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The Role of Values

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Abstract. Decision-making processes involving multiple stakeholders can be rather cumbersome, turbulent and lengthy. The stance of some stakeholders, upholding their individual interests, can slowdown or even block such processes. Recent research suggests that a focus on the values of the stakeholders could benefit those decision-making processes. However, the role of the values is not yet fully understood. To investigate the interaction between values, norms, and resulting actions in decision-making processes, we introduce a conceptual model to explore the relations between these concepts. The conceptual model presented in this paper is a first step towards a framework to model decision-making processes with the aim of understanding the role that values play in decision-making processes.

1 Introduction

Decision-making processes with multiple stakeholders can be complex, depending on stakeholders' behaviour [16,18]. For example, in the Netherlands, the decision about flooding the Hedwig polder has been a heated debate among the stakeholders. The decision to flood the polder of 299 hectare located in South-Western Netherlands, was taken already in 1977 to compensate for earlier lost ecological landscape. This decision has been both contested and supported ever since, by the different involved stakeholders, which include local residents, Dutch and various Belgium parliaments, environmental groups, farmers, and the European Commission. This is a classic example of how the stance of the stakeholders can slowdown or even block the decision-making process, and correspondingly the related (plans for) development.

Another example is an urban flood management case that took place in the South of the Netherlands [17], in which it took decades to come to a decision that was accepted by all stakeholders. The different authorities involved had conflicting interests, farmers had interests that differed greatly (large scale cattle farming vs. organic, small scale), and relations between some of stakeholders were so troubled, because of conflicting interests, that some of the stakeholders refused to communicate directly to other stakeholders.

To understand the development of such decision-making processes and the reason why some of them are turbulent or cumbersome, we need to explore the relation between the concepts involved in those processes. Research [9,14] suggests that values can play an important role in decision-making processes and that a value sensitive approach could therefore benefit such processes.

Moreover, at a closer look, it seems that it is not necessarily a value in itself that influences the process. On the contrary, values are generally so vaguely defined that stakeholders all acknowledge their importance in abstract terms. It is rather the conception [15] that stakeholders have of this value that can differ among the stakeholders and that influences their take on the process. For example, justice is a value that is generally considered to be important, yet, what justice entails is a topic of debate [10].

In this paper we present a conceptual model to explore the relation between values, value conceptions, norms and the corresponding actions. By doing so, we take a first step towards the means to model these concepts in a decision-making context, which is needed to understand the way these concepts interact and how they influence the decision-making processes. The goal of this research is to explore and show what role values take in decision-making processes and whether a focus on the values and value conceptions provides a better means to solve difficult cases, as suggested by the earlier research in [9,14].

With this conceptualisation, we take a first step to formalise the role of moral and social values. By exploring the assumption that a value sensitive approach can benefit complex decision-making processes, we aim in a later stage to support those processes with tools in which these insights are embedded.

The remainder of this paper is structured as follows. In the next section we discuss the ideas behind the concepts, based on literature. In section 3 we describe and depict the collective and the individual structure of decision-making processes, and the conceptual model of the role of values in these processes. Section 4 discusses the context of this research by describing related work. In section 5 our conclusions and ideas for future work are presented.

2 Background

Before we can come to a conceptual model of values in decision-making processes, we first need to understand what the relevant concepts are and why these are taken into account. Therefore we start with discussing the definitions of the concepts in this section.

2.1 Values

Values are defined in many different ways, e.g. as an enduring belief that a specific end-state is desirable over another [19], what a person or group considers important in life [11], or as guiding principles of what people consider important in life [2].

We assume that values can be considered to be more or less universal, like Schwartz and Rokeach state in their separate value surveys [2], but also like the values in decision-making as stated by [1]. Justice, freedom, benevolence, and security are values that are broadly considered important in different cultures, organisations, and societies. The interpretation of these values is a different story, as explained below in section 2.2.

In addition, ample research has been done on value typologies. The surveys of [20] resulted in 10 key value types describing relations between values, including power, hedonism, benevolence and security. Earlier, [19] concentrated on the connection between values and behavior, distinguishing *terminal values* such as 'family security' and 'freedom', and *instrumental values* such as 'courage' and 'responsibility'. Since we are taking the decision-making process as our point of reference, the value hierarchy for management decisions [1] provides an interesting model as well. Bernthal distinguishes a business firm level, economic system level, society level, and an individual level. In multi-stakeholder decision-making processes in the public sector, these levels are very relevant: often stakeholders are involved that are entrepreneurs or companies with business level values, including profits, survival, growth. Then if resources are involved, economic system values apply, such as allocation of resources, production and distribution of goods and services. The governmental authorities are likely to have societal values: culture, civilization, order and justice. Last, individuals will have values such as freedom, opportunity, self-realisation, and human-dignity.
Our aim is to get a high level understanding of the concept 'value' in relation to norms, conceptions and actions. Further, we assume that values that stakeholders have do not change in the course of the process. Therefore, we consider values to be fixed, enduring guiding principles of what people think is important in life [2].

