



A typology of elementary forms of human-nature relations: a contribution to the valuation debate

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This article aims to contribute to the debate about the role of relational values in environmental decision making, by putting forward a typology of ‘human-nature relational models’. We argue that human-nature relational models, which stress the notion of cognitive frameworks, can be useful to understand core drivers of individual and social behavior that underlie environmental change and socio-environmental conflicts. A ‘relational models’ approach calls for taking into consideration the diversity of cognitive frameworks conditioning our interaction with nature, with the ultimate goal of avoiding, mitigating, transforming and resolving socio-environmental conflicts and achieving a wiser relationship with the natural environment.

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Current Opinion in Environmental Sustainability 2018, **35**:8–14

This review comes from a themed issue on **Sustainability challenges: Relational Values**

Edited by **Unai Pascual, Kai MA Chan and Rachelle Gould**

For a complete overview see the [Issue](#) and the [Editorial](#)

Available online 14th November 2018

Received: 28 March 2018; Accepted: 22 October 2018

<https://doi.org/10.1016/j.cosust.2018.10.014>

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Introduction

The ecosystem services framework (arguably a dominant paradigm for describing human-nature relations nowadays) is part of an intellectual tradition that assumes that the best strategy to foster environmentalism is to appeal to instrumental values. According to this perspective, the role of valuation is to make these values visible, by making possible to capture and internalize them in decision making. Although the capacity of biocentric approaches to mobilize interest to conserve nature for its own sake is also acknowledged [1], the ecosystem services metaphor, while being a powerful communication tool, risks legitimizing an utilitarian

and monist (based on a single measurement of value, e. g. money) discourse while downplaying the complex and manifold ways humans interact with nature and articulate the plurality of its values, and in particular the cultural and moral dimensions of such interactions⁵ [2,3,4,5**].

Moving away from the use (and misuse) of value monism and fostering a transition to a pluralistic valuation approach is at the heart of the Intergovernmental Platform of Biodiversity and Ecosystem Services (IPBES) [5**]. IPBES explicitly recognizes that valuation itself is a value-laden process and that emphasis should be placed in social learning and integrating/bridging diverse values, especially in contested spaces. This is akin to the view of Bryan Norton [3], who from an ethical perspective concurs that in the quest for transformative change towards sustainability ‘what is needed is a method for evaluating change, a method that— unlike the current evaluative methods available today— can lead those with conflicting values to converge on actions that are agreed to improve unacceptable situations’ (p.6). We agree with Norton that such an evaluative method can only come from pluralistic valuation approaches rather than from those that are based on value monism [3,6].

As part of the debate around value pluralism, the dichotomy between intrinsic and instrumental values has been questioned, based on the proposition that it fails to resonate with many lay people. It is argued that in their decisions, people often consider the properties of the relationships they hold with nature rather than the inherent worth of nature itself or the benefits they derive from it in instrumental ways. These considerations, namely the preferences, principles and virtues associated with *relationships with* and *responsibilities towards* nature, as conducive to a ‘good life’, both meaningful and satisfying, have been coined as *relational values* [5**,7**]. The main objective of this article is to deepen our understanding of human-nature relationships and in so doing to contribute to the theoretical debate around the notion of relational values by putting forward two propositions, namely:

⁵ We adopt a broad notion of nature, which includes either non-human entities, categories that composes similar entities (e.g. species) or more complex natural environments in which different types of non-human entities interact (e.g. ecosystems), referred to a particular geographical location or to a larger scale.

- 1) It is possible to identify and categorize a finite number of discrete human-nature *relational models* (RMs). We propose an elementary typology of such RMs, each of them having their own 'grammar', encompassing several dimensions (see below for definitions and explanations).
- 2) We propose that all categories of values are derived from different cognitive frameworks that shape a given relationship with nature. For example, when something is considered to have an 'instrumental value' is mainly due to an underlying correspondence to a given RM, namely, 'utilization'. Similarly, intrinsic values can be related to an alternative RM that allocates a particular set of rights to nature (e.g. 'wardship'). Lastly, the current use of the term 'relational values' in the sustainability discourse may be associated with other RMs, such as 'stewardship' or 'ritualized exchange' (see explanations below, including descriptions in Table 1). When people's interests and values clash and conflicts arise as a result, we think it is better to move from classifying and measuring values-based on three categories (instrumental, intrinsic and relational) and adopt a more comprehensive analytical approach-based on the idea of relational models. By so doing we can better understand core drivers of individual and social behavior that underlie environmental change and socio-environmental conflicts.

