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## **(Inter)Nationalist Rivers?: Cooperative development in David Lilienthal's plan for the Indus Basin, 1951**

### **Abstract**

Sharing water resources in the Indus Basin, split between India and Pakistan and 1947, helped sour relations between these hostile neighbours until the signing of the Indus Waters Treaty in 1960. This article explores a radical early intervention into the dispute. David E Lilienthal, an American development expert, published a plan for trans-border cooperative development in 1951. He used a discourse of technocratic internationalism to privilege shared expertise over political difference. His proposal, I argue, tried to align politics in the Indus Basin with a constructed notion of the basin itself as a “natural” entity, contrasted with the political boundaries that divided India from Pakistan. I show how Lilienthal's appeal to engineers to effect a “scale jump”, shifting the waters dispute from a nationalist to an internationalist plane, reinforced an existing reliance in South Asia on technocratic water management. While subsequent negotiations dropped his proposal for cooperative development, his novel use of the idea of engineering to produce the basin as a depoliticised space helped to frame the terms of the debate. The paper is based on material from diplomatic archives in the United States and the United Kingdom.

*Keywords: Indus Waters Treaty; international cooperation; technocracy; South Asia; David E Lilienthal; development history; hydrogeopolitics*

## **Author Biography**

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## **Introduction**

The politics of competition and cooperation on transboundary rivers is a popularly reoccurring topic in recent geography and international relations scholarship (Alam, Dione and Jeffrey 2009; Biswas 1999; Fischendler and Feitelson 2003; Furlong 2006; Harris and Alatout 2010; McCaffrey and Neville 2010; Sneddon and Fox 2006; Turton 2003; Vogel 2012; Voza, Vuković, Carlson, and Djordjević 2012). Lately the Indus Basin– shared by India, Pakistan, China and Afghanistan – has attracted renewed scholarly attention as hydrodevelopment there has intensified (see Hill 2012; Sinha 2012). The riparian relationship between India and Pakistan is especially well represented, with work focusing on its technical, security, sustainability, and international relations aspects (Ali 2008; Hill 2012; Laghari, Vanham and Rauch 2011; Wirsing 2008;). Since 1960, the Indus Waters Treaty has governed India and Pakistan’s use of water from the rivers of the portion of the Indus Basin that contains territory they either control or claim. The Treaty covers, therefore, the Indus itself, plus the five tributaries that flow through the divided territories of Kashmir and Punjab. Under the terms of the Treaty, Pakistan acquired the right to use the basin’s western rivers (the Indus, Jhelum and Chenab) while India acquired the use of the eastern rivers (the Ravi, Sutlej and Beas). It does not refer to the Kabul, which flows into Pakistan through Afghanistan, from another direction entirely. The Treaty came about after long negotiations, which the International Bank for Reconstruction and Development, or World Bank, mediated. The World Bank was also a signatory to the Treaty, and arranged the financing of major projects for which the related Indus Basin Development Fund provided. The Treaty’s role in providing a framework for the resolution of disputes over India’s right to construct new

hydropower works at Baglihar and Kishenganga during the last fifteen years has brought the Treaty into sharp focus (Alam 2002; Chakraborty and Nasir 2002; Gazdar 2005; Iyer 2005; Miner, Patankar, Gamkhar, and Eaton 2009; Sahni 2006; Salman 2008; Zawahri 2009). Such work is geared towards current affairs and policy debates, with few examples of original historical research on how the Treaty came about (Alam 1998; Gulhati 1973; Michel 1967). As a result, the way that the terms of the Indus dispute evolved over time is under-examined. In this article I provide an historian's perspective, based on original archival research, on an early stage of the intellectual development of the negotiation framework.

The signal intervention that I consider is a 1951 plan for joint Indo-Pak development of the water resources drafted by David E Lilienthal, a prominent American water bureaucrat. Previous work on Lilienthal's involvement in the canal waters dispute has usefully emphasized the technical approach that he took to the problem, such as his foundational stipulation that efficient and appropriate development could ensure water supplies to both riparian parties. In so doing he played on established modes of thinking about water management in South Asia and beyond in order to construct a solution that relied on a technical, supposedly apolitical approach (Michel 1967, pp.219-223; Alam 1998, pp.139-141; Grandi 2011; Salman and Uprety 2002, pp.44-47). In this article I add to our understanding of the context, production, rationale, and reception of Lilienthal's plan. In particular, I examine the bearing that his understanding of the relationship between "natural" and "political" spaces had on his promotion of international technocratic cooperation.

After introducing the origin of the water dispute, I explain how Lilienthal came to be involved and the influence that his professional background had on his approach to the problem. I then argue that his framing of a technical solution relied on his discursive construction of a

particular kind of “apolitical” space in which cooperative water development could take place. This was a caricature of the Indus Basin as a spatial-political entity, which he presented as a “natural” unit that could most efficiently be developed cooperatively. I examine the role of human agency in his plan, and particularly his presentation of Indian and Pakistani engineers as a group who could act on behalf of their states while transcending exclusive national interests through their shared history and professional connections. Finally, I track the reception of his proposal in New Delhi, Karachi, and Washington, DC, from initial enthusiasm to the jettisoning of cooperative development in 1954. These events demonstrated that South Asian politics was even more divisive than Lilienthal had assumed. Nevertheless, I conclude that his intellectual work in framing a particular type of relationship between political space, the natural environment, and transnational expertise significantly contributed towards the momentum of early negotiations. Considering his plan in depth in its own terms, rather than simply as a milestone on the path to the eventual outcome of the Indus Waters Treaty, therefore, helps us to recover an important voice that presented an alternative, cooperative model of development.

