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Early modern conceptions of "natural law"

Summary

This article traces the shifts in meaning of the metaphor of "natural law" in modern thought from its pre-modern meaning as a divine standard for human behaviour accessible to reason. Descartes expanded this meaning to include the regularity of mechanical bodies by posing an absolute law system for all possible worlds as *a priori*, rational, and axiomatic. Newton relativised this from the perspective of the multi-facetted governance of God. The older conception of natural law sustained itself in economics and politicology, serving as a defence of individual freedom and non-intervention (Petty, Locke), but (dialectically) implying a determinism. It remained linked to Cartesian meaning via attempts by Petty, Hobbes and Locke to construct a natural science of social life.

Vroeë moderne opvattings van die "natuurwet"

Die artikel omlyn die verskuiwing in betekenis van die metafoor "natuurwet" in die moderne denke, van sy voormoderne betekenis as 'n goddelike maatstaf vir menslike gedrag toeganklik vir die rede. Descartes het hierdie betekenis uitgebrei om die reëlmaat van meganiese liggame in te sluit, deur 'n absolute wetsisteem vir alle moontlike wêrelde as *a priori*, rasioneel, aksiomaties te poneer. Newton het laasgenoemde gerelativeer uit 'n perspektief op die veelfasettige regering van God. Die ouer opvatting van "natuurwet" is gehandhaaf in die ekonomie en die politikologie, waar dit gedien het as verdediging van individuele vryheid en non-intervensie (Petty, Locke), maar ook (dialekties) 'n determinisme geïmpliseer het. Dit het egter verband bly hou met die Cartesiese betekenis deur pogings van Petty, Hobbes en Locke om 'n natuurwetenskap van die sosiale lewe te konstrueer.

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Some postmodernists support a Heideggerian view of "modernity" as a humanism according to which humankind rightfully transforms nature according to its own image and plans (cf Heidegger 1952: 81ff). Craig Owens (1987: 65) uses the terminology of Lyotard to express this:

> Master narrative — how else to translate Lyotard's *grand récit*? And in this translation we glimpse the terms of another analysis of modernity's demise, one that speaks not of the incompatibility of the various modern narratives, but instead of their fundamental solidarity. For what made the *grands récits* of modernity master narratives if not the fact that they were all narratives of mastery, man seeking his *telos* in the conquest of nature? What function did these narratives play other than to legitimise Western man's self-appointed mission of transforming the entire planet in his own image? And what form did this mission take if not that of man's placing of his stamp on everything that exists — that is, the transformation of the world into a representation, with man as its subject?

Owens understands modernity's view of the relationship between "man" and "nature" as a universal narrative of mastery. Faced with such a general statement, the question arises whether modernity really presents us with a monolith of narratives of mastery.

1. The issue

One way to test this understanding of the modern era is to follow the development of the metaphor of "natural law", which played a crucial role in the way in which the relationship between humankind, "nature", and God was understood. Such a study — limited here to early modern conceptions of natural law — gives a much more nuanced picture. One can for example sustain Owens's interpretation of modernity with regard to thinkers like Descartes and Hobbes (as well as later modern thinkers like Quesnay, Kant, Comte and Marx) but it is much more difficult to argue a case for Boyle, Newton, and Locke, who had different views on the relationship between God, man, law and nature, as well as a stronger sense of the relativity of human power.

Secondly, the concept of "nature" during this era is a problematic one. The word may refer to "the state of nature" which was supposed to have preceded the "civil state" or "culture", as in Hobbes and Locke (and later elaborated by Rousseau and Kant). In this context it

usually refers to the dominance of the sentiments, passions, instincts, senses, biological needs, the physical and the environment, in other words the complex whole of the sub-rational (very often given meaning in terms of a human-centred teleology) in contrast to the rational. But then each thinker had his own understanding of what the "state of nature" actually entailed and how the sub-rational complex functioned in that state (cf Venter 1999a: 4ff).

