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by bringing theologians into conversation with scholars  
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Disciplinary Brief

## **DOING JUSTICE TO NATURE IN SCIENCE**

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This is a brief, speculative, and exploratory response from the perspective of a physicist to the understanding of justice proposed by Nicholas Wolterstorff in his Theology Brief for the Global Faculty Initiative. His key points may be summarized as follows.

- First order justice concerns agents, individuals, and institutions acting justly; and is best understood as each rendering to others their right or due.
- Second order justice concerns the laws, sanctions and systems that secure first order justice.
- A right (due) is a morally legitimate claim to something, an entitlement.
- Conferred rights are attached to a position, promise, law, or social practice.
- Non-conferred rights are grounded in the excellence (goodness, worth, dignity, praise- worthiness) of the rights-bearer, such as natural rights and human rights.
- Justice and attention to rights should play a pervasive role in the university.

### **Objectivity and Morality**

The content of natural science concerns itself with what is – not what ought to be. Natural science is experimental and observational. It studies the repeatable, and what appear to be the unchanging and normally inescapable principles that govern the working of the natural world. Its theoretical explanations are required to observe intellectual standards of clarity, self-consistency, logic, and mathematical rigor, some of which are common to non-science disciplines too. But natural science is founded on the authority of nature: of reproducible experiment and observation, to which theoretical speculations must ultimately conform if they are to be accepted. Moreover, science's whole approach to explanation is to set aside intentionality, and personality, instead seeking explanations in terms of efficient causes.

Superficially, then, what science finds out does not appear to demand an assessment of worth, or goodness, beyond the material and pragmatic. It is not prima-facie about human or any other personal value. And that has led to a view that its contents (though not its institutions) are free from ideological or religious bias: that its knowledge is purely detached and factual. Postmodern critiques aside, most scientists do regard science's findings as objective.

That does not mean all scientists view their discipline as lacking in wider, or perhaps even transcendent significance; nor

are they necessarily unemotional; nor are aesthetic or ethical considerations excluded from their thinking or practice. But it does mean that when scientists discuss justice in their discipline they mostly focus on scientific social practice and applications, not on the content of scientific knowledge. This social perspective has become even more obvious recently as professional scientific societies have responded to critiques from minority groups about inequity and bias. Social diversity, equity and inclusion have become a major preoccupation in professional societies. And it shows up when the application of science, especially its commercial application, is seen as its main justifying rationale. The underlying ethical principles and values on which such discussions proceed come from outside science, whether scientists realize it or not. Here I want instead (or perhaps in addition) to suggest that natural science has priorities, which can reasonably be considered matters of justice, that derive from nature itself. Doing justice to nature is something both science and all of human endeavor should take as a priority.

## Justice in Science

If, as Wolterstorff says, first order justice derives from excellence (goodness, worth, dignity, praise-worthiness), are there not aspects of the natural world that possess this sort of excellence, and are there not important features of the very content of science that call for just recognition?

The Christian and Jewish scriptures, in countless places celebrate the natural world (e.g. Gen 1:31, Ps 8, Ps 96:1-6), its goodness, wonder, majesty, power, and beauty; and they also praise it as the ongoing gift and creation of God (Ps 65:9-13, 95:4-5, 104). Are these excellences the foundation of what constitutes justice in respect of nature? And are they perhaps even a major part of what undergirds the just practice of science?

Even the most secular of scientists and science commentators are unashamed to celebrate the awesome character of the universe, the wonder and mystery of what governs quantum and sub-atomic physics, and the intricacies of the biosphere. When doing so, are they recognizing something that truly goes beyond the impersonal and pragmatic, or are they just being led by their inescapable humanity into a spurious emotionalism? Christian teaching is that the awesome character of the universe is in fact attributable to the will and wisdom of a personal Creator, and that in engaging scientifically with nature we are engaging with the excellences of a creation.

As a Christian, I see my professional science as engaging with the natural world in a way that does justice to its excellence, worth, and dignity, which is a reflection of the character of God. In doing so, I stand in a historic tradition of people of religious faith who have seen intrinsic worth in knowing and understanding the working principles of nature. Such abstract knowledge is not in conflict with a call to practicality; indeed it can be argued that Francis Bacon's call to knowledge "for the relief of man's estate" was a vital stimulus to abandon purely speculative knowledge, and focus for charity's sake on reproducible experimental demonstration, which undergirds modern science. However, there is, in a society dominated by the technological application of science, a vital need to balance practical and commercial interests with the call to do justice to nature not just in the employment of technology in human society, but also in our valuing of the excellence and worth of the natural world. Thus, pure science is valuable foundationally because of the excellence, worth, dignity, and praise-worthiness of the creation, recognizable by all regardless of theology, but recognized by the faithful as a part of their spiritual understanding.