## **Partition and the water dispute**

The dispute between India and Pakistan over water resources had its roots in irrigation canal development during the period of British rule and from the way that the British partitioned the basin between India and Pakistan when they withdrew from the subcontinent in 1947. Britain had ruled the whole of its Indian Empire, which included portions of the Indus and its five Punjab tributaries, under one suzerain government. From 1885 onwards, the formerly piecemeal British canal development in the basin stepped up in pace with the development of Punjab’s major canal colonies and the subsequent large-scale development of irrigated land in Sindh from 1932. Competition for future water supplies from the rivers occupied the Governments of Sindh

(and its predecessor, Bombay) and Punjab from approximately 1920, and it was never resolved under the British. Inquiries into the water-sharing problem in 1935 and 1940-1941 failed to satisfy all parties (Michel 1967, pp.118-133).

In August 1947 India gained independence from Britain. In the last years of British rule, the imperial power's politics of decolonisation played against competition between two rival nationalist organisations, the Indian National Congress and the All-India Muslim League. As a result, India was partitioned into the separate states of India, under Congress rule, and Pakistan, under the Muslim League. Since Sindh and the western part of a divided Punjab went to Pakistan, while eastern Punjab remained in India, the new countries inherited a modified form of the Sindh-Punjab dispute. Another province in the far east of India, Bengal, was also split between the two countries. Consequently the easternmost province on Pakistan, East Bengal (now Bangladesh), was not geographically contiguous with Pakistan's western provinces. Partition was traumatic, especially in Punjab, through which five of the Indus tributaries flow. Riots and pogroms pitted Muslims against Hindus and Sikhs. Scholarly estimates of the number of deaths have ranged from 200,000 to close to three million (Copland 2002, p.658 fn 1). Hindu and Sikh refugees from Pakistani Punjab who had fled well-irrigated and valuable canal colony land to the west of the new national boundary called for India to develop upstream surface water resources without regard to Pakistan's welfare (Commonwealth Relations Office (CRO) 1950a).

Since the rivers flowed from the north-east to the south-west, India was the upstream power (see map at Fig. 1). India controlled some headworks that regulated water in the canals that serviced the old British canal colonies. In April 1948 the East Punjab irrigation authorities shut off water supplies to the Dipalpur Canal and the Pakistani portions of the Upper Bari Doab Canal at the headworks at Ferozpur, close to the international border. According to Michel, this

deprived almost 8% of West Pakistan's cultivable command area of water at the beginning of the critical summer seed-sowing period (1967, p.196). Negotiations between the Chief Engineers of East and West Punjab in April 1948 resulted in two temporary agreements signed at Shimla on 18 April. An Inter-Dominion Conference on 3 and 4 May brought the national governments of India and Pakistan, along with representatives of the two Punjab governments, together to discuss the Shimla Agreements. The Indian Prime Minister, Jawaharlal Nehru, and Pakistan's Finance Minister, Ghulam Mohammad, managed to break a deadlock by postponing agreement on the "seigniorage" charges that India wanted to levy on Pakistan for the use of Indus water (Gulhati 1973, pp.67-68).

Ultimately the governments could not agree on the seigniorage charges, and the dispute remained heated. India blocked Pakistan's attempt to widen participation in resolving the dispute by refusing to refer the matter to the International Court of Justice for arbitration (CRO 1949d). Without recourse to international justice mechanisms, Pakistani leaders invoked the threat of war. As Sir Zafrullah Khan, Pakistan's Foreign Minister, told the daily *Pakistan News* in October 1949, "a diminution in that flow [of the rivers from India] or even a threat of interruption which would have the effect of converting millions of acres of fertile land into arid wastes, creates a situation likely to endanger the maintenance of international peace" (CRO 1949c). Whether or not Zafrullah's threat was sincere, such threats had the potential to further burden already strained relations. Binational talks achieved little during the following three years, and the problem seemed intractable (CRO 1949e).

## **Technocracy to the rescue**

Into this scenario stepped David E Lilienthal. In some ways Lilienthal was an eminently suitable figure to tackle the problem of water-sharing between India and Pakistan. He was



experienced in public affairs, with a long career of United States government service behind him. He had founded the Tennessee Valley Authority (TVA), the innovative body that governed water resources in a multi-state river basin in the southeastern United States. He was closely identified with the TVA's work and its political mission, helping to create the organization's mythos as a force for democratic human advancement rather than a technical bureaucracy (Hargrove 1994, pp.49-54). Lilienthal had also served as the head of the US Atomic Energy Commission. In 1951 he no longer worked for the government, instead turning to a lucrative business and consultancy career in Washington, DC and New York. In this role he kept in close touch with the State Department and other government agencies.

Lilienthal envisaged the TVA as an exportable model of river valley governance and visited South Asia with an eye on promoting such a programme (Grandi 2011, p.5). He was reportedly disappointed when the Bank did not ultimately set up a supranational engineering corporation and ask him to lead it (Gulhati 1973, pp.139 fn \*, 153 fn \*). After his work on the Indus waters problem, Lilienthal set up a consultancy called the Development and Resources Corporation, which worked as a contractor with foreign governments and specialized in river-valley development. He was, essentially, a proponent of what Klingensmith has called "evangelical developmentalism", which individual American experts took with them on travels to developing countries. The United States Government, too, promoted large-scale river development through its assistance programmes and influence over institutions that funded dam projects, such as the World Bank (Klingensmith 2007, p.67). Individual American water managers had been taking their expertise to Australia, South Africa, Hawaii and Palestine from the early 1900s (Teisch 2011, pp.67-131). In the mid-twentieth century, decolonized states provided a new arena for the intensified circulation of American development expertise (Mitchell

2002, pp.41-53). At the same time, the international development community after the Second World War was greatly concerned with schemes to improve water provision in developing countries (World Commission on Dams 2000).