However, the combined term "natural law" (or "law of nature") may mean the age-old conception of a cosmic law reflected in human reason, and normative for human behaviour in the natural sphere (as opposed to the supernatural since the Middle Ages). One finds this in Calvin and Bodin, in early capitalist economic theory (Petty), and in Locke. But Petty and Locke shifted the conception of rational natural law in the direction of a basis for freedom (rather than the medieval idea of a basis for intervention by the church and the state). Since Descartes, however, "natural law" has also indicated (an axiom about) the regularities of spatially extended mechanical bodies (which in the context of the mechanistic worldview also include the biotic aspect of such bodies). Boyle and Newton disregarded the character of pure innate rationality which Descartes ascribed to these laws. Nor did they simply accept the Cartesian belief in the lordship of man over the world by virtue of knowledge of these laws.

My first intention is to trace in this article the development of the conception of "natural law" or the "law of nature" in early modern times, showing the divergence of meaning between (i) the rational law for human behaviour and (ii) the axiom valid for mechanical processes, as well as (iii) the shifts within these two meanings.[1]

The "law" metaphor, however, did not stand on its own. It was connected in a primary ("efficient") sense with a lawgiver, and in a teleological ("final") sense with a "for whom" (the primary and the final senses are usually, but not necessarily the same). Ontologically the conception of the lawgiver and the *telos* makes a difference both in the understanding of what a law of nature is and in the apprecia-

1 One may add that the two meanings coalesced again in the eighteenth century in Quesnay (with the subrational reference as dominant in the hierarchy); in the nineteenth century, Comte's "law" and "natural law" became indistinguishable.

tion of the importance of natural law. Thus we find a relativising of law in a voluntarist conception of the divine (as in Calvin, Boyle, and Newton), and an absolutisation of law in a non-voluntarist idea of God, as in Descartes (as well as Comte and Einstein in later modernity). The idea of "natural law" ought therefore not to be treated as independent, but rather in the context of ontological conceptions.

Secondly, I wish to provide a sketch of the formation of the conception of "natural law", in the hope that it will contribute to a better understanding of its meanings and shifts. In this regard a testing of the Mason-Zilsel hypothesis about the origin of the term "law of nature" may provide a direction. Mason (1956: 135-7) and Zilsel (1942) searched for the origins of this term (referring to those laws studied in the natural sciences):

- in an analogy of the practice of civil government by statutory law introduced by the absolute monarchs of the sixteenth and seventeenth centuries, and
- in the Judaeo-Christian conception of God as the absolute monarch which, according to them, was derived from the despotisms of Babylon. This latter concept is supposed to have been introduced into Western thought via the Stoics (who frequently used the term "laws of nature", strongly influenced by the Babylonians), who flourished as a school during the despotic phases of Greek and Roman history. Indeed, the idea of a cosmic order was widespread among the nations of the ancient world (the Near East, Egypt, and Greece; cf Wolters 1994: 43-6). But the Israelites may have been too easily included among those who believed in a despotic god, since their belief in a divine world order antedates their monarchy. Their idea of God includes a loving fatherhood rather than a mere despot, and it is in the Bible that one finds a democratisation of the ancient idea that the king is the image of God, when every human being is said to have been created in the image of God (cf Bartholomew 1994: 66).

Mason believes that the term "laws of nature" was not often used in the Middle Ages, and was revived when the idea of civil government by an absolute monarch through statutory law was introduced by the Frenchman Jean Bodin, and implemented in France. Mason and Zilsel consider it no accident that some forty years after Bodin's

theory of sovereignty another Frenchman, Descartes, characterised God as the "legislator of the universe". Mason (1956: 137) adds that some forty years before Bodin, yet another Frenchman, Jean Calvin, was working towards the conception of God as the absolute ruler of the universe, governing by laws decided upon from the beginning. It was the Calvinists, he says, rather than the Catholics, who spread aspects of Cartesian philosophy while the latter defended Aristotle against Descartes.

Mason probably sensed the absolutising of law in Descartes. According to Descartes, God could not have approached creation otherwise than through the specific laws.[2] Descartes thus went in search of an absolutist view of law and the lawgiver, which he believed could be found in Calvin and Bodin. He was probably correct as far as Bodin is concerned, but Calvin's views were more nuanced, and neither Boyle nor Newton followed in Descartes's footsteps in this specific regard.

