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Author: Brock Bastian and Daniel Crimston

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Resource decision-making is not based on human needs alone and regularly requires achieving a balance between the protection of animal rights, rare species, and entire ecosystems. This balance is being pressurized by two current trends. First, human (over)population of the planet is growing exponentially, placing pressure on limited resources. Second, there is a growing human tendency to afford moral rights to nonhumans, and these nonhumans are sometimes the resources themselves. We will review research that examines this conflict. First, we will focus on how people's own morality may play a role in resource decision making, demonstrating that our increasing sensitivity to the needs and rights of nonhumans has clear costs for humans. Second, we will focus on how competing motivations (satisfaction of human needs vs. upholding moral principles) may shape and bend our moral worlds; changing our attitudes and perceptions in ways that ultimately allow us to satisfy those needs. By taking account of how the satisfaction of human needs interacts with moral reasoning about the rights of those more distant from us, we will aim to provide new insights into how research, policy, and practice may be best positioned to address the inevitable rise of resource conflicts.

In December 2012, the Australian government approved a minerals mine in north-west Tasmania, an area that was also proposed for World Heritage listing and a location known to house the endangered Tasmanian Devil (Ford, 2012). For those interested in protecting this native ecosystem the mine approval was seen as a tragic loss. Only a month prior to this announcement the government declared the establishment of a marine reserve on the coast of Australia covering 2.3 million square kilometres of ocean (Duffy, 2012). They also announced a \$100 million fund to buy out affected fisheries. Opponents of this decision expressed grave concerns for the impact this would have on fishing communities and food stocks.

What these examples make clear is that decisions around resource use are not only based on human needs. Resource decision making is also beholden to the value placed on the protection of rare species and entire ecosystems. These examples also demonstrate that the needs of humans and nonhumans are often in conflict: marine parks interfere with the use of fish for food and mining has damaging consequences for the natural environment. This same conflict can also be located in many more common cases, such as the production of meat. With a growing human population the need for cheap affordable meat is also on the rise. The mass production of affordable meat also comes into direct conflict with animal rights issues. Factory farming raises the spectre of cruel and inhumane conditions in which animals are both raised and slaughtered for food. For this reason many choose to eat meat that they believe has been produced outside of these environments. Of course the additional cost associated with these alternative and more humane approaches is often prohibitive for those on low incomes, further highlighting the tension that exists between moral sensitivity and resource availability and affordability.

In this chapter we will aim to draw attention to what is an increasing pressure point in decision making around resource use and resource allocation. With a growing human

(over)population of the planet, the requirements for resources to meet basic human needs is also increasing. At the same time, humans globally are becoming more sensitive to the needs and rights of nonhumans (Pinker, 2011; Singer, 1981), leading to an increased desire to protect natural environments and other species from harm. In some cases these decisions are based on human needs – such as the importance of protecting the amazon due its role in producing about 20% of the Earths oxygen – however, just as often they are based on qualities that are considered of intrinsic value alone. This is most clear in the case of animals, many of whom we believe are sentient creatures that have the right to be protected from harm. In fact, increasingly animals are afforded other rights too, such as Sandra the Orangutan in an Argentine zoo who now has the legal right to freedom (ABC, 2014). Yet, these same concerns can be observed in the desire to protect other entities that are not themselves ‘sentient’. Take for instance the criteria for World Heritage listings. In deciding on which things should be protected, UNSECO focuses on qualities such as uniqueness or beauty – intrinsic qualities. Indeed the decision to grant the Whanganui River in New Zealand the status of personhood is clearly motivated by consideration of its intrinsic value (Fairbrother, 2012). Just like a person, the Whanganui River now has the right to be protected from harm, meaning that it is unlikely to be available for the production of hydro-electricity or agricultural irrigation any time soon.

Why a *moral* psychology of resource use?