Background literature and concepts

Understanding the diversity of human-nature relations requires integrating insights from a variety of literatures and bridging disciplinary boundaries. We draw insights from social psychology (through the notion of social representations), psychological and cultural anthropology (through the concepts of relational or mental models and taboo trade-offs) and ecological economics (through the concepts of incommensurability of values and languages of valuation).

The theory of social representation stresses the links between individual cognition and social processes.⁶ It proposes that the ways we perceive and relate to nature, make sense of it, and order it, are influenced by cognitive processes that are to a large extent socially constructed [8*]. This theory addresses the question of how human representations of reality, that is, how the brain perceives, processes and gives sense to stimuli, are socially constructed. Some key tenets of this stream of thought are: first, individual cognitive frameworks are collectively constructed and socially shared; but, second, these frameworks are not deterministic and there is scope for individual variations; thus third, social representations are

enduring structures, but they also can be modified through individual will or social processes, for example, through communication, social interaction, education and negotiation. Social representations influence the way people 'objectify' reality, thus determining what is perceived and what is not. Representations also influence the ways people anchor the received stimuli, that is, how they systematize and classify them into pre-existing categories. Social representations also determine the reasoning behind causal relations, thereby influencing attitudes and behavior. Whenever there are sufficiently distinct and distant social representations of reality (shared by different social groups) conflicts may arise. The notion of 'framing' (referring to social representations as cognitive 'frameworks') is useful to analyze socio-environmental conflicts [9*]. This notion stresses that the confrontation of different (and hard to reconcile) cognitive frames held by disparate social groups is the underlying cause of many conflicts [10]. Hence, 're-framing' becomes a strategy for attempting conflict avoidance, mitigation, transformation and resolution [11,12].

In psychological and cultural anthropology, *taboo trade-offs*⁷ refer to the difficulties faced by people when dealing with trade-offs among different types of value. They arise due to the fact that people are highly resistant to certain types of value trade-offs, due to cognitive incommensurability and moral stances. People often refuse to make trade-offs between different types of values because it would harm their self-image and their own standing within their social group [13**]. Trade-offs are more likely to become morally impermissible whenever a situation requires people to articulate values using the social conventions framed by a given social representation of reality that they do not consider to be theirs [13**]. Similarly, in ecological economics, the terms 'strong incommensurability of values' [14] and 'lexicographic preferences' [15] are used to refer to situations when there are strong moral limits to the 'fungibility' of values (the extent to which different types of values can be exchanged, substituted and traded off). Whenever such situations arise, the reduction of values to a single common metric is likely to face resistance [16].

According to the *Relational Models Theory*, as elaborated initially by the psychological anthropologist Alan Fiske [17**], there are four elementary 'models' that frame social relationships: first, in the *communal sharing* model, sociality is based on the perception that the set of persons involved in the relation have something in common that makes them socially equivalent; second, *authority ranking* bases relations on asymmetrical, transitive and linearly ordered differences

⁶ The theory of social representation is part of a French intellectual tradition in social psychology that started with Émile Durkheim, and to which Jean Piaget also belonged. It was consolidated with the work of Serge Moscovici.

⁷ A taboo trade-off is an "explicit mental comparison or social transaction that violates deeply-held normative institutions of certain forms of relationship and of the moral-political values that derive from those relationships" ([13**] p. 256).

Table 1

An elementary typology of human-nature relational models

Relational model	Ontology (nature of the subject)			Goal orientation	Emotional drivers	Practices	Main mode of interaction
	Clear society-nature distinction	Nature entity with agency	How nature is positioned vis-à-vis humans				
Detachment	Yes	No	Nature as inexistent (invisible)	Preference for urban-and technological spaces. Nature perceived as not important	Indifference	Absence of codified practices	Isolationism
Domination	Yes	No	Hierarchical relation: Nature as subordinated (inferior)	Preference for human control over nature. Nature perceived as a threat	Fear	Rules and norms based on human entitlement (for appropriation/ annihilation of nature) and superiority	Destruction (hostility)
Devotion	No	Yes	Hierarchical relation: Nature as deity (superior)	Preference for situations that are believed to be favorable for the deities. Nature perceived as sacred	Seek of transcendence Obligation	Sacredness yielding religious practices (rituals including taboos)	Worship
Stewardship	No	No	Humans as part of Nature	Preference for human restraint in order to respect nature. Nature perceived as a comprehensive system that encompasses humans.	Sense of belonging, Identity Care	Rules and norms about nature-centered management and self-imposed behavioral limits	Livelihoods integration into nature
Wardship	Yes	No	Nature as a separate entity with intrinsic rights	Preference for pristine spaces or conditions. Nature perceived as a separate entity to be protected.	Aesthetic experience Care Peacefulness	Rules and norms where delimitation of pristine spaces or conditions, and biocentrism (intrinsic rights of nature) prevail	Preservation of wilderness Benevolent patronage
Ritualized exchange	No	Yes	Nature as equal	Preference for equality. Nature perceived as an interactive agent	Obligation	Rules and norms based on the sense of partnership	Partnership Seek of balance
Utilization	Yes	No	Nature as a separate entity with no intrinsic rights	Preference for maximizing benefit-cost ratios. Nature as a source of goods and services and disservices.	Needs satisfaction Hedonic pleasure	Rules based on rational calculation and market orientation	Utilization (exploitative or preservationist) Profit-maximization

