Value-Based Reasoning and Norms[1]

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Abstract. Norms are designed to guide choice of actions. Value-based practical reasoning is an approach to explaining and justifying choice of actions in terms of value preferences.. Here we explore how value-based practical reasoning can be related to norms and their evolution. Starting from a basic model of a society and the norms that can arise from it, we consider how additional values, and a more sophisticated model, with more detailed states and a history, and a finer grained description of actions, can accommodate more complex norms, and a correspondingly more complex social order.

1 Norms and Values

Norms are a topic of considerable interest in agents systems, since they are seen as a way of regulating open agent systems. Simple two player games, such as the prisoner's dilemma (PD), can be used to explore norms [3], [8]. Empirical studies suggest, however, that public goods games do not provide a very realistic model of actual human behaviour. Studies such as [7] demonstrate that the canonical model is rarely followed in practice. An alternative approach is provided by Value-Based Reasoning, in which agents are associated with a set of social *values*, the aspirations and purposes an agent might pursue, and their choice of actions explained by these values [1]. Norms can in turn be explained in terms of these choices. An example illustrating this approach using the fable of *The Ant and the Grasshopper* and the parable of *The Prodigal Son* can be found in [4].

In both the fable and parable there are two agents (ant and grasshopper and father and son, respectively). In both there is a choice of working through the summer to build a food surplus, or playing for one's own pleasure. In terms of values, the grasshopper and the son choose pleasure over work. When winter comes and they have no food they ask to be fed. The ant refuses, saying that it is the grasshopper's own fault, but the father does give the son food. Thus, in terms of values, the ant prefers its own pleasure (feasting on its store) to the grasshopper's life, whereas the father makes the opposite choice. The norms underlying the fable seems to be a kind of work ethic (one should choose work, reinforced by a norm saying that those who do not work should starve). The parable shares the first norm (the son is *prodigal*), but regards the life of the son as more important than the father's feasting. Since the preference of the ant seems rather selfish, perhaps even immoral [2], it is important that the norm obliging work is recognised, so that the refusal can be seen as punishment of violation of the norm, promoting the value Justice rather than a selfish preference. Given the norm, the father's action can be seen as promoting a value such as Mercy or Forgiveness, by withholding a deserved punishment. Thus we see how the

existence of norms allows the introduction of additional values. Punishment of violations is necessary to avoid normative collapse [6], so the repentance of the son (an additional action which will extend the basic model) is an essential part of the parable: it is expected that he will work in future summers.

Although norms to work and to punish violations (in the fable, repeated violations in the parable) will give rise to an equitable and sustainable society, the society could be critiqued: there is no net pleasure, no choice, no diversity, and the pleasure that does exist (feasting in winter) is rather basic, whereas the pleasure denied (singing) can be seen as a 'higher" pleasure, which utilitarians such as Mill have valued more highly than basic pleasures. It can be seen as a mark of a civilised society that it uses surplus food to enable the development of arts and sciences. This can be reflected by distinguishing three types of pleasure: bodily pleasures, higher pleasures and mere frivolity. Now our norms can make use of these distinctions, by punishing frivolity, but encouraging higher pleasures by giving food to those who are in need because of their pursuit of these pleasures. The problem is ensure that there will be enough surplus food to feed those who do choose higher pleasures over work: this requires at least half the population to work. But why should they choose work? There are a number of ways in which we can accommodate agents choosing to play. Some require disparity between agents, while others require a redescription of the world: additional values and refined descriptions of actions and states.

Power. We first consider a disparity of power. In this situation some agents are sufficiently more powerful than the others as to be able to compel them to surrender their food. The powerful can choose pleasure without fear of starving. But a norm is required to prevent them demanding non-surplus food, representing a preference for Life over (any form of) Pleasure. Also we will wish to discourage frivolity, so there will be a norm (addressed only to the powerful, the rest will still be obliged to work) forbidding frivolity (allowing work as a choice) or obligating pursuit of higher pleasures.

This means that there is one norm for the powerful and one norm for the powerless, which requires some kind of social order, recognised by all. One example of such a society is Feudalism. If there are relatively few powerful agents, they can demand low rents and so leave some surplus to the tenants If such a society is to be sustainable, the powerless need to respect the social order so that they do not rise up and overthrow the elite. Revolutions must be avoided. The social order can be supported by additional values, such as *Deference*, respected by the powerless and a kind of *Nobelsse Oblige* respected by the powerful. Acceptance can be reinforced in several ways including patriotism, in which the powerless are encouraged to take pride in the cultural achievements of their masters, or religion. As a further reinforcement, prudence suggests that the rents should not be too high. The proportion to take resembles the Ultimatum Game [7]. A further possibility is that some workers may be taken out of food

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production and used for other purposes of benefit to all, which might be additional cultural activities (e.g. minstrels), building works (e.g. the pyramids), or whatever, and then fed from the tribute ("bread and circuses"). In addition to Feudalism, there are other models: slavery is one, and the kind of brigandry depicted in the film *The Magnificent Seven* is another, but these afford far less opportunity for keeping the powerless content.

