

**Institutionalisation of an Environmental Regime: Managing Vessel Greywater in South
Australian Waterways**

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Summary:

The research outlined in this paper examines the establishment of an environmental management regime to sustain water quality by controlling the discharge of ‘greywater’ from vessels using South Australia’s rivers and inland waters. Acknowledging the institutional nature of environmental regimes, we draw on the concept of institutional work to analyse the efforts of the South Australian environmental regulator and other stakeholders to create and maintain the mechanisms intended to alter the behaviour of users of the waterways and ensure their compliance. Through a detailed inductive data analysis of a large corpus of documentary evidence, combined with abductive reasoning in comparing our empirical observations with types of institutional work identified in the literature, we propose a provisional model of how an environmental management regime is institutionalised through four dynamic processes of institutional work: initiating, developing, implementing and stabilising.

Keywords: case study, environmental management, greywater, institutional work

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“The challenge of providing effective and equitable water governance is [made more severe] in the Anthropocene with its material and institutional complexity, multiple responsibility and enhanced urgency to act” (Prokopf, 2016, p. 145)

Introduction

Institutions matter in addressing environmental challenges through their central role in environmental governance systems (Beunen & Patterson, 2019; Patterson & Beunen, 2019). An institution can be defined as “a cluster of rights, rules, and decision-making procedures that gives rise to a social practice, assigns roles to participants in the practice, and guides interactions among occupants of these roles” (Young et al., 2008, p. xxii). Environmental regimes are a particular type of institution created to manage a specific issue relating to human-environment interactions by guiding and governing human activities (Young, 2008). They represent important efforts to devise responses to specific environmental problems and achieve effective environmental sustainability outcomes (Young, 2003). An environmental regime can be defined as a system for managing the environment that includes both environmental regulations and the institutions through which they are administered (Park & Allaby, 2017). Environmental regimes comprise “the formal and informal rules, norms, principles, institutional architectures, technologies and networks that emerge and evolve to govern multi-scalar environmental and sustainability challenges” (Environmental Policy Group, n.d.).

The sustainability of water because of water scarcity and deteriorating water quality in many parts of the world have directed governmental and regulatory attention to wastewater as a pressing environmental problem (United Nations, 2018). In this paper, we focus on the environmental management of ‘greywater’ – wastewater from household baths, showers, hand basins, washing machines, sinks or other kitchen appliances. Our case study examines the efforts of a South Australian regulator, the Environment Protection Authority (EPA), to manage the greywater produced by vessels using South Australia’s rivers and lakes.

The EPA administers South Australia’s Environment Protection Act 1993. One of the significant challenges facing the EPA is managing the environmental and human health risks and impacts associated with the Murray River (Environment Protection Authority, 2012). The river is the major source of domestic water supply and plays a key part in the South Australia’s tourism and recreation economy. However, water quality in the river has significantly declined due to high levels of water extraction, extended drought conditions, and pollution from a range of sources (Department of Water, Land and Biodiversity Conservation, 2009; Environment Protection Authority, 2003). The discharge of untreated greywater from vessels using the river is a major source of pollution (Eriksson et al., 2002) given the number of houseboats using it, many with washing machines, dishwashers, ensuite bathrooms and spa baths. Over 2,000 vessels could discharge up to 500 million litres of untreated greywater into the river annually (Environment Protection Authority, 2009), with potential effects on aquatic ecosystem health, raw water supply and recreational use of waterways (Environment Protection Authority, 2007).

To address this issue the EPA has sought to develop a new environmental regime to manage the greywater produced by vessels on South Australia’s inland waters. The key objective of

this environmental regime is to enable the EPA to monitor compliance with environment protection legislation sustaining water quality in inland waters across South Australia. The regime is composed of many social components including practices, norms, regulatory instruments, policies and guidelines around vessel greywater discharge and management. In addition to the involvement of the EPA and other human actors, a range of material or technical components is integral to enacting environmental management in practice (Jensen, 2015). These include information systems, digital artifacts, data bases, standards and technical devices such as greywater treatment systems. Of course, the river itself and the greywater forming the source of the problem are also materially implicated in the vessel greywater management.

To understand how the new environmental regime emerged over time through the efforts of multiple actors with potentially competing interests or expectations and differing perspectives on the problem and possible solutions, we utilise the concept of institutional work. A focus on institutional work enables us to study how the process of institutional change occurs, “which remains one of the most pertinent but challenging topics for improving environmental governance in a complex and rapidly changing world” (Beunen & Patterson, 2019, p. 25).

