of the water crisis in Pakistan.

It is important to note the although these debates were also about inter-provincial debates within Pakistan, much of the rhetoric around water in the SWSP centered on India and the scale of international hydro-politics. Over the next several months, as I interviewed members of SWSP and familiarized myself with their literature, the general thrust of their politics became clear: quite simply, they were against politics. They felt the Indus should be developed and planned by patriotic technocrats who would keep the nation’s interests at heart by adhering to rational and

technical standards of evaluation of water planning. Technology and science were seen to precede and be separable from politics – therefore a choice could be made between “technical” solutions on the one hand, and “political” solutions on the other. What this amounted to was a politics of uneven regional development in favor of the province of Punjab, disguised as apolitical development of the nation at large – the politics of techno-nationalism.

Bashir Malik generously gave me an appointment for an interview at his house a couple of days later. He was decidedly of the school of thought held by the “old guard” when it came to Indo-Pak relations. India, as a country and Indians as a people simply could not be trusted. Malik was born in Lahore in 1925 and had earned his BSc in Civil Engineering from Aligarh Muslim University, the intellectual bastion of the Pakistan movement. He opted to become a Pakistani national after Partition in 1947, and soon thereafter went to Iowa State University on a Fulbright fellowship. Malik was called to Washington by the Pakistani government to provide technical advice on the negotiation of the Indus Waters Treaty in the mid-1950s. Over the next several decades, Malik worked on the Mangla and Tarbela dams, for WAPDA, for the Punjab Department of Irrigation, the UN, and the FAO in Rome. He also earned a Ph.D. from the Netherlands. He told me he started to take an interest in international water politics after India threatened to cut off Pakistan’s water supply in light of the attacks on the Indian Parliament in 2001. “Some journalists didn’t even know what the IWT was. They had no idea what was going on.”

Mr. Malik was a firm believer in the judgment of technocrats and engineers. Throughout my talk with him, we would always circle back to the lack of engineers in positions of power as a central cause for the sorry state of water management in Pakistan.

India was very intelligent when dealing with the Indus dispute; they put a good engineer [Gulhati] in charge of their negotiations. We had only a non-technical person, the bureaucrat Mueenuddin. At that time, bureaucrats were dominant in Pakistan; they convinced the government that they know how to do everything. Civil servants are trained not to listen to anyone else, and engineers unfortunately in their prescience become shy and do not speak up. We [engineers] were more independent before 1956, after that One-Unit was declared and the bureaucrats took over. I visited Iran one time, as a consultant on a drainage project, and was very impressed with how they do things. There, a doctor is running the Health Ministry, irrigation is being run by an engineer, etc. And because of this they have excellent management and productivity.

I already knew from the SWSP meeting that Malik was disdainful of politicians, an attitude not uncommon in the Pakistani (and probably South Asian) middle and upper-middle classes. I was, however, curious if he would be as quick to denounce other actors, like the Army. Even the most virulent criticism of the government often stops short of criticizing the Army. Malik surprised me.

The floods [of 2010 and 2011] show that the Army and the World Bank both are not competent and actually dangerous. One major breach was caused by some Captain or Major at a barrage, what do these people know about the operation of canals? The World Bank also pushed the automation of Taunsa Barrage, and we agreed because it was funded. But then we didn't have enough people trained to operate the new automated system, and this became a problem during the flood.

Malik did not hesitate to criticize the Army, and even had a critique of the technocratic World Bank. He was loyal to engineers and the rationale of engineering, but not to just any engineering. In his view, engineers were valuable and competent not only because of their technical skill, but because of their nationalistic spirit. In a curious twist, knowledge that is respected because it is ostensibly universally applicable was attached to the localized and particularistic world-view of nationalism. "One of my goals with Save Water Save Pakistan", Malik told me, "is to return some status and respect to engineers in this country."

Bashir Malik is here locating himself within civil society on the basis of his profession of engineering. It is important to note this self-identification, because it proves to be the main way that SWSP engages in debates in civil society. Their main argument is that since technical measures are neutral and objective, they have the ability to transcend politics. Technical means need to be combined, however, with a technical man – a patriot – to assure a proper course of water development in Pakistan. This is the form taken by the “moral vision” of the technological imperative that I discussed at the beginning of the chapter. Arguments for technological development do not simply rest on dry facts figures – they quire a moral force, attached to the nation, in the terrain of struggle in Pakistani civil society. This terrain has important continuities and discontinuities with earlier periods of Indus River development.