At first blush it may seem a little strange to invoke the notion of morality when talking about resource use. Traditionally, moral considerations have been reserved for issues surrounding equity and fairness in the satisfaction of human needs. Take for instance the many ‘games’ that have been developed to bring insights into resource dilemmas or what is often referred to as “the tragedy of the commons” (Hardin, 1968). Almost exclusively these

dilemmas are investigated from the point of view of human needs alone. Issues relating to how resource use may impact on nonhuman needs, or even the various ways in which resources may be valuable in their own right (intrinsic value) as opposed to their usefulness in satisfying human needs, are rarely if ever considered.

We believe there has been a critical oversight in our approach to understanding resource decision making. Almost exclusively scholars have sought to understand how people share resources with other humans. In this work, core moral concepts of harm, fairness, equity, and rights are invoked in describing the satisfaction of human needs. Critically, however, these same moral concerns are also relevant for thinking about the rights and needs of nonhumans. Moral concerns are clearly evident in the animal rights movements, and whilst animals provide an important source of labour, as well as meat, leather, fur, or any number of animal based products such as lanolin, keratin, elastin, or collagen, they also form psychologically meaningful bonds with humans (Amiot & Bastian, 2014). The extension of intrinsic moral value to entire species, ecosystems, and the biosphere also demonstrates that these entities are often firmly within our circle of moral consideration (Feinberg & Willer, 2013; Pinker, 2011; Singer, 1981; Stern & Dietz, 1994). Concern over the rights of nonhumans is rapidly entering the collective moral conscience. Organizations such as PETA (People for the Ethical Treatment of Animals), The Sea Shepherd conservation society, and Greenpeace have raised popular concern over the use of animals for experimentation, meat, or clothing, and the protection of natural habitats and ecosystems. Focusing our analysis on the morality of human need satisfaction alone cannot account for the rapid rise of these organizations and the ways in which they are impacting on resource decision making.

A moral psychology of resource use is critical, not only for understanding issues of harm to nonhumans, but also because these considerations have moral implications for humans. Affording rights and moral concern to nonhumans incurs clear costs for humans.

Take for example the fact that environment-protection policies often have significant impacts on the livelihood and wellbeing on some of the world's poorest people, curtailing their capacity to subsist on their land. This is evident in tensions between the rights of Aboriginal people to pursue their cultural hunting traditions and the desire to protect rare species (such as the Dugong or Turtles in the case of Australia). The recent outrage over live cattle exports from Australia to Indonesia (spruiked by footage of brutal killing practices) caused financial pain to many Australian cattle famers. These human costs have been the focus of books such as David Stirling's (2008) "*Green Gone Wild*", or Wesley Smith's (2012) book subtitled "*The Human Cost of the Animal Rights Movement*". We need a moral psychology of resource use, not only to account for the increasing tendency to afford needs and rights to resources themselves, but also to account for the human costs of doing so.

What makes a resource morally relevant?

The first step in developing a moral psychology of resource use is to develop insights into why and when a resource may be viewed as possessing morally relevant qualities. Perhaps the most obvious way to account for why a nonhuman may be afforded moral status is the extent to which that entity is considered "human-like" (Bastian, Laham, Wilson, Haslam, & Koval, 2011). The importance of human-likeness has been well illustrated in a study by Plous (1993) which showed that animals that are perceived to be more similar to humans are also perceived as having a greater capacity for pain. Moreover, when watching human-like animals being mistreated observers experience greater autonomic arousal (Plous, 1993) and are more likely to recommend harsher sentences for those who abuse them (Allen et al., 2002). Of course "human-like" is also a vague term that incorporates a broad array of qualities, many of which may not be morally relevant themselves – for instance having finger nails is unlikely to be a prime mover of moral concern. One critical human-like quality is the

capacity to think and feel – that is the extent to which an entity is considered to possess a ‘mind’.