Lilienthal's involvement in the Indus waters dispute came before Talcott Parsons and other social scientists brought modernization theory to the fore of American foreign policy during the Kennedy era, and he diverged from the modernization theorists in being a practitioner first and a philosopher second (Fischer 2011, p.432; on modernization theory see Webster 1995, Latham 2000). Nor did he aspire to the type of totalizing state-led development project that Scott has depicted as characteristic of the twentieth century (Scott 1998). In his previous work he had, in Hargrove's succinct phrase, steered the TVA towards "us[ing] its technology to develop natural resources that the valley people could then exploit as they wished" (Hargrove 1994, p.90). However, he did view modernization as a path to better human lives, assuming that that big technical solutions imposed from the top could create the conditions for grass-roots democracy. He set these ideas out in his well-known 1944 book *TVA: democracy on the march* (Neuse 1996, pp.xx, 324; Klingensmith 2007, pp.53-60). Lilienthal fitted readily into a world in which transnational actors from the West could take their technical expertise abroad to developing countries, reframing their knowledge of local conditions as knowledge of the principles of development.

Yet Lilienthal's path towards intervening in the dispute was indirect. The idea of the visit seems to have originated when Jawaharlal Nehru, India's prime minister, had invited the former government servant to visit India after the two met in New York in 1949. In the end, Lilienthal's visit to South Asia was sponsored not by a government or an international body, but by *Collier's* magazine, an investigative journal. *Collier's* had previously published his articles about atomic

energy and weapons, which he had written in connection with his time at the Atomic Energy Commission. The trip to South Asia was not a formal United States Government mission, although he went with the State Department's blessings and support (Lilienthal 1966, pp.58-65). Nehru was interested in using Lilienthal's experience with the TVA to help India plan irrigation development (Hogan 2006, p.96). Lilienthal's intervention naturally had some reference to his professional interests, but was perhaps rooted more in his strong sense of a modernizing mission than in a personal stake in resolving the dispute (see Fisher 2011, p.432).

For Lilienthal's part, his visit to the subcontinent instead proceeded from his reading of trends in international Cold War politics. His main desire was to help the United States rejuvenate its troubled relationship with India, following widespread American anxieties about Asian stability in the wake of the Korean War, which had begun in 1950. He worried that if the United States could not forge a lasting friendship with India, the latter might move closer to the Soviet sphere in the Cold War, or even into it altogether (Lilienthal 1966, p.51). Indeed, when he returned from South Asia to Washington, DC, the first article that he published was entitled "Are we losing India?" (Klingensmith 2007, p.99). His article on the Indus problem, "Kashmir: another 'Korea' in the making?" came rather later, on 4 August 1951. That Lilienthal specifically addressed the Indus dispute at all was due to a conversation with Walter Lippman, a writer for the *New York Herald* who had identified it as a major cause of instability in India-Pakistan relations. Lippman, too, convinced Lilienthal that he should visit Karachi as well as New Delhi to avoid snubbing Pakistani leaders (Lilienthal 1966, p.65).

"Kashmir: another 'Korea' in the making?" reflected Lilienthal's journey to addressing the Indus waters problem. The article began by characterising the Kashmir dispute as the most dangerous threat to peace in South Asia, and only afterwards came to the Indus Basin (Lilienthal

1951, p.23). Kashmir – wedged between Indian and Pakistani territory, part of the strategic border between the subcontinent and Central Asia, and the source of two of the rivers that water the economically important Punjab plains – was desirable to both of the new countries (Schofield 1996; Behera 2006; Talbot 2005). Its disputed status was another accident of Partition. Not all of India had been under direct British government prior to 1947: Princely States such as Kashmir had more or less governed their own internal affairs, while British officers controlled external relations. When the Indian Empire ended, rulers of the Princely States were given the option to join India or Pakistan, or stand alone. The ruler of Kashmir, Maharaja Hari Singh, formally acceded to India in October 1947, but Pakistan disputed the legality of the accession. Pakistan encouraged informal fighting units to enter Kashmir and attack Indian forces during 1947 and admitted that its formal army was operating in the State in 1948. By 1951, Indian and Pakistani troops each controlled roughly half of the area, and maintained an uneasy ceasefire.

The Kashmir dispute, Lilienthal thought, posed a direct threat to American interests (Lilienthal 1951, p.23). The United States was a key player in the United Nations management of the Kashmir issue. At the time the United States had a strategic interest, albeit still a limited one, in ensuring stability in the South Asia (McMahon 1994, pp.32-33). Because of this, Lilienthal worried that deterioration in India-Pakistan relations would draw his country into a protracted armed struggle. “The real issue,” he wrote,

is [...] how best to promote and insure peace and a sense of community in the Indo-Pakistan subcontinent; how best to avoid a UN situation that will create another, though different, ‘Korea’. In this new ‘Korea’, religious fanaticism would be substituted for Communist fanaticism, but the result for the UN (and hence the USA) would be similar – commitment of armed forces to enforce its decrees (Lilienthal 1951, p.56).