between people; third, *equality matching* refers to relations around the allocation of additive exchange units, with even balance as the reference point; fourth, in the *market pricing* model, social interaction is organized with reference to ratios and rates. These social RMs can be seen as cognitive frames or representations and may be conceived as discrete and universal. Each model is associated with a particular set of motivational and normative conventions that shape and give meaning to social relationships. What varies across cultures is in which situations the social relational models are applied. Prescriptions about which model should be applied in a particular situation is a social convention. Moreover, power relations influence which of the relational model is dominant in decision-making and which ones are deemed inferior or non-appropriate [18]. In this vein, power can be interpreted as having the capacity to enable, promote and/or impose a given relational model as ‘common knowledge’ via cultural practices, customs and habits [18].

Human-nature relational models

Human-nature interactions are configured by a complex arrangement of social conventions held by social groups in a particular period of time. Human-nature RMs are cognitive frames that give shape to relationships between people and nature. As in the case of Fiske’s social relational models [17], we argue that there is also a finite number of cognitive frames underpinning human-nature RMs, and that they can be classified using discrete categories. The idea of human-nature RMs as cognitive frameworks that shape perceptions about nature and behaviour towards it is closely linked to the concept of ‘mental models’, which is also applied to socio-environmental issues [19,20*].

We propose seven elementary human-nature RMs, easily identified across cultures. While our typology is not necessarily exhaustive, we believe it covers the main cognitive structures underpinning human-nature relations, as described in a scattered way in the literature. Our classification has some similarities with the typology of values of nature proposed by Stephen Kellert [21,22]. But whereas Kellert’s typology deals with what he calls ‘values’⁸, we consider that such classification mixes up RMs (e.g. utilitarianization) with some dimensions of the grammar of such models (see below for a definition). For instance, the type of value he coins as ‘symbolic’, that is, nature as a source of language and imagination, is present across the seven RMs we propose, though the use of language and symbols vary considerably across them.

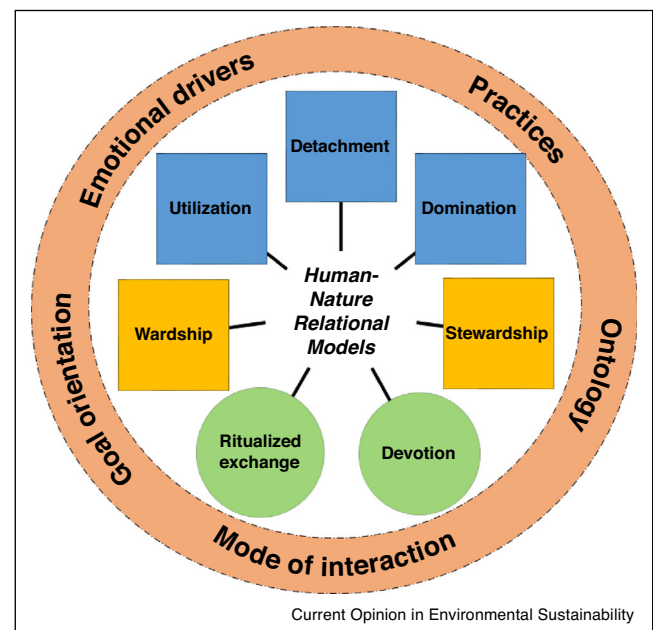
We argue that individuals apply different RMs towards different ‘entities’ of the natural world or to the same entity in different situations, depending on the historical

and social-ecological context of interaction. It is also possible that an individual shifts from one RM to another over time, as a result of learning, social interaction or communication. Further, human-nature RMs are shared by social groups as a way of group identification and mobilization, particularly so whenever socio-environmental conflicts arise.