There is now an extensive body of work focusing on the role of ‘mind’ in our perception of, and orientation towards, non-humans. In developing a psychological theory of anthropomorphism (the tendency to attribute human-like qualities to nonhumans) Epley, Waytz, and Cacioppo (2007) argued that there are three reasons that humans are likely to view nonhumans as possessing a mind. The first is related to the general tendency of humans to rely on their own experiences when inductively reasoning about the experiences of others. For instance, in wondering whether a fox feels pain when caught in a fox trap we often rely on what we believe it might feel like to have our own foot caught in a trap. The second relates to the usefulness of mental state attribution in making sense of the actions of others. For instance Waytz, Gray, Epley, and Wegner (2010) found that when motivated to predict the actions of nonhuman agents people are more likely to attribute mental qualities to them, as this facilitates the ability to formulate predictions of future behaviour (whether accurate or not). Finally, they argue that loneliness or a lack of social connection to others increases the tendency to attribute ‘mind’ to non-humans – especially those qualities that are important for creating and maintaining social relations (Epley, Akalis, Waytz, & Cacioppo, 2008). This work provides important insights into why pets are often anthropomorphized in cultures low in social capital.

Attributing mind to others, including nonhumans, is a critical social cognitive skill that is motivated by a number of factors and serves a number of functions. Most importantly for our analysis, it also has significant moral implications (Gray, Young, & Waytz, 2012; Waytz et al., 2010). Yet, not all things that are considered morally relevant are also considered to have minds. Many of the things that we seek to protect, such as rainforests, rivers, or reefs are unlikely to be thought of as possessing the capacity to think or feel. No

matter how motivated people may be to protect these entities they are unlikely to begin to view them as possessing a mind. This raises an important question: what are the qualities that people are interested in protecting in these cases? As we alluded to above, qualities such as uniqueness and beauty are also commonly referred to when seeking to raise the status of a particular entity to a level that affords it the right to be protected from harm, and by harm we mean its destruction. We argue that mind, beauty, and uniqueness are all qualities that contribute to a particular entities' *intrinsic value*. To understand the full extent to which morality is caught up in our reasoning about resource use we need to broaden our scope beyond mind perception alone: we need to begin to consider the broader ways in which things may be attributed with intrinsic value.

Indeed the notion of intrinsic value has traditionally been thought to lie at the heart of ethics. For philosophers, the intrinsic value of something is related to the value that that thing has "in itself," or "for its own sake," or "in its own right." This can be contrasted with the concept of extrinsic value: that which is valuable, not for its own sake, but for the sake of something else to which it is related. These two forms of value bring to light an important distinction along which resource conflicts often arise. Those concerned about the intrinsic value of a rainforest are opposed to others who see that forest as an important source of extrinsic value. Put differently, the value of a rainforest as a thing of beauty and uniqueness is pit against its value as a source of wood for building and construction. Critically, when people assign intrinsic value to a particular entity they are motivated to protect that thing from harm, indicating that it has, at least to some extent, become something that has moral relevance in their world – it matters in its own right.

Of course, these two forms of value are rarely completely independent. For instance, preserving a rainforest is also of extrinsic value in terms of its production of oxygen and its value as an ecosystem that supports biological diversity. Nonetheless, as is evident in the

mandate of UNESCO, World Heritage sites are protected because they are sources of intrinsic rather than extrinsic value. To this extent we argue that a broader focus on intrinsic value, which includes qualities such as mind, beauty and uniqueness, is critical for understanding when a resource may be viewed as morally relevant.

What predicts moral concern regarding resource use?

When we begin to talk about moral concern for resources we are clearly referring to the more distant reaches of moral thinking. The morality of protecting our own children from harm is somehow more potent, and obligatory, than the morality of protecting rainforests. Nonetheless, as we note above, there is an increasing tendency to import more distant entities into our moral worlds. Indeed, the idea that people are expanding their moral universe to include more distant nonhuman entities has been noted by a number of prominent theorists (Lecky, 1869; Singer, 1981). While this trend has been observed historically and has been argued for ethically, the ability to directly capture this psychological tendency (to include an increasing number of entities within the boundaries of moral concern) has been missing from the psychological literature.