As in Korea, the Truman administration’s policy of containing Communism might press the United States into providing peacekeeping security in Kashmir in order to forestall or counter the threat of Soviet intervention. Even before the outbreak of the Korean War, future US President

Dwight D. Eisenhower (then serving in a non-official position) had worried that the Chinese Communist victory over the Kuomintang meant that “[East] Asia is lost [...] India itself is not safe!” (quoted in Westad 2005, p.118). The United States could therefore have seemed to have had a stake in preventing a war in Kashmir, even if McMahon’s analysis suggests that it was American intervention, spurred by a chimerical fear of Communist expansion, that drew South Asia into the Cold War rather than the other way around (McMahon 1994, p.343). Whatever the ground reality, Lilienthal argued that the Kashmir conflict was too intractable for American intervention to be of use unless something could first reduce the general India-Pakistan tensions. He pointed out that the countries were progressing towards resolution of two other major issues between them, namely trade embargoes and the return of women who had been abducted during Partition. Despite this, significant tension remained. Lilienthal identified the canal waters dispute as a highly dangerous fourth motor of mutual suspicion (Lilienthal 1951, p.58).

Both Pakistan and India, he wrote, needed the waters of the Indus Basin. Pakistan’s eighteen million acres of canal-irrigated land could not do without water, and the twenty-two million Pakistanis who lived in the Indus Basin needed the food and the money that the land generated. On the other hand, India’s population of twenty millions in the Indus Basin had access only to five million acres of irrigated land. On India’s side of the border a further thirty-five million acres lay uncultivated, though “*if irrigated* [this land] could raise food and do a good job of it” (Lilienthal 1951, p.58, italics in original). Both populations required water in order to cultivate existing farmland, and to develop future uses. The trouble was, as Pakistanis had been arguing since 1948, India’s planned uses could reduce the water available in Pakistan. “It is pure dynamite,” Lilienthal wrote, “a Punjab powder keg”. Lilienthal rejected Pakistan’s legal argument about its riparian rights as inadequate to the task of ensuring future development.

Instead, he envisioned a technical solution. India and Pakistan, he argued, needed to work together “in a joint use of this truly international river basin on an engineering basis” (Lilienthal 1951, p.58).

Securing the necessary cooperation would not be easy. Proposals for joint development could not help ruffling feathers in India and Pakistan, where trust was low on both sides. Binational talks on setting up a joint investigation into the Indus waters problem had already proved difficult (CRO 1949a, CRO 1950b). A canal waters solution would signify basic reversals in Indian and Pakistani policy, as George McGhee, the Assistant Secretary of State in charge of the Near Eastern Affairs division, put it in later correspondence with Lilienthal (State Department 1951b). A British official commentary on Lilienthal’s article made a similar point (CRO 1951d). But Lilienthal thought that cooperation was possible if all parties agreed to treat the Indus question as a purely technical one, leaving aside political issues. Using the Indus Basin’s waters more fully, he wrote, was “not a religious or political problem but a feasible engineering and business problem” (Lilienthal 1951, p.58).

The technical approach that Lilienthal advocated depended on taking negotiations out of the hands of political leadership. He was able to draw on what Schot and Lagendijk have termed “technocratic internationalism”, first developed in Europe between the world wars, which provided a conceptual toolkit for technical specialists to frame international development cooperation as “apolitical” (Schot and Lagendijk 2008). Never mind the practical difficulties of separating “technical” and “political” issues, which Nehru himself would mildly point out in later correspondence with the World Bank (International Bank for Reconstruction and Development 1951); technical expertise was held in high esteem during the mid-twentieth century. Even the controversial and highly politicized Partition arrangements, drawn up by Sir

Cyril Radcliffe and the Boundary Commissions in 1947, had benefitted from having the appearance of a technical, apolitical exercise (Chatterji 1999).

At a general level, Lilienthal's proposal shared with previous Indus Basin river-development schemes a modernist understanding of water as a resource, a category permitting a discursive distinction between productive and unproductive things, and hence underpinning state formation and socio-economies (Bridge 2009; Radcliffe 2012). More specifically, incremental additions to the level of human control over the rivers system, using barrages and storage dams, drainage ditches and canals, was familiar to governments, engineers, and populations in the region. In South Asia, hydraulic engineering was particularly prestigious. Top-down human intervention into the Indus Rivers system had a long and, at the time, honoured tradition in both India and Pakistan (Gilmartin 1994, Haines 2011). Lilienthal's deployment of engineers as a particular kind of actor deserves further explanation, which I give below. His general appeal to technical expertise as the proper facilitator of large-scale water-development in the Indus Basin, though, resonated with contemporary ideas in South Asia and beyond.

## **The “natural” object of development**

A rather more controversial aspect of Lilienthal's article was his framing of a particular space in which engineers should deploy their expertise. He identified the areal extent of this space as the whole Indus Basin, a geographical concept which he applied somewhat inconsistently. More importantly, he characterised the quality of this space as natural and therefore apolitical. In so doing, he sought to undermine the hard distinction between Indian and Pakistani territory that confined water-development planning within nationalised spaces. The actors and processes of water development on either side of the border derived their authority from mutually independent national governments. In Lilienthal's view, however, dividing the

basin between states meant ignoring the rivers' ability to tie human actors and environmental processes on either side of the border together. Political and administrative boundaries within the basin, in other words, were human impositions. Worse, they prevented rational exploitation of the rivers. Using Indus Basin waters more fully could not, he wrote, "be achieved by the countries working separately: the river pays no attention to partition - the Indus, she 'just keeps running along,' through Kashmir and India and Pakistan" (Lilienthal 1951, p.58). Explicitly contrasting the human (i.e. political) demarcations of territory in north-western South Asia with the river's naturalness (using the Indus to represent all the rivers in the basin), he assigned to the Indus a large degree of agency in determining the possibilities for human life in the basin.