David Gilmartin discusses the disjuncture between “imperial science” and “scientific empire” in the management of canal water in Punjab in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries. Imperial science was the “worldwide application of science to the productive control of nature,” in which the fields of irrigation engineering, public health and forestry played prominent roles. Scientific empire, on the other hand, was concerned with producing a “structure of knowledge about India” in such a way that would incorporate the Indian indigenous elite inside the colonial state. Scientific empire depended on nascent social sciences, especially legal anthropologists, geographers and sociologists to engage in the “scientific appropriation of what might be called ‘local knowledge’,” (Gilmartin 1994, pp. 1127-1128). Gilmartin shows how these two roles of science could clash during the colonial management of canal water.

The problem of heavy silt loads in Punjab canals provides a concrete example. These heavy silt loads caused the operational efficiency of canals to plummet because their capacity to hold water was greatly reduced. Imperial science, represented by engineers, was in favor of

developing a formula for canal slope that would result in a flow velocity that would minimize silt deposition. R.C. Kennedy, introduced earlier in this chapter, was central in these efforts.

Scientific empire, represented by general colonial administrators, however, was in favor of reaching out to “big men” in the canal colonies to mobilize unpaid labor gangs to manually remove the silt. This was the way silt had traditionally been handled in Punjab, and this labor system was part of an intricate agrarian system of patronage and dominance. While British engineers balked at this blatant use of “slave” labor, British administrators counseled on the wisdom of currying favor among indigenous elites and “not disturbing” local structures of power. Whereas imperial science was concerned with development, scientific empire was concerned with governance.

Bashir Malik and the SWSP display the logic of imperial science outside of empire and within the nation. Daniel Haines, in his study of water engineering in Sindh, especially during 1930-1960, argues that as far as the attitude of the British and the Pakistani state to water development was concerned, “the same obsession with engineering prevailed, albeit reconfigured as a marker of Pakistan’s national progress...” (Haines 2011a, p. 262).

Malik’s belief in the importance of development, and perhaps more importantly, the viability of the nation, are intensely entangled with his identity as an engineer. The logic is as follows: the engineer is concerned solely with the efficient development of natural resources, which will lead to the economic development of territory within Pakistan, which will strengthen the Pakistani nation. Key to this logical sequence, however, is the evacuation of the particular history and geography which go into making an engineer. Engineers are not robots – they come from actual places, they grew up and attach loyalties to certain places. Ayub Khan, during a speech in February 1959, gave an early warning about the possible fracturing of the engineering

identity along regional lines: “The engineers of the provinces should, however, be prepared to consider themselves part of technical talent of the whole country and not of a region or province alone...” Khan 1961a, pp. 59-60).

So far I have discussed SWSP and Bashir Malik’s approach primarily to Indus River tensions with India. When I asked Mr. Malik about the relative importance of inter-provincial and international debates he said “Inter-provincial debates are serious, but the Indus Waters Treaty is a more serious threat, it’s an existential issue,” (interview, March 24, 2012). But this does not mean that he doesn’t have ideas about politics at the national level. Let us explore one aspect of Mr. Malik’s vision for water politics published in his book *Save Water Save Pakistan* (2011), which was widely available in bookstores during my fieldwork Pakistan in 2012. This book surveys the controversies around many of the same infrastructure projects and water rights issues I have reviewed in this dissertation.

The last part of the book is titled “Way Out” and the first chapter of this part is titled “Consensus not Mandatory”. While this title probably enough to impart the gist of Mr. Malik’s political vision, I will take few sentences to summarize. The focus of the chapter is on the “mandatory” task of building Kalabagh Dam. Malik declares that “an objective review of the whole issue in retrospect shows that consensus, in my assessment, should not be mandatory for building Kalabagh or any other storage dam on the Indus,” (Malik 2011, p. 212). Malik celebrates dams from around the world that were built without consensus; Hoover Dam, Aswan High Dam and Tarbela Dam. Malik celebrates what he sees as Ayub’s “bold” moves to make sure that Tarbela Dam was funded as a part of the IBDF in 1965, without the messiness of parliamentary debate. Ayub accomplished it, Malik says, “by a one line command in the Army lingo: ‘Gentlemen! Let us dig our toes in.’”