Recent work by Crimston, Bain, Hornsey, and Bastian (in preparation) has made significant progress in capturing individual differences in the extent to which people's moral worlds are either more or less expansive. The Moral Expansiveness Scale was developed to assess the relative size of an individual's moral sphere. Specifically, it involves asking people to make judgements about the moral standing of a range of entities within four clearly defined boundaries. Drawing from a list of 33 entities ranging from "family" to "inanimate objects", people are asked to decide where each entity exists in their moral world. To achieve this, people are provided with four 'moral spaces' and asked to place each of the entities into one of them. The "*Inner circle*" is defined as pertaining to those entities worthy of the highest

level of moral concern and standing, where there is an obligation to ensure their welfare and a willingness to make personal sacrifices to ensure their moral treatment. The “*Outer circle*” is defined as pertaining to entities that certainly hold moral standing but which people may be less likely to make personal sacrifices for. The “*Fringes*” is defined as pertaining to entities that may have some moral rights and standing, but where there is a definite lack of personal concern and responsibility about their moral treatment, and “*Outside the moral sphere*” is as pertaining to entities without any moral standing. Higher scores are given to entities placed in the inner circle (3) and decreasing for each subsequent moral space (outer circle=2, fringes=1, outside=0). People who place more entities closer to the centre of their moral worlds receive higher scores. Such individuals are referred to as high in moral expansiveness.

The key question for research on moral expansiveness is to understand how this individual difference shapes decision making around resource allocation and resource protection. In general, most people would indicate a desire to allocate resources to their own family, and may even make significant self-sacrifices for them. Of interest is whether this same tendency might extend to more distant entities, even if to a lesser degree, and whether moral expansiveness could predict this? Across a number of studies Crimston et al. (in preparation) found that those high in moral expansiveness indicated a preference for spreading resources to more distant others, as opposed to keeping them for themselves or for those closest to them. For example, Americans high in moral expansiveness expressed a preference for making medicines available to those overseas who cannot afford them (e.g., aids victims in Africa) when pitted against ensuring America had the best hospitals in the world. They also indicated a preference for safeguarding the habitats of chimpanzees and the other great apes around the world when pitted against ensuring that the cost of living remains stable in America. Crimston et al. (in preparation) also examined whether moral expansiveness might predict behaviours that run against an individual’s immediate self-

interest. To this end, they found that those high on moral expansiveness were more willing to donate a kidney to a variety of non-kin human targets (e.g., refugees, criminals), and were more willing to make a financial contribution to a range of animal welfare and environmental causes. Perhaps most powerfully, they also found that those high in moral expansiveness were more willing to sacrifice their own lives in order to protect a variety of targets, ranging from members of their hometown, to Africans and prisoners, but also extending beyond humans to coral reefs and redwood trees.

Work in this area indicates that there are important individual differences in how expansive or inclusive a person's moral universe is, and that this in turn predicts a willingness to judge humanitarian and environmental concerns as more important than personal and national self-interests, a willingness to donate a kidney to a range of non-kin human targets and to make a financial contribution to a range of animal and environmental causes. Finally, it also predicts an overall willingness to sacrifice one's own life in order to prevent harm to a set of both human and non-human targets. Importantly, Crimston et al. (in preparation) found these effects when controlling for other 'non-moral' variables such as the capacity for empathic concern and perspective taking (Davis, 1983), extended identification with humanity (McFarland, Webb, & Brown, 2012) and connection to the natural world (Mayer & Frantz, 2004), as well as other 'moral' variables such as variations in moral intuitions (Haidt, 2012), moral identity (Aquino & Reed, 2002) or endorsement of universalism values (Schwartz, 2007).

This work provides two important insights. First, it suggests that moral expansiveness is an important variable that predicts the tendency to prioritise protection of more distant entities even when this is pitted against narrower self-interest. Second, it demonstrates that these issues are indeed moral issues. The way in which people structure their moral worlds predicts their tendency to allocate resources and make self-sacrifices for nonhumans. To this

end, the work highlights the inevitable tension between expanding our moral universe to include nonhumans and our desire to provide for and protect those closest to us, including ourselves.