2.2 Context and Value Conceptions

Each agents operates in a certain context, which influences how the value is perceived. "Context is any information that can be used to characterise the situation of an entity" [5], including emotional history with the value and experience of the stakeholder in decision-making with respect to the value.
The context influences an agent's conception of a value. The difference between values and the conception of those values is –in slightly different wording–, described by [15] as *contested concepts* and *conceptions*. He describes contested concepts as unitary and vague concepts, e.g. liberty and social justice. In this research we consider such contested concepts as values.
The conceptions of these values are contested since they are an interpretation of what the value should look like in practice. And there are multiple conceptions possible for one single value, guiding principles can be explained in different ways, as addressed in section 3.2.

2.3 Vision and Collective Decision-Making Process

Since this research focuses on values in decision-making processes in particular, we include the vision and the collective decision-making process in our conceptualisation. The vision is expressed by an authority in long term documents or in vision reports, and represents the institutional objective with respect to the value, as also discussed in [7] as part of the

abstract level. In order to accomplish this vision a collective decision-making process has to take place. In this process, the vision and the norms of the agents are combined to come to a decision about which collective action to take.

2.4 Agents, Norms and Actions

We use definition of agents as indicated by [8]: "agents are autonomous entities with reasoning and communicative capabilities, and therefore suitable to (..) simulate and represent real-life entities displaying the same autonomy. The decision-making process has several stakeholders, which are represented as agents. An agent can represent an individual stakeholder or a stakeholders collective [12, p. 31], e.g. an organisation or farmers that unite their voice during the process.
We use the definition of norms as described by [3]: norms regulate the behaviour of agents by describing the actions they must (or must not) execute in specific situations.
An agent will take action to comply with the norm.

3 Conceptual Model of the Role of Values

In this section we describe how the concepts are related to each other. The conceptual model that we present in this section has both an individual structure, describing the concepts that are relevant for the individual agents, as well as a collective structure representing the collective concepts of the decision-making process. We first describe the two structures separately, after which we connect them into the conceptual model. All is explained using an example.

3.1 The Collective Structure

The collective concepts in multi-stakeholder decision-making processes represent the commonalities in the process. The collective structure in itself seems rather straight forward, as depicted in Figure 1.
The collective decision-making process is initiated to realise the vision of authorities. This vision is derived from one or more values. The decision-making process leads to collective actions that will contribute to the realisation of the vision, and therefore the value.
A **value** is assumed to be a guiding principle that is acknowledged in general terms by the stakeholders. In this case we use *water safety* as the example of an underlying value. Since we assume that values are acknowledged by all stakeholders, they are part of the collective structure. We assume that values are defined in abstract terms which are not contested as such. For instance water safety could be described as being safe from floods, we assume stakeholders do not oppose this.
The **vision** expresses a 'collective objective', e.g. no floods should occur in the urban areas of the region. The vision is expressed in long term planning reports by the province and the municipality, including at least

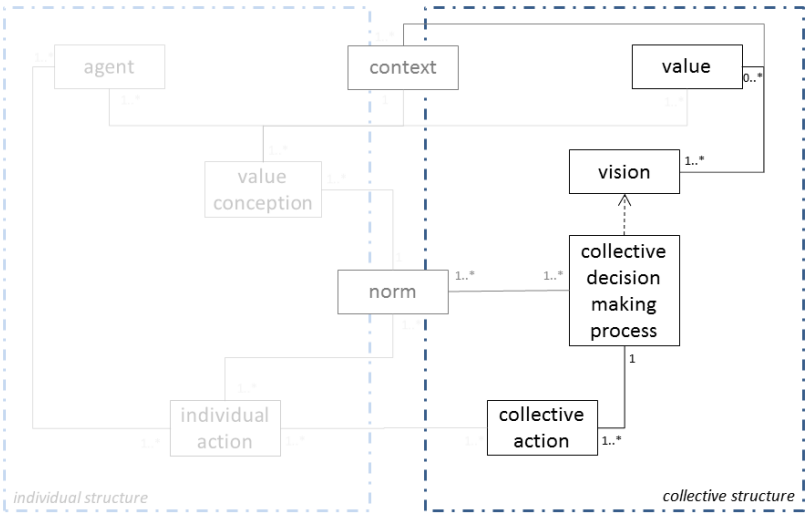

Fig. 1. Collective structure.

one value, such as *water safety*, but other values, such as *culture* could be expressed in the vision as well. For simplicity's sake, we only focus on one value here. There can be values that are not taken into account in the vision that actually do play are role during the process.
In Figure 1, the **collective decision-making process** (CDMP) follows from the vision. The collective decision-making process does not take place at a single moment in time, but includes meetings, discussions, deliberations, one-to-one meetings, newsletters, informative events and compensation negotiations. In policy making, it often takes decades to get to the point where a decision is actually agreed upon. Without an expressed vision, there is no CDMP to translate this vision into actions. The vision is the motive for the process.
The **collective action** following from the CDMP is in the end enabled by all agents. In the water safety example, the action could be to adjust the flow of the river that causes floods in the urban areas in the region, to evacuate an area or build a dike. There can be more than one collective action following from the CDMP, but a collective action is always the outcome of an CDMP.