Coordinating water governance across an area that comprised divided political spaces was the TVA's speciality. Appropriately enough, he cited the TVA as a precedent for river-valley development that cut across political and administrative borders: "The whole Indus system must be developed as a unit – designed, built and operated as a unit, as in the seven-state TVA system back in the U.S." (Lilienthal 1951, p.58). A coordinated approach to all aspects of the Tennessee Valley's economy and environment was, in Lilienthal's view, at the heart of the TVA's apparent success (Klingensmith 2007, p.56). His proposal for the Indus Basin elided national with subnational borders, ignoring the higher authority that the United States federal government provided for multi-state initiatives. Nor did he go so far as to set out a comprehensive agenda for institution-building and development. Yet he did reflect his TVA experience by taking a river basin as the ideal unit to be an object of development.

Of course, the way that Lilienthal presented the Indus Basin was not as natural as he claimed. Instead, his conception of the basin combined environmental and political topographies. He considered only Indian and Pakistani uses of water in the Indus system, whereas Afghanistan



and China were also riparian states in the basin. The Kabul river, which Lilienthal did not mention at all, flows through southern Afghanistan before joining the Indus main in Pakistan's North-West Frontier Province (now renamed Khyber Pakhtunkwa). He paid similarly scant attention to the fact that the Indus main rises in Tibet, which China had incorporated in 1950. Presumably his reference to India and Pakistan's dispute over Kashmir, coupled with the lack of public debate about possible Afghan and Chinese (or Tibetan) demands on the system, caused him to overlook the latter countries in his discussion. Political borders therefore still helped to define the object of development. His consideration of surface water but exclusion of groundwater from discussion also privileged certain aspects of the basin's environment over others. Admittedly, groundwater exploitation did not become common until the 1960s and 1970s, when the Green Revolutions of both countries made tubewells a major feature of agriculture in the region (Hill 2009, pp.98-99). These omissions, however, helped to enact what Sneddon and Fox have called the "discursive simplification" of a river basin's environment, a "representation of the natural environment [that] both generates and sustains the power of states to carve out certain political scales [...] and alter biophysical relationships" (Sneddon and Fox 2006, p.192).

As much as Lilienthal's particular view of the basin naturalised the relationships between a selected range of human actors and environmental processes, it carried normative weight during the time in which he was writing. River basins were well-established as objects of development in international development discourse by the 1950s. Colonial British policies in North Africa, which included seeking political control of Sudan to secure downstream water availability in Egypt, provided an early precedent for approaches to managing the relationship between political units and hydraulic systems (Tvedt 2004). Political discussions in Spain from

the beginning of the twentieth century often concentrated on constructing a collective and state-led national irrigation system (Swyngedouw 1999). In Israel, plans to irrigate the Negev Desert in order to encourage Jewish settlement dated from at least 1947. Debates about the appropriate institutional scales for water management abounded within Israel during the 1950s (Harris and Alatout 2010, pp.152-3). Thinking about river basins as single environmental units was well-established by the early 1950s: Molle has identified the concept of a river basin as subject to cyclical popularity since the 1700s. He argues that the period from the 1930s to the 1960s represented only/just one peak of its popularity. In addition to the TVA, Molle points to European experiences on the Ruhr, the Nordrhein-Westfalen, and the Rhone. American and European approaches to river basin management spread quickly in the mid-twentieth century to Mexico, Morocco and South Africa, among other countries (Molle 2009).

In South Asia, river development across whole valleys was also a known concept. Shortly before Independence the colonial government had approved plans for multi-purpose river valley development on the Damodar, Mahanandi and Kosi rivers. The early independent state in India continued work in the same vein of “aggressive supply-side solutions” (D’Souza 2003, p.3786). Supply-side hydrology has now come under criticism for its negative social and environmental effects, but in the early 1950s it was popular with governments and water management agencies in the region (D’Souza 2003; D’Souza, Mukhopadhyay and Kothari 1998; Mehta 2003). The Indian National Planning Committee’s Sub-Committee on River Training and Irrigation, first appointed in 1938 (before Independence), laid out programmes for bringing river valleys under engineers’ control (Lahiri-Dutt 2008, p.325). In 1950 the Indian National Planning Commission itself recognised the exemplary usefulness of multipurpose river development in the United States (State Department 1950). Prominent physicist Meghnad Saha guided India’s Damodar

Valley Corporation, created in February 1948, into adapting elements of the TVA model (Klingensmith 2007, pp.119-137). In Pakistan, work was already underway on the Thal Valley Project in West Punjab and the Kotri Barrage in Sindh. Lilienthal, identified as he was with the TVA, seemed to be an appropriate water-management expert to advocate basin-wide action. In his *Collier's* article, in his previous work with the TVA, and in his later projects in Columbia (1954) and Iran (1956-1963), a great deal of Lilienthal's intellectual effort aimed to establish river basins as the most appropriate environmental scale for water resource development (see Grandi 2011, Fisher 2011).

### **Engineers as scale-jumpers**

Lilienthal's construction of the Indus Basin as a naturalised, apolitical space provided an object on which development processes could act. Pushing water development from an activity that occurred within contiguous but separate national spaces to one that spanned the whole basin required what Smith has called a "scale jump" (Smith 1993, p.101). Scale is a shorthand for describing "the complex dynamics that interface between nature and society", characteristic of water governance regimes (Norman, Bakker and Cook 2012, p.55). A scale jump in this case therefore meant shifting the terms of the Indus water debate to a larger geographical area, and in the process expanding the range of actors (at the level of individuals, institutions and nations) that interacted with social and environmental processes within that area.