Ongoing work on moral expansiveness will hopefully encourage new insights and research directions. Scholars such as Singer (1981) have identified the idea that each person has a moral universe or moral circle that can be either expanded or contracted to be more or less inclusive of others, yet a measure tapping individual differences in this tendency has been missing. The work by Crimston et al. (in preparation) will provide for novel psychological insights into the individual, situational, and ecological factors that cause people to expand or contract their moral universe.

Human need satisfaction and the shifting moral universe

Although it appears that there may be important individual differences in how people make decisions about resource use and their moral concern for both humans and nonhumans, there are also powerful situational determinants of these decisions. While people may seek to protect the needs and rights of nonhumans, the motivation to do so may be moderated by the personal costs associated with doing so. Put differently, although moral expansiveness may predict the tendency to make self-sacrifices to protect nonhumans from harm, it is also likely that when human needs and desires conflict with the desire to protect resources from harm, the satisfaction of those needs may win out. In this way, we argue that decision making around resource use is flexible and shifting, often motivated by our own particular needs and perspectives.

This is especially evident when we consider the practice of eating meat. Work in this area has highlighted what is referred to as the ‘meat-paradox’: how people can both love animals and enjoy eating meat. Most people are horrified by the sight of animal cruelty

(Allen et al., 2002; Plous, 1993), and in general most people are not particularly comfortable with the killing practices necessary to bring meat to their supermarkets and dinner tables (Herzog, 2010; Joy, 2010; Singer, 1975). Nonetheless, a vast majority of people continue to eat meat. The average American consumes approximately 120kg (264lb) of meat annually (UNFAO, 2013), and continued satisfaction of this appetite is achieved through the slaughter of 10 billion land animals (90% are chickens; Joy, 2010). Across the globe, on average, people consume an estimated 48kg (106lb) of meat, necessitating the processing of over 50 billion land animals (UNFAO, 2013). This appetite for meat is indeed no recent phenomenon, with meat consumption pre-dating human civilization (Rose & Marshall, 1996). The question is, how do we continue this widespread consumption of meat at a time when we are also increasingly becoming more sensitive to concerns over animal welfare?

This example of conflicting interests – the human appetite for meat and animal welfare – provides a critical case study into how people may shift their moral world views when their concern for others interferes with their own need satisfaction. Research has examined how people are able to resolve the meat-paradox thereby reducing discomfort associated with their meat-eating practices. In one study, Bastian, Loughnan, Haslam, and Radke (2012) asked people to rate the extent to which 32 animals possessed a range of mental capacities as well as their willingness to eat each animal. What they found was that people's willingness to eat an animal was negatively related to the extent to which they thought that animal possessed mental capacities. Ruby and Heine (2012) found this same relationship between edibility and mind attribution across diverse samples, including American, Canadian, Hong Kong Chinese, and Indian consumers.

Whilst these correlational studies provide little insight into motivational process, other research has provided compelling evidence. Bratanova, Loughnan, and Bastian (2011) asked American participants to rate the extent to which a tree kangaroo was capable of feeling pain

and deserved moral concern. In their study, participants were told either that locals considered the animal to be a source of food or simply that it was an animal living in Papua New Guinea. This revealed that simply being categorized as 'food' undermines an animal's perceived mind. Participants in the study had never eaten tree kangaroo, however when they were told that the animal was a 'food animal' they judged it as less capable of suffering and less deserving of moral concern.

Further illustrating the ways in which eating meat can motivate perceptions of animal's mental capacities, another study by Loughnan, Haslam, and Bastian (2010a) randomly assigned participants to consume either beef or nuts, and subsequently report their moral concern for animals and to rate a cow's capacity to suffer. What they found was that after consuming beef participants reported a more restricted moral concern for animals in general, and specifically rated a cow as less capable of suffering. It would seem that this response may work to reduce any negative feelings that people experience when they are eating meat. To test this possibility directly (Bastian et al., 2012) had participants provide some ratings of the mental capacities of a cow, amongst a range of other measures. They were then led to believe that they would be participating in a consumer survey and would either be sampling meat or green apples. Right before they were about to sample the food, participants were asked to briefly fill in the same measure of mind attribution to the cow and they also rated their positive and negative emotions. Participants who anticipated meat consumption attributed the cow lesser mental capacities, right before they were about to eat meat. This was compared to their perception of a cow's mind at the beginning of the experiment, which was similar to the amount of mind attributed by the control group at the beginning of the experiment and also right before they were about to sample the apples. Those who were about to eat meat, but not those who were about to eat fruit, strategically diminished their perception of the cows mind right at a time when it would most interfere