3.2 The Individual Structure

Because of the many inter-dependencies with the collective structure, the individual structure can not be depicted as a stand-alone separate structure, but we can still discuss the concepts themselves individually.

A **value conception** is the conception of a value, so it has a direct relation to value, to the context that influences the value conception

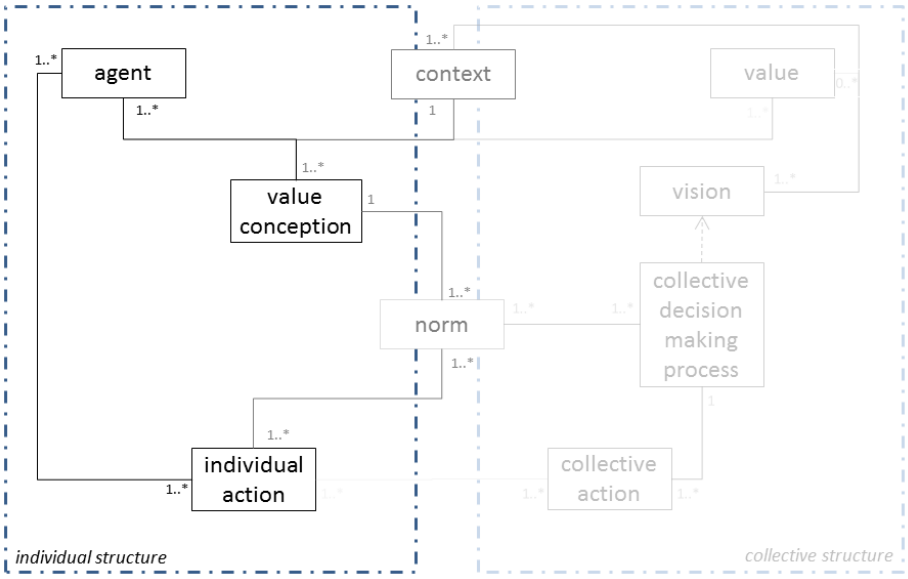

Fig. 2. The individual structure of decision-making processes.

and the agent who has the value conception. A value can be related to multiple value conceptions, with the value water safety this could include risk prevention, flood defense, flood mitigation, flood preparation, and flood recovery. In addition, an agent can have multiple conceptions: one agent can perceive flood defense and flood recovery combined as water safety. A value conception directly influences one or more norms of an agent.

The stakeholders that are involved are all represented as **agents**, for instance water authorities, municipality, inhabitants, agricultural entrepreneurs, property developers. One agent can have multiple value conceptions, and a value conception can be related to more than one agent.

One or more **individual actions** are taken by agents based on one or more norms they have. If the norm of an agent for risk prevention would be 'building on riverbanks is forbidden', an agent could decide to comply with the norm by taking the action to build in an area where building is permitted. Further, an agent can have multiple individual actions and, an individual action can be related to more than one agent if more than one agent performs this same action.

3.3 The Structures Combined in the Conceptual Model

The conceptual model of the role of values in multi-stakeholder decision-making processes is depicted in figure 3. The collective structure and the individual structure are related in multiple ways, including through context and norms, which are part of both structures.