Because India and Pakistan seemed to have vested interests in confining plans for development to their own territory, Lilienthal needed a group of actors to facilitate his scale jump. He therefore appealed to engineers, not simply as abstract agents of technological change but as individuals with personal histories and professional goals rooted in the basin. He could not turn to politicians; his rhetoric demanded separating "technical" from "political" questions.

Engineers' professional ties offered an opportunity to transcend political differences. Though engineering in the region had recently fallen prey to pernicious influences, he held, all was not lost. "Partition did not repeal engineering or professional principles among these [Indian and Pakistani] engineers," he wrote, "it merely made them secondary, for a time, to politics and emotion" (Lilienthal 1951, p.58). His appeal was to an epistemic community: in the sense that Haas pioneered in the early 1990s, a network of professionals who share assumptions about, and faith in, particular forms of knowledge or truth that is applicable to the world (Haas 1992, p.3). Engineers of various ranks, operating at different levels of governance and with responsibility for greater or lesser areas across the basin, had the potential to constitute what Bulkeley has termed "network governance" that operates beyond simple territorial state boundaries, across several overlapping geographical scales (Bulkeley 2005, p.881).

Lilienthal took Indian and Pakistani engineers' common understanding of the scientific nature of the Indus waters problem for granted. This was an astute move: Kux has identified the common technical language that Indian and Pakistani negotiators shared as one of the key factors explaining the success of the negotiations that eventually led up to the signing of the Indus Waters Treaty (Kux 2006, p.25). They might disagree about the specifics of water-flow data (CRO 1949f), but their training in modern hydrology gave them a common understanding of the principles of water resource development. South Asian engineers, Lilienthal thought, correctly perceived the Indus rivers as a single environmental system: "They saw the river basin as a unit, as it is in nature" (Lilienthal 1951, p.58). With their scientific worldview and technical knowledge engineers would presumably sympathise with his desire to extend development to the limits of apparently natural, rather than explicitly man-made, boundaries. It did not hurt

Lilienthal's estimation of engineers in South Asia that many of those he met in Indian Punjab had been trained at the TVA (Lilienthal 1966, p.92). What Lilienthal was concerned with was moving engineers away from their new orientation towards the separate states of India and Pakistan that now divided the basin. For this he nostalgically invoked their shared past in the colonial irrigation service. Engineers in both Punjabs, he believed, could put aside their recent differences and remember friendships with former colleagues who now worked for the opposing government. Wrote Lilienthal:

This proposal I make would draw upon the professional sense and honor of the men, both in Pakistan and India, whom I got to know [...] I am convinced that they are quite capable of working together again. It was touching to see how homesick the Hindu and Sikh engineers who fled Pakistan are for their ancestral home in Lahore and their old associates. [...] When the partition [*sic*] rioting began, Hindu engineers helped their Moslem colleagues and vice versa, hid them, fed them, got them safely on their way. Their loyalty is now to their new countries. But from what I have seen of them and from my knowledge of technical men anywhere, they can also be loyal to this job of making a river basin go to work for both of their countries, as a joint venture (Lilienthal 1951, p.58).

Engineers were, then, uniquely placed to effect a scale jump in the Indus waters debate for two reasons. Their friendships and professional ties, which pre-dated Partition, cut across Partition's boundaries. They could use their personal and professional relationships to negotiate between national and super-national scales. He emphasised the view that engineers' understanding of the Indus Basin as an environmental system naturally fell to a super-national scale, that of the basin itself. Trained under the British in undivided Punjab, they had been brought up to consider the whole irrigation system as one unit. National divisions in the canal system were a novel phenomenon, which interrupted a history of canal development within the political framework provided by one imperial government. Engineers on both sides of the border "saw the river basin as a unit, as it is in nature," and it was only Partition, "a politico-religious instrument [which] fell like an ax" across the Punjab, that had displaced unitary engineering

(Lilienthal 1951, p.58). Never mind that during this final, climactic section of the article, Lilienthal's invocation of Punjabi engineers to the exclusion of the Sindh cadre actually conflated the Indus Basin with Punjab. The larger point was that, however one defined the Indus Basin, an international border cut through the middle of it. Engineers, claimed Lilienthal, had the perspective and epistemological authority to disregard such a border.

Engineers offered, then, a route out of rigid demarcations of the kind of territorialized sovereignty that underpins much of modern state formation (Agnew 1994, Ruggie 1993). They did not represent an unofficial "diplomacy from below" (Morieux 2009), but an alternative way of doing diplomacy from within the state. Engineers served nation-states but could understand and constructively manage the relationship between environmental and political process within and beyond the state's borders. As Dalby reminds us, "Politics is about connections that do not necessarily work in the terms of spatial controls over areas" (Dalby 2005, p.433). Lilienthal appealed to a sense of epistemic community in which memories of cooperation (demarcated in terms of time: the past) superseded each engineer's physical location in a state's territorial space. If a naturalised Indus Basin provided the object of cooperative development, then, Punjab's engineers could recover their "natural" scale of operations, and become its agents.

## **The failure of cooperation**

Lilienthal's reading of attitudes towards material development in South Asia was accurate. His idea of separating out religion and politics from engineering and economics was popular with policy audiences in Washington, London, New Delhi and Karachi. The World Bank was enthusiastic about the possibility of intervening because its efforts to assist water resource development in South Asia were being hampered by India and Pakistan's disagreements over water rights. The Bank had already turned down one Indian project because of Pakistani

objections (CRO 1951a). Taking a technical approach to the table would help the Bank to intervene while minimizing its exposure to political hostility in either country. In London, the Commonwealth Relations Office felt that the idea of a body such as the World Bank making a functional proposal was different to and more promising than political proposals for cooperation (CRO 1951b).

