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Precarious foundations: irrigation, environment, and social change in the Canadian Pacific Railway's Eastern Section, 1900–1930

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Abstract

This paper analyzes the introduction and development of irrigation agriculture in the lower Bow River region, Alberta, Canada. Sponsored by the Canadian Pacific Railroad (CPR) and the Canadian federal government, irrigation promised to transform semi-arid prairie into a densely settled countryside. After 1900, a mixture of policies and practices pioneered elsewhere were deployed to create the largest irrigation project of its kind in North America. Settlers faced difficult economic conditions, however, and fell into conflict with the CPR. The system as a whole experienced a range of environmental changes as irrigation water altered the land and produced new conditions for flora and fauna. By 1930, the irrigation project experienced high levels of settler abandonment and deep fiscal problems. The circumstances of the Bow River case suggest the particular qualities of social and environmental changes initiated by irrigation agriculture in the Canadian prairies, but they also provide the basis to consider comparatively the processes and difficulties attending irrigation expansion in the late nineteenth and early twentieth century world.

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Irrigation was one of the great tools of human resettlement in the late nineteenth and early twentieth century world. Around the globe from South Asia to Australia to the US Southwest, lands that had once been judged to be desert or marginal were rapidly transformed by irrigation systems.¹ New engineering techniques extended ancient systems and transcended them. Barrage dams facilitated river diversions in British India; high reinforced concrete dams allowed for

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massive storage and diversion projects in the US west. In a host of locations, states and developers crafted irrigation settlement policies to colonize vast tracts of land.²

A considerable body of scholarship analyzes the North American dimensions of this global phase of irrigation expansion. Scholars have sought to understand the social and political aspects of irrigation by examining the role of the state in irrigation development, the social effects of differential water access and control, and the rural societies and environments which irrigation, in part, produced.³ Although a number of scholars have addressed the environmental history of irrigation, much of this work focuses on a broad policy domain or regional scale that rarely considers environmental change in particular places.⁴ Perhaps the most important exception to this generalization is Mark Fiege's *Irrigated Eden*, a study that follows the flow of water through ditches and into fields in southern Idaho's Snake River valley to discover the range of environmental outcomes of irrigation agriculture in one setting.⁵ Fiege conceptualizes the intermingling of human design and environmental processes as a 'hybrid landscape' and pays particular attention to the capacity of environmental changes to disrupt human property relationships and to precipitate cooperative forms of environmental management. At its broadest level, Fiege's work invites us to reflect upon the idea and rhetoric of territorial conquest alongside the disorderly and dialectical processes of human–environment interaction. In part, this paper seeks to work with these insights, explore them in a different locality and situate them in an international context.

The North American historiography of irrigation expansion deals mainly with the US west. This is justifiable and understandable not only because of the importance of the subject in the American context, but also because of the influence of American advances in irrigation at a global scale.⁶ The case of irrigation development in the Canadian prairie west, however, produces some interesting points of comparison.⁷ Prairie projects occurred in a semi-arid climate regime, different from the arid circumstances of the core region of irrigation development in the US Southwest. Canadian projects also operated within a shorter growing season and developed upon the basis of mixed farming systems which contrasted the more specialized and market-oriented operations of California, but bore similarities with projects in northern states like Idaho or Montana. As a relatively late irrigation developer, Canada imported and refashioned irrigation technologies and techniques from the US and elsewhere. Whereas in the US an uneven patchwork of local traditions, differing state policies and contested applications of federal power shaped irrigation development, in the Canadian prairie west a uniform body of law and regulation prevailed.⁸ Before individuals or interests had claimed water rights under common law, the federal government cancelled riparian rights and established authority. This development regime operated in a highly centralized fashion under a single agency of government bent on attracting and assisting large development concerns. Whereas in the US, the federal government through the reclamation service, played a significant role as an irrigation developer, in Canada the federal government did not invest directly in irrigation; rather, railway and land companies became the major developers. The new systems of irrigation initiated environmental transformations in the Canadian prairies similar to those analyzed by Fiege, but with more conflictual results. A Canadian counterpoint provides a more complex understanding of the North American scene and reminds us of the highly variable local effects of irrigation at a continental and indeed global scale.

The semi-arid sections of the southern Canadian prairies were one of the several world regions encompassed by irrigation beginning in the late nineteenth century. Ignored and avoided in an

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