Theoretical background

The concept of institutional work proceeds from the position that institutions are the product of human action. It seeks to focus attention away from the macro-level effects of institutions towards the micro-level roles that human actors play in institutionalisation and institutional change (Gawer & Phillips, 2013). Institutional work “describes the practices of individual and collective actors aimed at creating, maintaining, and disrupting institutions” (Lawrence et al., 2011, p. 52). Taking a practice perspective on institutions emphasises “the creative and knowledgeable work of actors which may or may not achieve its desired ends and which interacts with existing social and technological structures in unintended and unexpected ways” (Lawrence & Suddaby, 2006, p. 219).

In this paper we focus on institutional work directed towards creating and maintaining institutions. In relation to the former, Lawrence & Suddaby (2006) identify political work that involves advocating for new rules, defining rule systems, and vesting rights and roles in those systems; normative work focused on constructing identities, associations and networks; and cognitive work to theorise concepts and beliefs that can support new institutions, to articulate and legitimate new practices and structures, and to educate actors in how to engage in these practices and interact with the new structures. In contrast, maintaining institutions involves institutional work directed at supporting the mechanisms that ensure compliance with an institution, especially as change occurs. In this regard, Lawrence & Suddaby (2006) identify enabling, policing and deterring work to ensure adherence with rule systems; and valorising, mythologising, and embedding work to routinise the reproduction of the norms and beliefs underpinning a rule system.

Various authors have built upon this initial theoretical framework to identify multiple forms of institutional work, each comprising different activities. For example, in an exploration of how management fashions become institutionalised, Perkmann & Spicer (2008) refer to institutional work focused on the normative structure of institutions as cultural work, and institutional work focused on the cognitive aspects of institutions as technical work. They include standardising as another activity involved in this latter kind of institutional work. In

reflecting on a decade of research on institutional work, Hampel et al. (2017) suggest that Lawrence & Suddaby (2006) focused on intended outcomes to categorise types of institutional work. The authors offer an alternative perspective based on how institutional objectives are achieved. They classify institutional work in terms of symbolic work to influence institutions, material work that makes use of the physical aspects of the institutional environment, and relational work that is focused on how interactions between actors influence institutions. In a study of the emergence of science-based clusters, Ritvala & Kleymann (2012) propose a framework that delineates four broad forms institutional work: ideational, material, bridging, and authentic leadership work.

Given the growing significance of institutional work in recent research on institutional theory, its application to understanding and explaining processes of institutional change and stability in environmental management seems an avenue worth exploring (Patterson & Beunen, 2019). The study outlined in this paper therefore aims to contribute to our understanding of this phenomenon by answering the following research question:

What kinds of institutional work do organisations perform as they attempt to establish a new environmental management regime?

Research methods

To answer our research question, we conducted a qualitative investigation of a single case study, the South Australian EPA's development of vessel greywater management. To enable us to understand and analyse the trajectory involved in the establishment of the greywater management environmental regime we assembled a large corpus of over 200 texts related to our case study. These included: print and online publications and press releases of the EPA; newsletters, reports and white papers from other stakeholder organisations in both government and the boating industry; and media coverage, including newspaper and magazine articles, and television and radio interviews. The collected texts were carefully read to assess their relevance and then assembled in chronological order. This allowed us to map out the sequence of events and juxtapose accounts associated with each event from different sources. In turn, this enabled us to construct a detailed database of relevant data excerpts organised around the timeline of the events surrounding the emergence of the environmental regime. We then examined each text to establish the actors involved, their interests and concerns, the arguments that they articulated in relation to the greywater management issue, and the actions they took. Based on our critical reading of the texts, we constructed a detailed narrative that formed the basis for our data analysis and served as a reference with which to make sense of individual texts.

We engaged in a systematic data analysis, looking for evidence of what might constitute institutional work performed by different actors and using open coding to identify relevant concepts in the data and group them together into initial categories (Gawer & Philips, 2013). Examples of how we interpreted our data in this stage of the analysis are presented in Table 1. As our analysis progressed, we looked for similarities and differences between these categories (Gioia et al., 2012) and engaged in an abductive thinking process (Timmermans & Tavory, 2022) by comparing our categories against the already identified categories of institutional work reported in the literature (Gawer & Philips, 2013). This produced a set of first order concepts and second order themes. The next step in our analysis involved considering whether it was possible to organise the themes into higher level 'aggregate

dimensions' (Gioia et al., 2012) that helped us make sense of the institutional work that occurred in the establishment of the greywater management environmental regime.