International opinion of Lilienthal's plan meant nothing, of course, without a positive reception from the Governments of India and Pakistan. Back in Washington, DC and New York, Lilienthal worked to persuade the Bank to take the lead in contacting the South Asian governments. All the while, he reiterated the importance of treating the Indus Basin as a single unit, and developing it as such (Lilienthal 1966, p.233). Eugene Black of the World Bank quickly put Lilienthal's proposal to the test by writing to Jawaharlal Nehru and Liaqat Ali Khan, respectively the Prime Ministers of India and Pakistan. Black told them that the Bank would tender its good offices in canal water negotiations on the basis that both governments accept three basic principles of Lilienthal's proposal. Firstly, that the water resources of the Indus Basin would be sufficient for both countries' needs if properly developed and used. Secondly, that the water resources should be developed cooperatively to promote the economic development of the Indus basin as a whole. Thirdly, that the problem should be addressed on a functional and not political plane, without relation to past negotiations and claims, and independent of political issues (CRO 1951a).

The Prime Ministers' responses were broadly favourable. Liaqat and Nehru both replied that they would be happy to use the Bank's help in coming to an agreement about the canal waters. Both, moreover, reinforced Lilienthal's wish to separate out the canal waters dispute from other India-Pakistan problems and treat it as an engineering problem, "even though," as

Nehru wrote, “in existing circumstances, it may be a little difficult to divorce it completely from political issues” (CRO 1951c). Yet Nehru himself had previously called for matters such as the canal waters dispute to be settled on a technical basis (CRO 1949f). A.N. Khosla, a senior Indian engineer, lived up to Lilienthal’s expectations of engineers when he claimed the credit for convincing Nehru of the value of treating the basin as a unit (Lilienthal 1966, p.235).

Both countries had sound political reasons for wanting to negotiate. Pakistan, as the downstream water-user, necessarily depended on India allowing water to flow into Pakistan. While Pakistani politicians and military planners declared that they would rather undertake a suicidal war that submit to the slow strangulation of their water supplies by India, negotiation was a more realistic option (CRO 1949e). India, meanwhile, was pushing itself forward as an international force for peace, condemning what it perceived as both American and Soviet aggression (see Guha 2007, pp.153-158). Nehru and Liaqat’s approval of Lilienthal’s principles, then, was rooted in the political contexts of their countries. The power of his proposal was offering a way for both Prime Ministers to reduce the possibility of a war that neither wanted by deploying a “neutral” discourse of technical development. Moreover the Bank’s involvement presaged a new potential source of development aid (Michel 1967, p.224). The political leaderships of both countries were prepared to countenance a more flexible alignment between space and sovereign authority in order to tackle the Indus problem. They accepted the possibility of pooling their engineering experts in order to approach developing the basin on the “natural”, trans-border scale that Lilienthal advocated. In doing so, they suggested an openness to what McConnell terms “modalities of sovereignty” (McConnell 2009, p.344). Rather than absolute territorialisation, some flexibility in sovereignty was at least conceivable.

But the idea of cooperative development fell out of favour by 1954, for several reasons.



The World Bank left ambiguities in its approach, which widened the scope for disagreement. Rather than Lilienthal's stipulation that negotiations should start by assuming that a new plan would preserve Pakistan's existing water uses, the terms that Black set out to Nehru and Liaquat stated that Indus waters were "sufficient for present and future needs". This was much vaguer, and disagreements over how much water Pakistan could claim for existing canal systems bogged down subsequent trilateral discussions (Michel 1967, pp.225-227; Alam 1998, pp.147-8). Day-to-day, the canal waters dispute continued to sour India-Pakistan relations. India pressed on with the development of a headworks on the Sutlej at Harike to feed new canals, while Pakistan accused India several times of withholding water (Gulhati 1973, pp.113-115). Public pronouncements from Indian and Pakistani political leaders demonstrated that, while technical men might be drawing up the plans, politicians remained involved in setting the terms of public debate on the canal waters dispute (Foreign Office 1952; CRO 1953a; CRO 1953b). Ironically, Lilienthal's effort to simplify the Indus waters debate by defining the Indus Basin as the object of development was undermined when the Indian and Pakistani representatives at a May 1952 meeting in Washington, DC disagreed over the actual boundaries of the basin (Gulhati 1973, p.107).

Most importantly, neither the Indian nor Pakistani planning teams actually bought into the fundamental principle that Lilienthal required as the first step towards resolving the dispute, namely cooperative development. Working separately, rather than jointly, to each produce a development plan, the two teams came up with independent and mutually exclusive schemes for developing the whole basin (State Department 1952). Hostility between India and Pakistan was such that neither side saw genuinely integrated development as possible or even desirable (Michel 1967, pp.223-224). After encouraging signs that the Pakistani leadership was "soft-

pedalling” the canal waters issue in mid-1953, the delegations presented their plans to each other and the Bank in October (State Department 1953).

Gulhati, a member of the Indian team, has since claimed that India’s plan represented “the first basin-wide plan ever prepared for the Indus system of rivers [...] [which] ignored the new political boundary between India and Pakistan”, while the Pakistan plan ignored India’s development needs (Gulhati 1973, p.122). Authors with more distance from proceedings, however, have noted the degree of national self-interest that each plan represented. Michel’s analysis supports Gulhati’s claim that the Indian plan envisaged new irrigation development in both countries, but notes that India’s plan envisaged Pakistan as legitimately able to claim water only from the rivers that actually ran through Pakistani territory, and as a proportion of all water in all six rivers (Michel 1967, pp.230-231). Pakistan’s plan focused on preserving its existing uses from the Sutlej, while India hoped to divert Sutlej water for its own uses, expecting Pakistan to replace its lost supplies with water from rivers further to the north and west (Alam 1998, pp.172-4). Engineers too, contrary to Lilienthal’s aspirations, proved somewhat nationalist in their approach to the water dispute. Unsurprisingly, neither side accepted the other’s plan, and the Bank presented its own plan in 1954. It was this Bank plan that introduced the key principle of the eventual Indus Waters Treaty, namely a division of the basin that allocated the western rivers to Pakistan and the eastern rivers to India (see Alam 1998, p.177).

