

# Reflections on the history of aquatic science in South Africa with particular reference to the period after 1994

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## ABSTRACT

In this article we reflect on how freshwater research has evolved in South Africa from its beginnings in the early 20<sup>th</sup> century and how it has altered over time to align with the post-1994 socio-political environment. We situate aquatic science within a research question to explore why aquatic science has developed in the manner it has done, providing some of the broader environment of political change, access to funding, the relevance of particular research themes at different times, and the research agenda of some prominent individual scientists. We do not, therefore, intend merely to itemise what has been achieved over the years. Our intention is to develop an historical context that may help frame research in ways that bridge the cultural divides that persist between the humanities and the sciences. Moreover, although water is crucial to life and livelihoods in a country of scarce water resources, the fields of aquatic study are not generally familiar to the South African public and do not have the high profile they merit. In order to chart important current developments in freshwater research, this article highlights significant aspects of this scientific arena during the earlier part of the 20<sup>th</sup> century that are pertinent to explaining how and why the current situation, by way of research fields, policy and legislation came into being. The history has been necessitated by, and driven by, regional socio-economic and geopolitical factors as well as developments in the relevant scientific disciplines. After examining how this state of affairs came to be, an overview of the present state of the field is provided.

**Keywords:** research milieu; key developments; drivers of change; institutional change; policy

## INTRODUCTION

In South African research circles the call for multi-disciplinary research collaboration is frequently heard. More often than not, the envisaged 'multi-' of the disciplines are closely related ones. For example, a zoologist might work on an aquatic research project with a botanist. Indeed, in this paper we provide examples of the beneficial outcomes of this kind of partnership. Less common, however, is cooperation between what CP Snow famously referred to as 'the two cultures' – the humanities on the one hand and the sciences on the other (Snow, 1959). This division still exists. Historical analysis of science will be found in historical journals, scientific research in science journals. Each has avid readers, but straddling the two generally tends to offend either one constituency or the other as it seeks the reassuring markers of its *modus operandi*. Scholarly or academic history, viz. the discipline of history, is not a mere compilation of facts and dates, a miscellaneous collection of anecdotes or reminiscences, although this sometimes – at least to historians – appears to be the way that scientists regard the discipline, and even how the word 'history' is often utilised in scientific work. By contrast, scientists are impatient with levels of historical context and lengthy analytical narrative and do not always require the depth of understanding that history provides in order to pursue their craft or add value to it. Nonetheless, the urgency of many issues of our time – the Age of the

Anthropocene, as termed by Nobel prize-winning chemist Paul Crutzen (Crutzen and Stoermer, 2000) – demands that all research arenas come to terms with what is possibly the greatest paradigm shift ever to have occurred – our realisation that humanity is a dominant force shaping the planet. Viewed from this perspective, the need to integrate science and humanity in matters such as global change foregrounds the importance of the humanities and demands that real multi-disciplinary work be conducted. This paper is a modest attempt to bridge Snow's divide. In it, we wish to indicate, but also to explain and provide understanding of, the manner in which changes in the political and technological arenas, institutional, funding and legislative arrangements as well as research agendas pursued by people with individual talents and interests, has impacted upon aquatic scientific research in South Africa in past decades and that resonate into the future.

Over the past 100 years South Africa has experienced a number of political changes that each required a new relationship between society and scientific research. The tectonic shift in South African politics after 1994 brought about a re-evaluation of both the political idea of the nation and its future socio-economic priorities. However, no polity can act entirely independently and changes in South African freshwater research and policy have been impacted upon by international developments relating to sustainability, ecosystem services, complexity theory, multi-, inter- and trans-disciplinarity and an overarching research agenda around adaptive resource management. While internal factors are primarily driven by a national agenda, many external factors are not peculiar to South Africa. The year 1994 was not, however, the only political shift in South

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