Table 1: Initial coding examples

Examples from our data	Open coding
"We're currently developing an agreement with the Department of Transport's Commercial Marine Division that will see the new greywater requirements incorporated into their regular survey and inspection process." (<i>EPA media release</i>)	• Collaborative relationship to support vessel audit
"EPA Officers joined representatives from the Boating Industry Association of SA (BIASA) ... on a 10 day survey of the River Murray ... The EPA also quantified the location and numbers of inland vessels, and recorded the registration details of all vessels that were not previously on the EPA's vessel management database." (<i>Industry magazine</i>)	• Engagement with boating industry • Vessel audit in action • Use of vessel management system
"He says the EPA had given people a longer grace period because of the low river levels. 'We've got to the point where we no longer think that's the right approach and we're going to start being more forceful in our enforcement of the regulations,' he said." (<i>Regional news item</i>)	• Delay to enforcement of greywater requirements • Intention to change approach to enforcing compliance

Preliminary findings

Our initial analysis of the case study data identified a wide range of first order concepts that represented micro-level activities observed in the data that we believed reflected institutional work in some form on the part of the EPA and other actors. Through the abductive process described above we were able to organise these into second order themes that drew on already established categories of institutional work reported in the literature on new institutional theory. In considering the relationships between themes and their related concepts to develop aggregate dimensions, we were influenced by the emergent temporal progression of the trajectory of the environmental regime development.

It made sense to organise the themes into a model of the processes involved in the institutionalisation of the environmental regime. We identified four distinct dimensions of institutional work that were central to the process of institutionalising an environmental regime: (1) work to *initiate* the change in environmental management; (2) work to *develop* the conceptual apparatus underpinning the new regime; (3) work to *implement* the arrangements comprising the ways in which the environmental issue, in this case vessel greywater discharge, was to be managed; and (4) work to *stabilise* the assemblage of regulations, procedures, activities and interactions that collectively comprise the new environmental regime. Table 2 summarises the resulting interpretive template representing our model of greywater management institutionalisation.

Table 2: Interpretive template for greywater management institutionalisation

First order concepts micro-level activities observed in the data	Second order themes categories of institutional work	Aggregate dimensions processes that constitute institutionalisation of an environmental regime
- Identifying the problem and its cause - Using sustainability to establish importance - Articulating a proposed solution	Framing	Initiating work
- Lobbying for change - Creating a legislative space for change	Advocating	
- Providing scientific foundation for decisions - Site visits and benchmark data collection - Greywater and river risk reports	Theorising	Developing work
- Identifying stakeholder database - Assembling an external advisory group - Public consultation on draft code of practice	Convening	
- Technical rules regarding treatment - Inclusion thresholds for affected parties - Roadmap for phased implementation	Defining	
- Stimulating complementary innovations - Funding houseboat trial - Testing alternative systems - Collaborating to develop a standard	Mobilising resources	Implementing work
- Clarifying new roles and behaviours - Providing adopters with the knowledge - Organizing coordinating events	Educating	
- Negotiating compliance with industry - Sensing and acknowledging tensions - Drawing lessons from external feedback	Negotiating	
- Producing artefacts to reinforce new practice - Valorising desired behaviours	Normalising	Stabilising work
- Inspection trial and expansion - Agreement with fellow agency - Development of vessel management system - Upgrade waste disposal infrastructure	Enabling	
- Auditing and monitoring user behaviour - Rule enforcement	Monitoring	

Development of the paper

The next step in developing the paper is to conduct a finer-grained analysis of our data to add further dimensionality to our concepts, themes and dimensions. We seek to examine the multiple kinds of institutional work performed within the same context of environmental regime institutionalisation and their different effects on this process. This involves focusing

on the mundane, day-to-day practices in which actors in the field engage in shaping institutional outcomes and the intended and unintended consequences of those practices (Lawrence et al., 2013). We also wish to reveal and understand the role that materiality and material artifacts play in institutional work – an increasingly significant issue in institutional analysis (Hampel et al., 2017; Jones et al., 2017; Lawrence et al., 2013; Monteiro & Nicolini, 2015). While our findings are drawn from a single case study of a South Australian environmental regulator, they contribute to a broader understanding of the role of institutions in environmental management practices.

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