The three years between the publication of Lilienthal’s article and the Bank’s production of its own plan, then, saw the demise of his vision of cooperative development across the whole basin. While the basic principle of engineer-led discussions proved workable, neither Lilienthal’s intellectual effort to put engineering before politics nor to characterise the Indus Basin as an objectively “natural” space in which engineers could operate stood the test of application. The

Treaty as it stands splits the rivers between India and Pakistan, re-inscribing the political partition of the subcontinent on the Basin's irrigation system (Mustafa 2010, p.8). In the words of a major near-contemporary study, the Treaty and accompanying financial arrangements "confirm the economic division between Pakistan and India, and the rupture of the infrastructure of communications, transportation, trade, and finance" (Michel 1967, p.10). While the Permanent Indus Commission, a joint India-Pakistan body which was set up to ensure both states' compliance with the Treaty, has historically provided a resilient route to conflict resolution, the provisions for cooperation are weak (Zawahri 2009; Miner, Patankar, Gamkhar and Eaton 2009). As Lowi has observed in a comparative context, the Indus treaty was "the antithesis of integrated development and the institutionalist approach" (Lowi 1993, p.66). Lilienthal had provided a model of cooperative development in a depoliticised basin that influenced policymakers in India, Pakistan, and the World Bank. That these actors rejected large parts of his plan demonstrated the power of the same political considerations that Lilienthal had hoped to transcend. Moreover the failure of a genuinely cooperative proposal for sharing the Indus waters, an alternative to the bifurcated model of development that the Treaty eventually followed, suggests the rather limited scope of cooperation that the current Treaty actually represents.

## **Conclusion**

Despite the failure of cooperation, we should not underestimate Lilienthal's contribution. After signing the Indus Waters Treaty in 1960 Field Marshall Ayub Khan, the President of Pakistan, sent a telegram to Lilienthal that read "You have cause for legitimate pride in fulfilment of your cherished desire for harmony and understanding between the two neighbors [*sic*]" (cited in Neuse 1996, p.260). Shortly afterwards Eugene Black, the President of the World

Bank, credited Lilienthal with causing the Bank to mediate (Brookings Institution 1961, p.47). He did more than simply instigate the negotiating process, however. He shaped the discursive construction of the Indus Basin as a “natural” object of cooperative development. For all that subsequent negotiations jettisoned the principle of cooperation, the basin scale of development remained. Lilienthal successfully widened the scope of the Indus waters problem from the Sutlej to the whole basin – or at least the parts of it that India and Pakistan brought into discussion. He also shifted the terms of the debate from an overtly political arena to one in which the invocation of technical expertise and “apolitical” international development simplified the problem to a level at which India and Pakistan could ultimately reach agreement. With a much greater total volume of water available, which neither side had yet begun to make use of in irrigation projects, India and Pakistan might be (and, in fact, eventually were) able to each increase their overall water consumption. Lilienthal attempted to widen what Cowell has described as “the ecological and political decision space [...] in which trade-offs [could] be made”, and broadly succeeded (Cowell 2003, p.345).

Lilienthal framed his plan for cooperation in the context of an apparently material argument that the river basin was the natural object of development. In fact, at this stage of history he was engaged in a representational exercise that *claimed* to identify a geographical structure in the real world, namely the Indus Basin. At the same time, he claimed to identify a transnational scale of politics that could facilitate India-Pakistan cooperative action. Lilienthal’s article drew on established ideas about river-basins as “natural” units and selectively applied that idea to the Indus waters dispute. Lilienthal’s article could not itself alter biophysical processes, although his proposal for river-development implied large changes in the basin’s hydrology and agricultural geography. What it meant was defining the territorial arena in which politics and

institutions would interact. Treating the Indus Basin as a single unit was a pragmatic proposal that followed from the principle of strengthening the overall authority of the governments that shared it. To a large degree, it worked. The Indus Waters Treaty was not based on joint development, but it did purport to encompass development across the binational basin.

Perhaps his lasting legacy was the prominence of engineers in negotiating the Treaty, and their deployment of “factual” engineering knowledge about the natural environment. Apart from the boost that his optimistic enthusiasm might have given to engineers’ egos, the decision of India, Pakistan and the World Bank to follow his suggestion and bring technical men to the fore helped to fortify the position of an already well-entrenched group of professionals. Taking on and reiterating contemporary ideas about human ability to manipulate nature, Lilienthal helped to convince the governments of India and Pakistan to allow their senior irrigation engineers to extend their authority beyond the bounds of the domestic state, and into the international arena. At the same time he further naturalised both the supposedly objective value of their expertise and the interconnected river system on which they were to act. By this means he took part in what Kaiser and Nikofova have described as “the historical production of scaled knowledge, [...] [which reveals] how scales have come to be seen as real things in the world that are ‘like this and not that’” (Kaiser and Nikofova 2008, p.538). The cooperative mode of development that he proposed failed. But the Treaty did preserve the geographical arena in which he thought development planning should take place, and the primary actors that he wanted to undertake it.

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