Mason adds that the idea of quantitative laws of nature may have come from the conception of law found among the merchant societies such as the *lex mercatoria* (1622) of Gerard Malynes:

> True law is a right reason of nature, agreeing therewith in all points, diffused and spread in all nations, consisting perpetually, whereby *meum* and *tuum* are distinguished and distributed by number, weight, and measure (quoted in Mason 1956: 136).

It ought to be pointed out that here — in a document which appeared during the lifetime of Descartes — "right reason of nature" refers to economic activities and objects; in other words the expression is not limited in meaning to non-human or non-voluntary processes. Malynes is saying that "true law" agrees with nature and is universal, and that such laws determine property relations by quantification. This is the continuation of a tradition about property that may be traced back to ancient Egypt, and its understanding of nature reflects the Stoic tradition. The shift towards a conception of nature and natural law which modelled human processes on physical ones, initi-

2 Comte would later follow in Descartes's footsteps by subjecting his divinity (humanity) to the universal laws, and Einstein would much later repeat Descartes's view of the relationship between the law and God.

ated in the mechanistic approach of Descartes, occurred over a period and is probably not yet to be found in Malynes.

I shall attempt to highlight part of the history of the understanding of "natural law" by giving an overview of the shifts in the early modern uses of the term. But for the sake of a broader background, which may assist in giving a clearer outline of the shift, it may be helpful to test the Zilsel-Mason approach more intensively, and also to include some pre-modern conceptions in the study. It is hoped that such an analysis will bring the diversity of meanings of "natural law" and the interaction among these meanings to the fore, and lead to a more flexible understanding of the relationship between man and nature in modernity than that of Owens (quoted above).

2. Ancient and medieval ideas of natural law

The inclusion of humanity in the context of "natural law" is in accordance with a long tradition coming from the Stoics. Willey (1961: 14ff) points out that the Stoic idea of "natural law" (as an inner law of duty which expresses the external universal order) was fused with the *ius gentium* of the Roman jurists into a law of nature before which all men are equal. Cicero (*De legibus* I, 7) validated the laws of the state against this original source of law. As early as Gaius the *ius gentium* is defined as the "right constituted by natural reason".

A fusion of this tradition with biblical faith was brought about by Christianity, which played on two "states of nature" — nature before and after the fall. Thus Ambrose of Milan viewed property not as an institution of nature but of the post-lapsarian greed of usurpation; nature gave all things to all men in common. All men are also by nature free, but sin made serfdom and coercion natural. The rule of the Gospel that we should do unto others as we want done to us, says Willey (1961: 16), was considered a law of nature, but sinful man has to be coerced by positive law to obey this natural law.

All through the Middle Ages natural law was used as the basis of criticism of the established order, for natural law was seen as the rational expression of God's law, and this did in some cases lead to criticism of the treatment of poverty and the institution of slavery.

Thomas Aquinas identified the law of nature with the imprint of the eternal law in human reason, where it serves as a principle for practical reason (*Summa Theologica* XCI, 2-3; 1945: 742ff). Thus *lex naturalis* refers specifically to human rational insights for practical life, while in other creatures the eternal law of God is expressed in their forms (which, as in Aristotle, are conceived of in teleological terms). Thomas thus contextualised natural law in terms of a hierarchical order in which the Ambrosian views could scarcely be sustained and domination by the established order became normative. Natural law thus provided a rationalisation for intervention by state and church in areas of life which are not the direct concern of these institutions, such as economic activity. Given the stature of Thomas Aquinas, this alone speaks against Mason's neglect of the Middle Ages.

Calvin and Bodin continued the idea of rational law as divine law, which forms the basis of critique of human positive law and human actions, but Calvin did not show as much trust in the ability of human reason and earthly powers — even the church — to interpret divine law as the Middle Ages and Bodin had. Early capitalism, in the sixteenth and especially the seventeenth century, would continue the application of natural law to human activities, but use it as a defence of the notion that free economic activity follows its own laws, and therefore in support of non-intervention.

3. Calvin and Bodin

How sustainable is the Zilsel-Mason thesis that Calvin and Bodin are sources of the modern (Cartesian) concept of a rational law of nature which refers to the subrational (specifically the mechanical) and is based upon the metaphor of a despotic God?