Most of the engineers I interviewed held similar views about the construction of Kalabagh Dam (see Chapter 5). It was common to hear them, as well as many other upper-middle class Pakistanis in Lahore, remarking wistfully that past military dictators should have built Kalabagh when they had the chance. It was also common to hear any suggestion that the downstream politics of Kalabagh might present a legitimate political concern dismissed as “Anti-Pakistan”. Like many of the other activities condemned as “Anti-Pakistan”, such as the anti-nuclear campaign or the activities of NGOs, a foreign actor was usually identified to be “behind it all”.

I analyze the SWSP not because it is a powerful civil society movement – indeed, the active life of the organization in terms of press releases and meetings had already fizzled out by the time I left Pakistan in the summer of 2012. I analyze it because in the statements of Bashir Malik, the convener of the SWSP, a certain nationalist technocratic understanding of water politics in Pakistan is crystallized. This understanding is not limited to engineers in Punjab. Indeed, in Winner’s understanding of the technological imperative, the “moral vision” of the necessity of technology is spread more diffusely throughout society. A brief look at the columns of the leading English and Urdu –language newspapers (not Sindhi newspapers) Pakistan will attest to the fact that the technocratic vision is espoused by many who are not engineers. This is where Gramsci’s theory of civil society as a terrain of ideological struggle can complement Winner’s theory of the moral of vision of technology.

My argument is that what Langdon Winner refers to as the “moral vision” of technology expresses itself in the context of Pakistani water politics as one narrative struggling for dominance in the field of civil society. The meetings and press releases of SWSP, as well as the broader social functions Bashir Malik envisioned for them, were a struggle precisely on these

grounds. The narrative the SWSP pushes is similar to the ones expressed by in various points in Pakistan's water history that I have examined throughout this chapter. This is a narrative of political centralization and technology trumping the geopolitics of downstream. This narrative, and the engineering and political practices it has enabled, has informed the evolution of the Pakistani state in a variety of historical and contemporary settings I have explored in this dissertation – international legal arbitration, Cold War alliances, and the politics of federalism in Pakistan are just a few. However, civil society is understood by Gramsci as a terrain of struggle – and the SWSP is not the only actor engaging this field.

To conclude, I discuss venues of emerging socialist politics in Pakistan that explicitly link the politics of region to the water question. In June and July of 2012, I participated in two events in Lahore that provide evidence of a different take on the politics of water in Pakistan. The first was an event called a “Socialist School”, held at Labour Party Pakistan (LPP)'s offices on Davis Road. The second was a Conference on Water Politics of Punjab, held at the offices of the Workers Party (WP) on McLeod Road. The meeting at the offices of the LPP was organized by the National Students Federation, and the meeting at the WP offices was organized by several faculty of the Quaid-e-Azam University in Islamabad.

These meetings were on the same scale as the meeting of the SWSP that I attended - there were about thirty people in each meeting, including members of the press. The participants came from the same general class as the SWSP – they were mostly middle and upper-middle class. A key difference in the meetings was the age structure –most of the people attending the LPP and WP conferences were young men and women. Another key difference was the presence of people who identified as Sindhi at the LPP meeting.

I observed key differences in the discourse around water politics emerged in these sites. While the SWSP was dismissive of the geopolitics of downstream, conversations at the LPP and the WP revolved chiefly around the geopolitics of downstream. The institutional histories of the participants go a long way to explaining the drastically different orientations of these groups. For the engineers of the SWSP, the question is one predominantly of the existence and expansion of the technological system of irrigation and storage on the Indus in Pakistan. Thus they represent the technological imperative that Winner talks about in the context of how technologies structure the evolution of society. The engineers' evocation of the Pakistani nation was the "moral vision" with which they attached their politics of technology. I have examined (see Chapters 2 and 8) various aspects of this understanding of politics and technology.

The meetings at the LPP and the WP offices took place in the context of people who self-identified as members of the Pakistani left. The political memory and imagination of these attendees is saturated with the "national question" (cf. Zaidi 1992). The national question poses a particularly thorny question for the left in Pakistan in the context of forming alliances with nationalist demands in the smaller provinces of Pakistan, especially Sindh and Balochistan (Akhtar 2010). For example, at the LPP meeting, I was called upon to speak for a few minutes about my research about inequality in the water allocation systems of Pakistan. I offered what I thought was the provocative suggestion that issue should not be seen in terms of Pakistan vs. India, or Punjab vs. Sindh. What if, I asked, we were to see the issue as one of tail-enders and poor peasants in canal irrigation systems in all areas vs. the large landholders (see Chapter 1)?