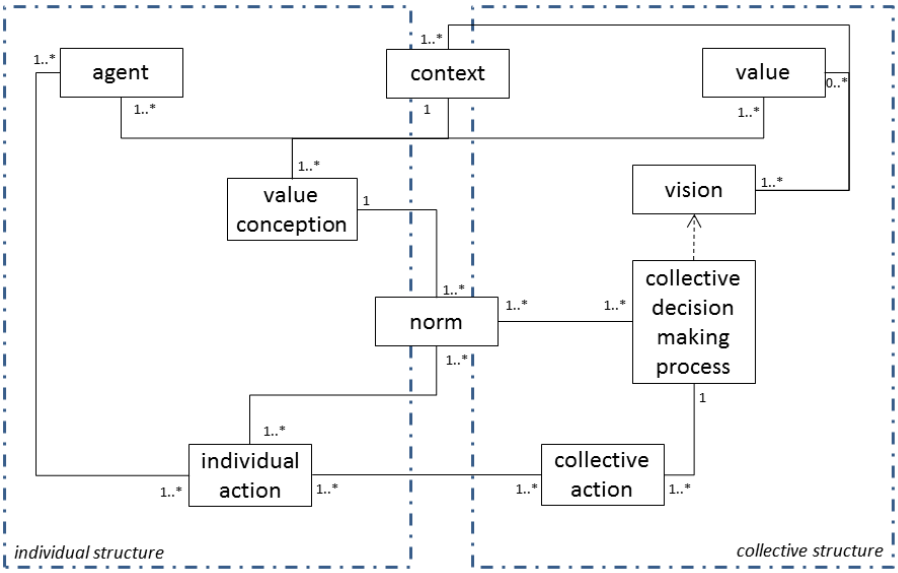

Fig. 3. Conceptual model of values, context, conceptions, norms, and actions in decision-making processes.

Value conceptions are influenced by the **context** of an agent. Based on e.g. historic encounters with other agents which may or may not have included conflicts, or an emotional history with the value, an agent has the intention to enable the joint decision, or an agent does not have this intention. The level of experience can determine how convincing an agent can be. One can imagine that an experienced project manager, or a long term resident of area at stake have more authority and experience than e.g. a young new resident. This context will influence the conception an agent has.

Norms are based on the value conception. Complying with the norms contributes to the the value conception. As illustrated above, a norm for risk prevention could be 'building on riverbanks is forbidden'. A value conception can be related to one or more norms. Norms are related to one value conception. The agents' norms influence the collective decision-making process, since the norms prescribe what agents will comply with (or not) as an outcome of the process.

Moreover, the vision follows from the value and the context. The vision 'no floods in urban areas' comes from the value water safety in a context of water governance in a riverine region where stakeholders are likely to have a history with the value, and with decision-making in this respect.

Finally, the individual actions and the collective actions need to be aligned for the collective decision-making process to be successful. As earlier mentioned, the agents need to intent to enable a collective action,

since unanimity is needed in order to perform the action. One or more individual actions need to enable one or more collective actions.

4 Related Work

In philosophical literature on engineering and design, e.g. [21], a direct relation between values and norms is indicated. Values, norms and design requirements are described as a value hierarchy, with values on top and design requirements at the bottom. There it is stated that values are specified by norms, which in their turn are specified by design requirements. The other way around, design requirements are in place for the sake of a norm, and a norm is in place for the sake of a value.

In the field of normative multi-agent systems, the use of values has been explored by [3], [4] and [7]. First, [3] describes the interaction between system norms –norms that are imposed on the agents by a system–, actions that are regulated by those norms, and personal values of the agents that are being promoted or demoted by those actions. While this is useful for the investigation into reasons why agents follow or violate norms, we believe that such a clear separation between the norms and values does not exist. Therefore, we express the need to further explore the way values and norms interact to determine collective and individual action.

Second, [4] argues that a value can be seen as a preference that can be discussed and debated. They describe norms to constitute a link between values and behavior, where norms serve this value. Their framework explores a connection between values, norms, goals and actions. In this research we want to take this one step further by exploring the role of these concepts in decision-making processes.

Third, the OMNI framework [7] discusses norms, values, context and social structures thoroughly, where each concept is located in a three by three matrix with three different levels and three dimensions. Yet, values, agents, roles and actions are not discussed in terms of their direct relationship with each other, but rather in relation to the levels and the dimensions. To fully understand their role in decision-making processes we need to further explore these direct relations.

In addition, to represent multi-stakeholder decision-making, to better understand the complex social phenomena occurring, a modelling framework needs to be chosen that has sufficient modelling capabilities to represent all important aspects of the problem. For this, we will relate to the agent organization approach as described by [6] to model the interactions between stakeholders together with and within the organizational structures they are part of. Also, we will relate to the framework of [13] who model individuals and institutions as the key components to capture, analyse and understand the domain and its complexities. We aim to build up on their research, but with values and the conceptions of values as the major component to relate to the social structure, searching for common ground rather than differences in interests.

5 Conclusion and Future Work

Turbulent or cumbersome decision-making processes can slowdown or even block the plans for spatial development. Values are considered to play an important role in preventing or overcoming conflicts in such processes. In order to understand how values influence these processes, we discussed the relevant concepts and the relations between them. This resulted in a conceptual model with an individual structure and a collective structure. The individual structure of value conceptions, agents, and individual actions was then related to the collective structure, containing values, vision, collective decision-making process and collective action. Norms and context are concepts that are part of both structures. This conceptual model is the first step to explore and understand the concepts of decision-making processes.
So far, we did not take institutional aspects such as roles and rules into account. Further research is needed to expand the conceptual model with those aspects, including clear and detailed definitions on the attribute level. After expanding the conceptual model, the next step will be to formalise the concepts and relations, so that we can start modelling values in complex decision-making processes.

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