with their meat consumption. This finding is consistent with previous research showing that both situational and chronic meat consumption lowers mind attribution (Bilewicz, Imhoff, & Drogosz, 2011; Loughnan et al., 2010a). Importantly, people in the meat condition who ascribed diminished mental capacities to the cow reported less negative emotion when anticipating meat consumption. This finding suggests that by diminishing their perceptions of an animal's mental capacities (making them seem less human-like), people can alleviate unpleasant feelings aroused by meat consumption.

Meat-eating provides an excellent example of a context in which human needs conflict with the needs or rights of a particular resource, and how those needs may motivate people to perceive the world in a way that allows them to satisfy those needs. As we note, however, moral motives may also extend to concerns over the use of less sentient resources such as the protection of rainforests, rivers or reefs. Indeed, others have also argued that the protection of these environmental entities is understood by many as a moral issue (Feinberg & Willer, 2013; Markowitz & Shariff, 2012; Singer, 2002). Yet, just as in the case of meat, the protection of these environmental entities may also come at a cost. Specifically, at the cost of increased economic activity and personal financial gain. Focusing on the issue of mining and drawing on three large representative samples across Australia, China, and Chile, Bastian, Zhang, and Moffat (under review) examined the role of both moral and economic motives in promoting or prohibiting the acceptance of mining. Not surprisingly, across all three countries people's moral opposition to mining was strongly related to their decreased acceptance of mining in their own country. Interestingly, however, this was moderated by perceived financial gain. When economic incentives were high, moral opposition was less predictive of mining acceptance, suggesting that although moral principles are strong predictors of environmental attitudes, they are less so in contexts where resource protection conflicts with the potential for personal financial gain.

The motivation to satisfy human needs appears to shape people's reasoning and judgments around the use of resources that are capable of satisfying those needs. This occurs by shifting attitudes and perceptions in ways that facilitate need satisfaction. Specifically, by diminishing the extent to which resources are viewed as morally relevant, which may entail denying their possession of morally relevant qualities, people are less troubled by the use of those resources to satisfy their needs.

It is perhaps interesting to draw a parallel between work on meat eating and work on sexual objectification. Although people are by no means resources in the same way that animals can be, the use of others for the satisfaction of sexual desire can certainly shape our perceptions of others so that they are viewed as more resource-like. Indeed, the satisfaction of sexual desire is a strong motivator of a large proportion of human behavior and different lines of research have shown that when attuned to sexual desires men view female targets in more instrumental ways – they objectify them. Providing direct support to this process, Vaes, Paladino, and Puvia (2011) showed that activating the goal of sex led men (although not women) to view female targets in more objectified ways: sexual attraction shifted a man's focus away from a woman's personality and onto her body triggering a diminished perception of her human qualities. This work suggests that viewing women as less human-like may allow men to satisfy their sexual desires by treating them as instruments of need satisfaction, rather than full human beings that are valuable in their own right. Providing converging support for this process, (Loughnan et al., 2010b) showed that objectified women (those who were shown wearing minimal clothing or whose body was the focus in photographs), as well as objectified men, were attributed with fewer mental capacities and rated as deserving less moral concern – they were literally viewed as more like objects than people.

This work on objectification, together with the other research reviewed here, shows that both humans and nonhumans are sometimes used as resources in order to satisfy people's

needs or drives. When human need satisfaction conflicts with our moral consideration for other entities, people are motivated to find ways to change their perceptions of those entities in order to satiate their needs. Whether those needs relate to hunger, sexual desire, or financial gain, they moderate the extent to which moral standards, considerations, or concerns shape behavior.