Table 1 presents (and Figure 1 illustrates) seven human-nature RMs, each with their own grammar. The literature of social psychology dealing with relational models uses the term ‘grammar’ as a metaphor for ‘the social conventions, rules, and norms that specify how and when and with respect to whom relational models apply’ (p.633) [23]. We follow the same notion, and propose that the grammar of human-nature RMs is composed of at least five basic dimensions. These dimensions are different domains characterizing human-nature relationships. Each of them is governed by a particular set of social conventions.

The *ontology* dimension refers to what Descola [24] calls the ‘mode of identification’, namely, the cognitive structure or social representation that defines the boundaries between the self and the otherness. Here we identify

Figure 1



Human-nature relational models: There are seven elementary relational models characterized by an underpinning grammar (outer circle), composed of various dimensions: ontology, mode of interaction with nature, goal orientation of the interaction, emotional drivers behind the social representation of nature and practices. People and nature can be sharply differentiated (boxes) or not (circles), and nature can be perceived as having agency (green), positioned in inferior or invisible ways (blue) or with intrinsic rights or as equal (yellow). Each relational model articulates values in a different way.

⁸ The categories in to which Kellert classifies values are: Aesthetic, dominionistic, humanistic, moralistic, naturalistic, negativistic, scientific, symbolic and utilitarian

three aspects within the ontology dimension: first, the degree to which society and nature are differentiated; second, whether non-human entities are considered to have agency; and third, how nature is positioned (e.g. inferior, equal or superior) vis-a-vis humans. Western societies in general and western science, in particular, are characterized by separating nature from people and human from non-human beings [25], which necessarily imposes limits to our cognitive capacity to interpret other knowledge systems and human-nature interactions in other cultures. *Goal orientation* refers to the overall societal goals guiding decision-making, and largely determines the evaluative criteria. *Emotional drivers* are a distinctive and unpreventable element of human-nature relations [26]. Here we understand emotions in a broad sense, as feelings and states of mind that steer behavior and decisions, as opposed to rational thinking. *Practices* refer to codified social conventions that set normative boundaries, particularly about the allocation of rights and responsibilities. They dictate what can and cannot be done in a particular relational setting-based on dominant moralities. Lastly, the *main mode of interaction* summarizes the way the relationship is concretized or operationalized.

Below we briefly explain the main features characterizing each of the seven RMs that we present in an elementary typology of human-nature RMs:

Detachment is dominated by indifference towards non-human entities, either because they are not perceived or because they are considered irrelevant. This relational model might be the consequence of ignorance and lack of experience. Some authors have warned that current technological and urbanization trends might be associated with a distancing of humans from nature [27], resulting in major emotional, attitudinal and behavioral changes in our interaction with it [28]. The cognitive consequences of declining contact with the natural world and the extent to which contemporary urban life leads to alienation towards nature is a subject that has not received sufficient academic attention. We hypothesize that the rising use of information technology and urbanization will increasingly be associated with the perception of the bulk of natural entities as abstract and distant objects, rendering them irrelevant or invisible.

Domination derives from a sense of human entitlement over nature and fear (sense of threat). Nature is seen as a space to be conquered, as a category opposed to 'civilization'. Hostility and annihilation are distinctive under this mode of interaction. We might associate this model with 'predatory naturalism', as described by Descola [24], characterized by both a clear society-nature distinction and an antagonistic vision towards nature, which is perceived as an obstacle to 'progress'. The clearing of large tracts of forest in the European Middle Age [24] and the mass devastation of forests during the

colonial time in Brazil [29] can be seen as processes driven by this relational model.

Devotion is characterized by hierarchical relations. Natural entities are conceived as having agency and divine properties, above humans. Religious rituals and taboos are the basis of social conventions that give meaning to and shape human-nature relationships. For example, in Southern Indian sacred groves biodiversity conservation is not a goal in itself, but a byproduct of complex religious practices closely intertwined with the local ecology [30,31].

In the **Stewardship** model, the natural entity is perceived as not having agency but there is no clear-cut subject-object distinction, since humans are seen as part of (and dependent on) nature. This interdependency is the basis for human responsibility towards nature. Such sense of responsibility is expressed in nature-centered management rules and self-imposed behavioral limits [32]. The metaphor of Gaia [33] and the ethical precepts behind the agro-ecological movement could be seen as reflections of this relational model [34].

Wardship shares with the stewardship model the sense of human restraint for the sake of nature's protection, but it has a preference for either wilderness and pristine states or control over natural entities. This RM leads to the promotion of protected natural spaces from which human activities should be removed, or in caring and managing animal or vegetal species for non-utilitarian purposes. It can also be associated with the notion of benevolent patronage bestowed by humans on natural entities [24]. In this model, humans hold responsibility for the custody of nature, which is seen as a distinctive entity with its own (intrinsic) rights.