3.1 Jean Calvin (1509-1564)

Some interpreters of Calvin provide support for the thesis that the basic principle of his thought is indeed reducible to God as the cosmic lawgiver, for according to them Calvin proclaimed the "sovereignty of God" (cf for example Spykman 1976: 166-7; 195; Du Plessis 1978: 321; 325; Van der Walt 1974: 393). It is true that the theme of God's law plays an important role in Calvin's thought. In

the 1536 edition of the *Institutes of the Christian Religion*, for example, the analysis of the law of God forms part of the first issue of which Calvin takes cognisance: the knowledge of God and ourselves. But the context here is the question of understanding one's own dependence upon God's grace and love (in contrast to the utter misery of somebody outside that grace). What is absent, also, from the final edition of the *Institutes* is the metaphor of "sovereignty"; neither is this found in the very brief analysis of the state's role towards the end of the *Institutes*. It is important to note that Calvin uses different metaphors when he speaks about God in relation to creation, so that one has to be careful not to reduce these simply to "law-giver" or "sovereign". I cite the following passage in support of this reading:

> [...] it undoubtedly follows that your life is sadly corrupted, if it is not framed in obedience to him, since his will ought to be the law of our lives. On the other hand, your idea of his nature is not clear unless you acknowledge him to be the origin and fountain of all goodness. [...] For, first of all, the pious mind does not devise for itself any kind of God, but looks alone to the true God [...] He by whom God is thus known, perceiving how he governs all things, confides in him as his guardian and protector, and casts himself entirely upon his faithfulness — perceiving him to be the source of every blessing, if he is in any strait or feels any want, he instantly recurs to his protection and trusts to his aid, — persuaded that he is good and merciful, he reclines upon him with sure confidence, and doubts not that, in the divine clemency, a remedy will be provided for his every time of need — acknowledging him as his Father and his Lord [...] Loving and revering God as his father, honouring and obeying him as his master, although there were no hell, he would revolt at the very idea of offending him (*Institutes of the Christian Religion* I, ii, 3).

True, in this long quotation God does appear as a lawgiver with authority, but He also appears as the source of life, as the one whose will is law (after Occam this means God is personally involved), who is the source of good and of all blessings, as governor of all, guardian, protector, the faithful one, the merciful, father, lord, with majesty, glory, and judge. Calvin did not systematise these metaphorical attributes, and interpreters ought to be careful not too easily to subsume them all under the heading of "sovereignty" or "law-giver". When it comes to governing the world, Calvin expressly rejects the mechanistic deism which reduces the involvement of God to giving an impulse to a machine which then runs on that energy. God's providence "consists in action" (*Institutes* I, xvi, 4) and the world is not governed

simply via God's power, but by his decree.[3] Calvin makes a special point of indicating that even when it appears as if matters proceed by themselves on a fixed course (such as the seasons), God — by paternal favour or judgement — is still personally involved. God, by active involvement, steers everything to its proper end. A teleological principle is therefore involved, but it differs from that of Aristotle in the sense that God is here not the far-off magnetic final cause who unknowingly pulls everything towards its form. God is a governor, yes, but in his government he remains the loving father.

As we have noted above, Calvin rejects the idea of law associated with the regularities of a mechanical automaton. His idea of law is much wider. He accepts a "natural law" imprinted on the heart of humankind — the original order of creation aimed at the wellbeing of humankind — but notes that humankind is so immersed in the darkness of error that it is scarcely able to form a tolerable idea of the worship of God (Calvin 1979: *Institutes* II, viii, 1-2). God therefore has given humankind his law in written form. Calvin uses "law" in a twofold sense, as he finds it in the Bible: "the whole doctrine of Moses" related to his "universal office" to preach both repentance and faith, but also the part pertaining to Moses' specific ministry as expressed in precepts, rewards and punishments. Law and gospel are substantially the same — they only differ in the form of administration (cf Bandstra 1976: 15; 21ff).