This suggestion prompted both discussion and debate. One participant, a student of engineering in Lahore, remarked that on a tour to Sind he was shocked to see with his own eyes the enormous volumes of canal water that were deployed by large landlords. Another participant,

a political worker from Sindh, remarked that canal-level inequalities aside, it could not be denied that Punjab was upstream and the province of Sindh was downstream. A discussion followed about the role of class and region in the politics of water, and which factor was more or less important.

Similar to the meeting of the SWSP, the Pakistani nation was also invoked in these meetings, but in a very different way. The technological imperative of the engineers of the SWSP presented Pakistan in existential threat of not having enough water, or not having enough control over water. The activists at the LPP and the WP invoked Pakistani nation in existential threat as well – but under the threat of the regional politics. The solution for the SWSP was two-fold: to flatten regional differences within Pakistan and to expand technological control over the river. For the leftists, the answer was not so clear-cut. But significantly, the answer lay not in technology and flattening of difference, but in negotiation, conversation, and the acknowledgement of regional difference.

My point is not that these small meetings of activists in Lahore had discovered the answer to the problems posed by the politics of the Indus in Pakistan. My point is that they are at least asking the same questions. These are the very same questions I have discussed in this dissertation –about the geopolitics of downstream as it forms at the intersection of geography, technology, and region. Just like the members of the SWSP, the participants at the LPP and WP meetings were active participants in a “war of position” on the terrain of Pakistani civil society. The conveners of the WP conference were actually involved in what Gramsci might have called “wars of maneuver”. In fact, the WP conference was organized as a solidarity event for a strikes and sit-in for people who were displaced by the construction of Mirani Dam on the Dasht River in Baluchistan.

This chapter has examined the civil society politics of water in Pakistan. I have shown that the Pakistani notion is invoked by different actors in different ways to present the geopolitics of downstream. I argued that the SWSP and Bashir Malik represent a specific technocratic conception of the world which saw the possibility of transcending the geopolitics of downstream through autocracy and technology. For leftist activists, the geopolitics of downstream was not something to be transcended, but to be dealt with sensitivity and subjected to discussion. Both of these visions invoked the idea of a Pakistani nation at threat, but in different ways. The engineers saw the lack of water as the primary threat, while leftists saw insensitivity to the “national question” as the primary threat. Both groups were attempting to propagate their conceptions of downstream in the terrain of Pakistani civil society.

Understanding civil society as a terrain of struggle, instead of relating it to class position or “style” of politics, is a useful way to understand the contours of water activism in Pakistan. I drew on a classical understanding of Gramsci’s concept of civil society, complemented by Langdon’s Winner’s theory of the technological imperative to understand this terrain. The geopolitics of downstream, as I hope to have shown in this chapter, is not only about location, boundaries, and technology –but about political struggle.

## CONCLUSION

In this dissertation, I explored the geopolitics of downstream and the technocratic politics of integrated basin development. I draw primarily on the history and politics of the Indus Rivers in Pakistan to argue that for about a century a socio-spatial structure of downstream relations has created a tendency for regional elites to engage with other regions on the politicized grounds of downstream vulnerability. This socio-spatial structure is rooted in intensive use of the waters of the Indus for irrigation economies, the location of political boundaries, and uneven geographical development across Pakistani territory. While the dependence of the irrigated economy on Indus and the pattern of uneven development have remained constant, there has been evolution and flux in the location of political boundaries in the Indus basin. First, with independence in 1947, the Indus River became a transboundary river between the new states of Pakistan and India. Second, the experiment of One Unit during the late 1950s and 1960s changed political-administrative boundaries within the territory of West Pakistan. These changes in political boundaries, along with the technological enabled irrigation economies and uneven geographical development constitute the “moving parts” of the dialectic structured relationship between hydraulic regionalism and technocratic developmentalism on the Indus over the past century.