The **utilization** model underlies the appropriation of nature's goods and services, mostly via extraction and consumption. It is dominated by a utilitarian logic, which might lead either to an exploitative or conservationist use of nature, and often to the commoditization of its properties. It is strongly associated with instrumental values [35]. This model underpins the green economy and the ecosystem services metaphors [36]. The core elements are the utilitarian stand towards the natural environment and a clear society-nature distinction.

Ritualized exchange refers to situations where humans allocate agency to a natural entity, and engage in an exchange not governed by considerations of proportionality and ratios but by ritualized codes of equality, balance and reciprocity. For example, traditionally the Maya group Itza (from Guatemala) assume that in order to exploit natural resources through plant collection, hunting, agriculture, and so on, they had to 'pay' the guardian spirits (*yum-il*) through ritualized food offerings [37]. The

Tukanoan indigenous group of Colombia are reported to follow the principle of strict equivalence and reciprocity between humans and non-humans, who share a natural environment that has a finite amount of 'generic vitality'. Exchanges must take place so as to compensate non-humans for the share of vitality that has been diverted from them in the process of food procurement by humans. It is believed that both humans and non-humans contribute jointly, through reciprocal exchanges, to the general equilibrium of the cosmos [38,24].

The grammar of each of the seven RMs is reflected in the combination of criteria for evaluation and the discourse used for political mobilization, both derived from social conventions and moral motives. This is what in ecological economics has been called 'languages of valuation' [39]. Confronted social groups around a socio-environmental conflict typically make use of their own narratives, often related to a particular RM. When the RMs held by different social groups are incommensurable, aggregation of values becomes extremely challenging or impossible. In such situations, conflicts can become intractable and no socially optimal solution may be found. In such cases, however, conflict resolution through social learning may still be possible. Learning would imply being exposed to different RMs, each with their own grammar and language of valuation, and being able to empathize and negotiate meanings, social goals and decision-making mechanisms [40].

Importantly, RMs influence not only how problems are perceived, but also the notion of justice held, as well as the considered policy options and discourses for social mobilization [41]. People may not only disagree about the intervention at stake or how the problem is conceived, but also about how to deal with such disagreements. For example, in conflicts around mining projects with potentially high environmental impacts, local populations often prefer a local referendum as a decision making tool, while mining companies frequently prefer the adoption of a compensation rationale [42].

Implications for valuation

There are various implications of taking the perspective of human-nature RMs in valuation.

First, we propose to move further from the classification of values into instrumental, intrinsic and relational, and to adopt a more comprehensive analytical approach-based on several discrete relational models, each of them characterized by a particular set of social conventions (grammar).

Second, adopting a relational model approach implies the need to recognize the limits to the social acceptance of trade-offs and aggregation of wellbeing indicators, given potential incommensurability among RMs.

Third, valuation approaches need to embrace pluralism to grasp the diversity of RMs, and to understand each of them using their own 'grammars', aiming for social learning.

Fourth, the main goal of valuation should be to identify and disentangle the (not always explicit) RMs involved in socio-environmental conflicts. Rather than trying to 'get the price right' (by means of eliciting people's economic preferences and aggregating them) the objective should be to 'map the RMs among social groups', in order to foster social learning under diverse and competing cognitive frameworks about nature.

Fifth, in situations where the incommensurability of the RM is a contentious issue, attention should be given to procedural aspects and the *quality* of the decision-making process. In such situations, agreements about the process would be a necessary source of legitimacy for any adopted decision, since the final outcome might likely be not satisfactory for all the parties involved.

Sixth, any valuation process implies a relation with the subject being valued, and therefore, strictly speaking, all values emanate from relational models. What varies is the type of relational model on which the different ways of articulating values are manifested.

Seventh, the complexity entailed in the drivers of environmental change and socio-environmental conflicts cannot be dealt with using a single grammar or language of valuation. Transformation to sustainability cannot simply rely on showing the hidden instrumental values of nature. Instead, the role of valuation should be to foster awareness about the ways socio-environmental interactions depend on different and often competing human-nature RMs, especially in contexts of uneven social power relations. Transforming people's relations towards nature first requires addressing how (and why) humans cognitively frame their relationships with it, and the intricate mechanisms involved in changing such framings.

Acknowledgements

We are grateful to two anonymous referees and to Rachele Gould for their very valuable comments on the manuscript.

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