God is active in his law in both senses. By his *ordo naturae* (the objective basis of the *lex naturae* in the human heart), God sustains his creation, and by his law as the particular rule of grace he reveals

3 "My intention now is, to refute an opinion which has very generally obtained — an opinion which, while it concedes to God some blind and equivocal movement, withholds what is of principal moment — *viz* the disposing and directing of everything to its proper end by incomprehensible wisdom. By withholding government, it makes God the ruler of the world in name only, not in reality. For what, I ask, is meant by government, if it is not to preside so as to regulate the destiny of that over which you preside? I do not, however, totally repudiate what is said of an universal providence, provided, on the other hand, it is conceded to me that the world is governed by God, not only because he maintains the order of nature appointed by him, but because he takes a special charge of every one of his works" (Calvin 1979: *Institutes* I, xvi, 4).

what is necessary for their salvation. God is, however, not subject to his law: *Deus legibus solutus est* (Calvin adapts the principle from Roman law: *princeps legibus solutus est)*. But God is not *exlex* — not the arbitrary God of Occam, but faithfully involved in the execution of his law. Or, as Calvin says commenting on Exodus 3: 22, God's power is above all law, yet his will and actions are in fact justice; his actions are elevated above the law and yet they are in themselves the whole law (cf Du Plessis 1978: 326-7).

Although Calvin, in his very cursory analysis of the power of the earthly authority, demanded obedience from the citizen (and did not clearly opt for an ideal form of government), he also charged the earthly authorities under the law of God with a special task, to protect those under their authority and to execute justice with equity. He allowed the "magistrates" to resist and replace the government of the day if it deviated from justice and equity (cf Calvin 1979: *Institutes* IV, xx; Du Plessis 1978: 343ff). His follower, Johannes Althusius (1557-1638), concluded from this that controls are required in the form of ombudsman-like officers who monitor the functioning of government and resist deviations from justice and equity (cf Wolf 1963: 177ff).

Calvin's idea of law — both its encompassing content and the relationships in which it stands to God and creatures — and the variety of ways in which he speaks of God make it difficult to fit him into the history of the concept of natural law in the simple manner adopted by Mason. There are some kinships between Calvin's idea of God's governance and that of Newton (as indicated below), but it is probably easier to support Mason and Zilsel's hypothesis that Bodin's doctrine of sovereignty may have been a precursor of Descartes's understanding of natural law, and that the latter may have been the beginning of a large portion of the modern understanding of natural law.

3.2 Jean Bodin (1529/30-1596)

Like Calvin, his younger contemporary Bodin had a Catholic ecclesiastical training with strong Renaissance influences, and opposed the Aristotelian tradition, but whereas the early Calvin was more interested in the Stoics, Bodin seems have gone the way of Platonism. Bodin (in his *Six books of the commonwealth*, of 1576) focused his attention on the commonwealth as the rightly ordered government of a number of

families and their common concern by a sovereign power (Bodin [*sa*]: 1). According to Bodin the conditions of felicity are the same for the commonwealth and the individual, and lie in the intellective and contemplative virtues (Bodin [*sa*]: 2-3) — as Plato and Aristotle also believed. It is the sovereign power who determines the felicity of the commonwealth, and therefore also of the individual citizen. Bodin's idea of the state is not only totalitarian, but also (and this may have been the basis for the metaphor of a divine lawgiver) monarchical in the strongest sense of the word: the prince is the sovereign in an absolute sense and rules by command.[4] The attributes of his sovereignty — the sole rights of the prince — include the right to declare war and make peace, to authorise appointments to public office, and to be the source of all rights of jurisdiction, regardless of the customary ways of executing these functions (Bodin [*sa*]: 40ff). Bodin does, however, relativise the power of the monarch by subjecting it to divine and natural law.[5] He consistently distinguishes between "divine" and "natural" law; it is not clear exactly how the two relate to one another.

But as in Cicero, so in Bodin, there is a higher law (or laws) than that of the earthly sovereign. Unlike Althusius, however, Bodin did not provide for control mechanisms to oversee the government of the

4 "On the other hand it is the distinguishing mark of the sovereign that he cannot in any way be subject to the commands of another, for it is he who makes the law for the subject, abrogates law already made, and amends obsolete law. No one who is subject either to law or to some other person can do this. That is why it is laid down in the civil law that the prince is above the law, for the word law in Latin implies the command of him who is invested with sovereign power. [...] If the prince is not bound by the laws of his predecessors, still less can he be bound by his own laws. One may be subject to laws made by another, but it is impossible to bind oneself to any matter" (Bodin [*sa*]: 28).