The tendency towards a downstream geopolitics, which defines regional identities in terms of downstream vulnerability, is not always realized. A strong counter-tendency in the form of technocratic discourses of integrated river basin management has continuously interrupted the structural tendency towards hydraulic regionalism. Engineers and technocrats have historically attempted to de-politicize river basin management and development by casting the issue as one of mere finance and engineering. Technocratic discourses are powerful precisely because they present themselves as technical, objective and apolitical. In actual historical and political

situations, however, technocratic arguments about integrated basin management and the erasure of regional political difference are not always believed.

I examined the historical geopolitics of the Indus over the past century through the interaction of downstream geopolitics and technocratic basin management. I paid special attention to the ways this interaction is mediated by other forces, such as international law, Cold War geopolitics, and technology. My hope is that the narrative and analysis presented here will serve to provoke theoretical debate, stimulate further research, and catalyze a conversation about progressive policy formulation on the issue of hydro-politics in Pakistan and the Indus Basin more broadly. At the moment, this conversation is dominated by technocrats and realists, whose unspoken assumption is that the policy objective is to maintain the status quo. I hope by historicizing the issue, and by identifying structures and contingencies in the co-evolution of river, region, and nation, I have pointed the way towards a more unsettling, critical, and geographically informed analysis of this pressing issue.

This research has prompted me to undertake two directions in my further research. First, I will examine the intersections of location, economic productivity, and caste/kinship on the irrigation canal colonies of Punjab. Specifically, I want to know if, how and why “tail-enders” (those who are the lowest elevation in gravity-powered canal irrigation system) are historically constituted. This builds on my interest in the politics of downstream at a different scale, and will require intensive ethnographic research as well as engagement with Geographic Information Systems and remote sensing methods. My hope is that this research will inform emerging political debates in Pakistan about the importance of land and water reforms to progressive change in the country.

The second direction for further research which comes out of this project is a deeper engagement with the history of engineering in Pakistan. I want to know how the developmental ideal of the engineer, as an apolitical and rational man in service to the nation, was experienced by lower middle class and lower class Pakistanis in the 1960s and 1970s. I also want to examine the ways in which successive political regimes in Pakistan have sponsored engineering education and institutions of engineering, especially irrigation and civil engineering. Finally, I am interested the differences in how engineers and more working-class employees of WAPDA understood the neoliberal gutting of WAPDA that began in the 1990s. This research will require interviews designed to elicit oral histories and archival research in engineering universities and institutions in Pakistan.

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#### 2012

- Mueenuddin Sheikh (Executive Engineer, Central Bari Doab Canal); July 9, 2012
- Rafay Alam (Chairman, LESCO)
- S. Memon (Commissioner, Indus Waters Permanent Commission); April 26, 2012
- Fateh Gandapur (Former Chairman, IRSA); via email on July 10, 2012
- Hafeez Aslam (Former Director Finance, WAPDA); February 25, 2012
- Nadeem Akram (Manager, Tech Club); March 27, 2012
- Asif Kazi (Former Chief Secretary, Water); April 19, 2012
- Amjad Agha (President, ACE); April 20, 2012
- Faris Qazi (Deputy Commissioner, IWPC); April 26, 2012
- Rana Khalid (Deputy Operations, IRSA); May 22, 2012
- Shafqat Masood (Former Chairman, IRSA); March 27 and July 7, 2012
- Bashir Malik (Chairman, Save Water Save Pakistan Forum); March 24, 2012
- Mohammad Shafi (Water Issues Spokesman, Tehreek-i-Insaf); April 15, 2012
- M.H. Siddiqui (Consultant, Punjab Irrigation and Power); April 24, 2012

#### 2010

- Agha Abbas Ali Khan (former Chief Engineer, Punjab Irrigation and Power)
- Asjad Imtiaz Ali (Member, Technical of Flooding Commission)
- G. Ahmed Usmani (Chief Manager, Project Management Unit, Punjab Irrigation and Power)
- Mohammad Munir Sheikh (Head, Climatology Section, Global Change Impact Studies Center)
- Mohmmad Younus Chaudry (former Sectional Division Officer, Punjab Irrigation and Power)
- Najmus Saqib Rahmani (Executive Engineer, Okara, Punjab Irrigation and Power)
- Retd. Brig. Khurshid Shah (former Engineer WAPDA Salinity Control and Reclamation Project)
- Retd. General Zulfiqar (former Chairman, WAPDA)

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