Since natural science is concerned with the reproducible and unambiguous aspects of the world, its successful pursuit demands, and eventually rewards, certain practices that have a moral character. Perhaps foremost among these is truthfulness. Of all the virtues, truth is perhaps the one most explicitly attributed to Jesus (Jn 1:14 “the Word became flesh and dwelt among us, full of grace and truth”, Jn 14:6 “I am the way, the truth, and the life”, etc.) and enjoined on Christians (1 Cor 5:8, 2 Cor 6:7, Eph 4:25, etc.) Science demands truthful observing and reporting. This is a discipline that requires a certain unselfish honesty, and echoes Biblical calls that serious Christians take seriously. Perhaps that is one reason for the very influential role played by Christians in the development of modern science. Personal discipline, important though it is, has never been sufficient on its own; and science has also institutional practices that seek to enforce truthfulness and uncover error or (self-)deception. It was once relatively straightforward for observational or experimental reports to be checked and reproduced by other natural philosophers, and for scientific discoveries to be quickly confirmed or dismissed. Moreover, when science was predominantly a pastime for enthusiastic amateurs rather than a source of wealth, the only personal benefit to be obtained from it was reputation. Today it is far more difficult to detect incompetence, error, or deception because of science’s complexity. And the potential personal advantages are considerably more tempting. Truth has recently become more difficult to establish and less practically compelling, with regrettable consequences. In many scientific fields there is a crisis of reproducibility, and in virtually all of science there is a glut of unreliable and incorrect journal articles, fed by the now negligible cost of publication and dissemination. These are injustices, I suggest, not merely because of the cost, trouble, or suffering that they impose on others, but also because they fail to render to nature the truth that is its due.

## Just Treatment of Nature

Environmental Justice is a phrase widely invoked today that seems to suggest that there is such a thing as justice toward nature. A major discussion thread that often dominates the development of what environmental justice means is equitable human sharing of natural resources. Wolterstorff has argued that this sort of “distributive justice”, while important, is just one facet of first-order justice. Nevertheless he speaks almost entirely of “agents” (including social entities) as being the givers and receivers of justice. Beyond that, I want to propose that there is a meaningful sense in which the relationship of humans to the natural world calls us not only to do justice to our fellow humans, but also to do justice to nature. If so, then it would be too narrow a characterization to say that justice concerns rendering to other *agents* their right or due. Instead, unconscious or even inanimate features of creation are owed their just due. And these “rights” might well compete with the desires or “rights” of people or other agents. [ 1 ]

This also is a profoundly Biblical idea, encapsulated in the Old Testament primacy of Sabbath (Deut 5:12-14) and Jubilee (Lev 25:8-22). As one of the ten commandments, observing the Sabbath is certainly in part about justice toward employees and servants, and in part about acting justly toward God in worship. But it is also about rest for the land, for animals, and for nature. Rest for the land is, of course, a recognition by the religious instruction of the hebrews that an agricultural society’s flourishing depends on the health of fields, which is promoted by avoiding over-utilization. But it is also a recognition of what we justly owe to the care and stewardship of creation, because of its intrinsic worth. Creation care is a duty for humans, not just for reasons of self-interest, but also for justice toward nature.

What, as a consequence, do we owe to the study of nature? What moral and ethical priorities does science demand? And

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do those priorities (those “rights”) moderate, constrain, or conflict with other rights claims?

It is perhaps obvious that, when investigating the biology of humans, ethical constraints on what is acceptable experimental practice should be enforced. It is uncontroversial to see these as a matter of justice. But the puzzles seem to me considerably more difficult when it comes to the justice of animal experiments. Do animals have rights, and if so which animals, and what rights? Beyond the animal kingdom, does the environment, the oceans, the atmosphere, the landscape, the planet have rights? Is there a question of justice in recognizing their excellence and worthiness? Is it justice that is violated by pollution, excessive consumption, or other environmental exploitation?

Here is where utilitarianism most obviously falls short of providing properly grounded ethics. It can presume some value or values based on human survival or prosperity, but it cannot justify any value, worth, or dignity derived from the character of non-human nature. It can cash in the emotional or aesthetic appreciation that many people feel toward the natural world, but it cannot attribute an intrinsic value or excellence to nature, possessed independent of humans. Christian teaching does attribute high worth to humans – because God loves us. But, rightly understood, that worth does not over-ride the worth of the rest of creation, because God loves it too. Nature deserves to be valued by us humans. And science is a discipline that places high value on understanding it. Perhaps, then, justice toward nature, based on its excellence and praise-worthiness, is a compelling, and Christ-worthy, ethical priority.

When the flourishing of humans and of nature seem to be in conflict with one another, I believe that a proper balance can be greatly facilitated by seeing *both* priorities as being about justice based on what is due. Natural science at its best can foster this understanding.

## Endnote

[ 1 ] Wolterstorff’s discussion of justice does not address what seems to me a crucial difficulty in a “rights” perspective, which is that different rights often do compete; so an absolute assertion that a right trumps other considerations is impractical.

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