We believe that future work in this area has a lot to offer. Research to date has demonstrated that our moral universe is flexible and motivated. While we can be motivated by moral principles we are also captive to our own basic needs and desires. Research has shown the role of moral principles and moral qualities (such as possessing a mind) in this process, extending the analysis to reasoning about value more broadly would be extremely useful. When are people likely to view resources as intrinsically valuable and does this perception shift according to our needs and perspectives. What is the role of self-perception in this process? For instance, does our self-definition as part of a broader ecological network predict a tendency to view a range of natural entities as intrinsically valuable? Conversely does our confidence in the supreme dominance and independence of humanity lead us to disregard the intrinsic value of things like rainforests, rivers or reefs?

A ‘third-dimension’ to resource dilemmas?

Our analysis suggests that there are, at least some, cases where our decisions over resource use are shaped by a moral consideration of the resources themselves. The morality of resource allocation and resource use is not only tied up in how those decisions affect (human) consumer needs, it is also tied up in the rights and wrongs of resource use itself. As we note above, we believe this line of thinking has been largely absent from work focusing on how resource dilemmas are resolved. Traditionally, scholars have focused on resource dilemmas as social problems that exist between the competing needs of two human parties

(also referred to as ‘commons dilemmas’ or ‘the tragedy of the commons’; Axelrod, 1984; Dawes, 1980; Kollock, 1998). This approach is adequate for cases where resources are only of extrinsic value. For instance, in most games designed to test how people resolve resource dilemmas, numerical points, or at the most money, are used as the focal resource (Van Lange, Joireman, Parks, & Van Dijk, 2013). This is, of course, not reflective of resource dilemmas in the real world. As we note at the beginning of this chapter resources such as rainforest, rivers, and reefs invite a range of other considerations, as does the use of animals for food. While coal or iron ore may be reducible to numbers or monetary value, the impacts of mining cannot. Resource dilemmas are not simply defined by egalitarian approaches to the maximization of extrinsic value, rather they are powerfully shaped by intrinsic qualities such as sentience, beauty, and uniqueness. The value of a rainforest cannot be accounted for in terms of its wood and the value of a river cannot be defined by its potential to produce irrigation and hydroelectricity. Just so, the value of an animal cannot be accounted by its ability to provide meat, and the value of a person cannot be accounted for by their ability to provide sex.

We argue that considering the intrinsic value of resources brings a necessary third-dimension to resource dilemmas. Focusing only on selfishness and altruism between interacting human parties is no longer sufficient for understanding how resource issues are resolved (e.g., Fehr & Fischbacher, 2003). In the real world people’s consideration of the intrinsic value of resources themselves impacts on decision making regarding resource allocation and resource use. We believe that taking account of this third-dimension promises to provide fertile territory for novel research endeavors.

So what happens when we introduce a focus on the intrinsic value of resources to resource dilemmas? How would this critical change to common resource dilemma paradigms affect people’s tendency to cooperate together? We suggest that framing resources as

intrinsically valuable should have a number of important effects. First, it should lead to less greed in taking resources for oneself. Maximizing the amount of money or points that one receives has implications for reciprocal cooperation from others, however, maximizing the number of old-growth trees, or number of cows for personal meat consumption, may also come with other more moral implications. These may range from personal discomfort with one's own greed to reputational concerns, extending beyond the willingness to cooperate with others to one's motivation to prevent harm.