Money. In post-feudal societies we find that class and disparity remain, but that this disparity is manifested as wealth rather than physical coercion. When wealth is the source of power, the forcibly coercive demands of the powerful are replaced by the ability to buy the surplus. Selling is not compulsory, but avoids the wealthy starving and allows the possibility of acquiring money to allow for future pleasures, or deferring work through debt. This is the underlying idea of holidays, pensions, and more recently of "gap years". How the surplus is distributed can be left to the individuals and so made to depend on the preferences of individuals, or there may be limits imposed by a state. This could lead to a fair degree of equality, since eventually the initially wealthy will have spent all their money, and so be forced to work. There are, however, mechanisms which tend to allow the wealthy to maintain their position: including land ownership, access to external wealth (e.g. colonies) and usury. The notion of money which allows consumption to be deferred or anticipated requires a norm obligating the repayment of debt, or more generally to honour agreements, and will be accompanied by new values such as *trustworthiness* and *honesty*. In some cases deference or generosity may mean that some people (e.g. monarchs, priests or those who cannot work) are supported without payment. This may lead to support a norm obligating giving alms to those who cannot support themselves (to the poor, or to those performing a worthwhile service, or both). Once the need to honour agreements has been recognised the possibility of turn-taking arrangements arises. Such arrangements are common amongst children and households sharing chores, and as been been shown to emerge in certain kinds of agent simulations [5].

The "play" may also be of value to the working agents. Here some agents may be prepared to part with a (typically) small part of their surplus. Since the singing of a single grasshopper may entertain a whole colony of ants, it is even more attractive if the cost can be shared across a large number of individuals. Where this is so, a variety of entertainers can be supported, and other services performed. Money greatly assists this arrangement, and places it on a contractual footing. As such we might expect the emergence of a service and entertainments sector, where some agents are able to adopt the role of providers of cultural activities willingly supported by groups of other agents. This is likely to be increasingly the case when productivity rises, so that workers generate larger surpluses. Now both food production and providing services for which others will pay can be seen as "work". Only the best will be paid to entertain, allowing for such play to be distributed on merit (rather than on power or wealth).

Government. As well as choosing to spend their surplus on providing themselves with culture, through paying others to play in particular ways, agents may choose to pay others to do their duties. In [6] it was shown empirically that to avoid norms collapsing it is necessary that they not only be backed by the punishment of violators, but that those who fail to punish must themselves be punished. Since punishment has a cost, however, there are reasons not to punish, and in societies where violations are comparatively rare, the cost of punishment falls unevenly and unpredictably. Recognising the need to punish is an important aspect of social cohesion. Once this is seen as a social duty it is a small step to organise and pay for a third party to punish violators. From this it is a small step to taxation, and the provision of services such as law enforcement by the State. And if law enforcement, why not other duties? In this way Governments may emerge, first as a Hobbesian *Leviathan* for mutual protection but, once established, available to take on the performance of other duties, such as supporting those incapable of work, or even centrally providing entertainers.. In addition to adding an additional actor to the model, an emergent state will lead to further new values such as *self-reliance*, *freedom*, *community*, and their relative preferences may provide insight into the form in which the Government emerges.

Discussion. Value-Based practical reasoning [1] was developed to explain and justify choices of actions in terms of the subjective aspirations of agents, represented as an ordering on values. Norms are designed to guide such choices and can be seen as corresponding to, and hence encouraging, particular value orderings. As such norms and value-based reasoning should relate to one another. In our very simple initial example, based on the fable of *The Ant and the Grasshopper*, for the society depicted to be sustainable a norm enjoining work over play was required. But since normative collapse requires the punishments of violations [6], it was important that the ant did not simply meet the grasshopper's needs. Because this appeared to be endorsed by the ant selfishly choosing pleasure over the grasshopper's life, the new value of justice was introduced to justify such punishment. Corresponding values such as forgiveness were then required to justify the action of the father in the parable of *The Prodigal Son*. But because violations eventually need to be punished to avoid normative collapse, we need to record the history of the system to recognise repeated violations. Thus we are elaborating the states, and introducing further values, some of them meta-values: values promoted and demoted by value orders rather than actions. *Greed* would be another meta-value, representing the undue preference for an agent's own wealth. Norms encourage particular orderings.

We have also shown how finer grained descriptions of actions (e.g. discriminating various kinds of pleasurable activity), and additional state information (recording disparities of power and wealth) give rise to, or are required by, more sophisticated norms. The introduction of money, for example, requires a set of accompanying norms to regulate its use. These norms in turn support a variety of social orders, and more specialised and diverse societies. Different normative systems can in this way be explained in terms an interplay of values, states, norms and social aspirations, and approved preference orderings, supported by meta-values.

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