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Water planning: From what Time Perspective?

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ABSTRACT

Integrative planning for water technology and infrastructure depends on various social, behavioral and environmental factors. Since water is a common-pool resource, water planning commonly involves addressing the views of diverse groups of people on multiple levels. Inter-group differences, especially if they go unrecognized, can be problematic for planning processes. Research into the Time Perspectives of people fulfilling different roles in the water sector worldwide revealed fascinating differences in how people perceive the Foreseeable Future. The aim was to characterize the heterogeneity so that it might be explicitly accounted for in planning. One-on-one interviews were held with 309 managers, practical workers, and scientists in the Netherlands, Ghana, Brazil, and Japan. Each interviewee's Time Perspective was characterized using a multi-measure method. The most noteworthy conclusions concern differences in the temporal extent of the goals and events that motivate people. Scientists are motivated by objects that lie furthest into the future followed by managers and then practical workers (Group medians: 8.4, 3.5, 1.7 yrs). Across national cultures, the time horizons of the Japanese and Brazilian interviewees are longest. These conclusions are important because the time horizons considered in planning influence what problems are perceived, what questions are asked, and what solutions are sought.

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1. Introduction

1.1. Why characterize heterogeneity in Time Perspectives?

In the water sector, integrative planning evolved in response to the perception that fragmented, technocratic practices were preventing sustainable development [1]. This paradigm shift echoed developments in environmental planning and planning theories in general from the early 1970s onwards [2,3]. In theory, integration involves harmonizing the plans of different organizations and sectors on multiple levels, recognizing physical interdependencies (e.g. water–land, quality–quantity) across administrative borders, and heeding the social, economic,

and ecological interests of present and future generations. Understandably, some experts argue that complete integration across all of these divisions and scales is impractical (e.g. [4]). On the other hand, the problem of fragmentation remains. International leaders have observed that “water security is the gossamer that links together the web of food, energy, climate, economic growth, and human security challenges that the world faces over the next two decades” [5]. Since fresh water is a common-pool resource that connects so many important concerns, it is likely that planners in the water sector will continue to encounter diverse individual and collective interests.

For a mixture of historical, ideological, and practical reasons, it is currently considered proper that the perspectives of public and private stakeholders be included in planning via some form of participation [6,7]. It is generally assumed that the engagement of stakeholders generates more legitimacy, mandate, and support for a plan and that the collective framing of issues is the first step toward designing suitable responses [8–10]. But participatory approaches have proven to be particularly

Abbreviations: NC, National Culture; PR, Professional Role; MO, Motivational Object; CT, Circles Test

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problematic in practice [11,12]. Part of the failure of inclusive practices in integrative planning derives from how ambiguity is handled [13]. Problems can be framed, and solutions sought, from various conflicting but equally valid viewpoints [14]. In response, theorists suggest that collective learning be facilitated prior to decision making processes to make use of the diversity in perspectives and knowledge [15–18]. Heterogeneity in viewpoints can, however, hamper planning processes; particularly if fundamental differences go unrecognized [19–21]. In this paper we explore the idea that one of the most fundamental sources of heterogeneity in perception and behavior, which is seldom addressed explicitly, may be Time Perspective.

If planning is taken to mean “the design of a desired future and of effective ways of bringing it about” [22], then it follows logically that planners implicitly work with basic concepts such as ‘the future’ and ‘time’. There has been criticism of this broad definition (e.g. [2]), but it suffices here to support the premise that conception of time is necessary for planners. And research has found that time is experienced and conceptualized in fundamentally different ways across individuals and across societies [23–26]. Each individual has a Time Perspective consisting of multiple dimensions that are formed by various factors [27]. What makes this important is that the Time Perspectives of planners influence the way they frame problems and conceive solutions: “not only the present state of affairs, but also future and past events in the frame of a subject's Time Perspective co-determine behavior” [28]. Individuals form groups that have collective views on time, known as Time Frames. The Time Frame of a group can be characterized by the Time Perspectives of the individuals it comprises [25], but it can also be seen as a cultural characteristic with its own emerging properties [26,29]. We focused on the individual, being the most clearly autonomous entity, and investigated similarities and differences in the Time Perspectives of people fulfilling different roles in the water sector in different national contexts. The aim was to characterize the heterogeneity so that it might be explicitly accounted for in integrative planning.

1.2. *The Foreseeable Future as a function of National Culture and Professional Role*

Variance in Time Perspectives across cultures may be one of the most fundamental sources of heterogeneity in viewpoints of people working within the water sector worldwide as regards planning. Natural hydrogeological resources commonly extend across administrative and national borders. This means that people from different cultures have shared interests in a common resource [30]. As a result, high level policies and laws, such as the EU Water Framework Directive, focus on the scale of river basins and stipulate international cooperation [31]. Response strategies for the main long-term challenges facing the water sector at the moment, such as Climate Change, also require international cooperation [20]. Various studies have compared Time Perspectives across countries and revealed significant differences [26,29,32]. Although we define culture as a shared quality that is intrinsic to the ‘self’ rather than being a framework or setting, and recognize regional cultural differences and dynamics [33,34], national borders were accepted as rough divisions between cultures as have previous studies (e.g. [30]).

In addition to culture, variance in Time Perspectives across Professional Roles is likely to be one of the most basic sources of the heterogeneity in the viewpoints that planners are confronted with in the water sector [35–37]. People with different personality characteristics and competencies are attracted to different roles. And to attain these different positions they also follow different education and career pathways. While working in a certain role, by a process of ‘identity negotiation’, individuals also establish mutual expectations of one another to form groups [38,39]. So people fulfilling different roles in the water sector are likely to have quite different viewpoints. One of the main challenges facing planners is to translate long-term, abstract visions and policies into strategies and concrete actions. This translation depends on cooperation across roles; between people who work with abstract concepts and theories and people who perform practical tasks. Research has found this to be a problematic process [40–43] and this is also the experience of the authors.

The independent variables were thus defined as National Culture (NC) and Professional Role (PR). Based on earlier research [26,29], four countries were chosen to represent the variance between NCs: the Netherlands, Ghana, Japan, and Brazil. Since public and private water sectors are likely to differ considerably, to assess the influence of the independent variables with a sample of just four countries it was necessary to control this variable. Only organizations from public sectors were included in the present study but future research may include this variable to, for example, assess possible implications of privatization. As regards Professional Roles, three sample groups were defined to represent the level of abstraction from theory to practice:

- Scientist a specialist in one of the physical or natural sciences related to water management.
- Manager someone who controls resources, expenditures, and the direction of (part of) an institution, which in turn directly influences water resources.
- Practical worker someone who physically intervenes in the management of water resources, generating material outcomes with their individual actions.

These roles were chosen for practical reasons; considering the structures of the water sectors in the countries of interest. We considered including policy makers but the 3 groups that were selected are assumed to represent variation across different PRs sufficiently and organizing interviews with additional groups was likely to be impractical.

Two main research questions were posed to direct the analysis:

- *What are the similarities and differences in the Time Perspectives of people with different Professional Roles within a given National Culture?*
- *What are the similarities and differences between National Cultures in the Time Perspectives of people with comparable Professional Roles?*

Various methods exist for characterizing how people conceptualize and deal with time. [44] claim that no two individual's attitudes toward time are identical. Previous empirical research also showed that there is limited overlap between the various markers of Time Perspective and that the

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