Second, we suggest that a focus on intrinsic value should also moderate the ways in which people respond to defectors. When others take more points or money for themselves the best response is to do the same in return. Indeed it was exactly this strategy – the tit-for-tat strategy (Axelrod, 2006) – that was found to be most robust in promoting cooperation in the prisoner's dilemma game. Yet, when we consider the dilemma faced by environmentalists and logging companies over the use of forests for wood, this strategy is unlikely to be adopted. Imagine the environmentalists cutting down more trees to punish the loggers every time they take too many for themselves. When people are focused on the intrinsic value of a resource, and as such are motivated to prevent its destruction, they will seek ways to prevent its use rather than to equalize its use. This suggests that such individuals will aim to influence the behavior of others in less direct ways. For instance they may continue with their own strategies, hoping to lead by example, or they may engage in self-sacrificial behavior either by taking less for themselves, or by expending their own resources to prevent further harm. When focusing parties on the intrinsic as opposed to the extrinsic value of a resource, cooperative strategies are likely to be more robust against defection. This may, of course, produce other problems in the longer term – such as occurs when perpetrators are not punished appropriately – yet it nonetheless suggests that how a resource is valued can fundamentally change how resource dilemmas are resolved.

Third, we argue that a focus on intrinsic value should not only ensure that cooperation is more robust against defection, but should also promote increased cooperation, and potentially even some level of self-sacrifice, when it comes to first offers. If motivated to protect a resource, people will be motivated to ensure that they will be able to establish cooperation from other parties. To achieve this, first offers may be used to communicate cooperative intent, as well as perhaps conservational intent. To this extent, people will be more egalitarian, and perhaps more conservative, in their initial allocation of resources where other parties are able to make resource allocation decisions in return.

We believe that further exploration of these possibilities holds a number of promising and important insights. Specifically, it suggests that although the needs of humans and nonhumans often collide in the course of resource conflicts and resource decision making, it also suggests that focusing on the intrinsic qualities of resources may promote increased cooperation between humans. Of course, this may not lead to increased satisfaction of human needs, but it would lead to the increased preservation of resources themselves.

The future of resource conflicts: implications for policy

We believe that a moral psychology of resource use would make a valuable contribution to the fields of moral psychology and environmental psychology. Beyond its capacity to generate new knowledge however, we also think that it would provide valuable insights into policy development.

Perhaps the most obvious is the link between how resources are framed in terms of their value, and the implications that this might have for resource conservation and human cooperation. Indeed, such is the approach employed by environmental groups when seeking to protect old growth forests or other natural resources. These groups seek to focus people on the historical importance, the uniqueness, and irreplaceability of natural entities. In doing so

they seek to remind people that old growth forests are not simply unharvested wood, but that they are intrinsically valuable and deserve to be protected as things of value in and of themselves. This same approach is evident in the case of groups who advocate for animal protection and animal rights. Reminding people that animals are sentient and intelligent creatures, is a powerful way to interrupt their use of them for food or other instrumental purposes. Understanding the psychology behind these strategies could provide important avenues through which policy makers can seek the protection of resources that are either scarce, or whose destruction has become unpalatable.

A less canvased contribution is the link between a focus on intrinsic value and human cooperation around resource consumption. These links have yet to receive solid empirical attention, and as such many of the policy implications are yet to be realized. Nonetheless, should the tendency to focus on intrinsic rather than extrinsic value shape human cooperation, this insight would provide valuable and immediate inroads into managing resource dilemmas globally.

Most critically, however, is the role of psychology in guiding and directing policy around resource bottlenecks. As we note at the beginning of this chapter there is a pressure cooker effect that is already well on its way to overheating. Increased human population, paired with diminishing resources, and expanding moral concern for an ever growing list of entities will virtually guarantee that conflicts around resource allocation, resource consumption, and resource protection will become increasingly prominent in the years to come. These issues will become the focal point for social policy in the near future and the greater the role that moral psychologists and moral psychology is afforded, we believe, the better the outcomes.

Conclusions

Our world is growing, not only in terms of those who are competing over resources, but in terms of those who are considered to have a right to protection from harm. A moral psychology of resource use is needed to successfully navigate the various pressure points that are increasingly sensitive within this debate. We have offered some general insights into the nature of these issues, and some initial research findings. The field of moral psychology is growing, as is the field of environmental psychology, and we believe that by bringing these two bodies of knowledge together it will be possible to make an important contribution, not only to the literature, but also to public policy and public debate.

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