5 "It is far otherwise with divine and natural laws. All the princes of the earth are subject to them, and cannot contravene them without treason or rebellion against God. His yoke is upon them, and they must bow their heads in fear and reverence before his divine majesty. The absolute power of princes and sovereign lords does not extend to the laws of God and of nature. He who best understood the meaning of absolute power, and made kings and emperors submit to his will, defined his sovereignty as a power to override positive law; he did not claim power to set aside divine and natural law" (Bodin [*sa*]: 29).

prince — in his view, the French Estates were purely consultative in his view. Given Bodin's rather precise concept of law as the command of the sovereign, and the absolute sovereignty ascribed to the prince, one could with more ease derive from this the metaphor of a law of nature in the sub-human sense. (It is also possible that the source of the interpretation of Calvin in terms of the metaphor of the "sovereignty of God" may have been an overestimation of the similarities between Calvin and Bodin).

It must also be stated that "natural law", both in Calvin and in Bodin, still had the sense of a law aimed at human life known by the human cognitive function (usually "reason"). It would take a special — modern (?) — suggestion that the idea of nature can be reduced to the non-human or the non-voluntary or the animal (which includes the sub-rational functions of the human being): a suggestion that may be derived from the mechanistic approach of Descartes. The bridge between the rational and the sub-rational can possibly be found in the idea of law as innate rational axiom, in Descartes.

4. Descartes — the innate laws of nature

René Descartes (1596-1650), sometimes called the father of Modern philosophy, is known for the approach of methodical doubt, and for his rationalism. Metaphysically Descartes still supposed that every phenomenon and change has a cause, of which the first cause (which is also the ultimate rational ground) is the "self-caused" substance (Descartes 1969: I, li; cf Clay 1915: 92). But "substance" is used here analogically, since there is no common signification of the word between God and creatures. However, the word is used univocally for the two kinds of earthly substances (mind and body) for, like the self-caused substance, they exist independently (attributes depend on them) although they cannot exist without the self-caused substance as their cause. Each has a distinct attribute — the mind has thinking and the body has extension (Descartes 1969: I, lii-liii).

It is well-known that Descartes belonged to the deductivist tradition: he wanted to construct the whole *corpus* of knowledge after the pattern of geometry on the basis of a few axioms, which themselves have their roots in "clear and distinct" notions, believing, as he

says in Part 2 of the *Discourse of method* (Descartes 1969: 17), that all things knowable to man are connected in the same way as geometrical deduction, and in this way not much can be hidden from reason. We have clear and distinct notions of the thinking substance, the corporeal substance, and of God, as well as of duration, order, and number (Descartes 1969: I, liv-lv).

Descartes also retains his deductivist approach in natural science, where laws are reflected in the mind as axioms from which we can derive all important truths:

> [...] but I have also observed certain laws established in nature by God in such a manner, and of which he has impressed on our minds such notions, that after we have reflected sufficiently upon these, we cannot doubt that they are accurately observed in all that exists or takes place in the world: and, farther, by considering the concatenation of these laws, it appears to me that I have discovered many truths more useful and more important than all I had before learned, or even expected to learn (Descartes 1969: V, 33).

God is both the cause and the reason behind the law. Nothing in any category of causation, Descartes says, can exist which does not depend upon God — hence we must assume that eternal truths do not depend upon any creaturely thing but "on God alone, who, as the supreme legislator, ordained them from all eternity" (Descartes 1969: VI, 8). Since there are only two substances, mind (thinking) and body (extension), one has to expect that all non-thinking aspects of reality will be reduced to extension, of which movement is a part. This whole area of natural phenomena (including the previously organically conceived stars) functions according to mechanical principles, and the living organism (including the human body) is nothing but a mechanical aggregate with movement and extension (Clay 1915: 94). Descartes — anticipating Newton's law of inertia to a certain degree — formulates the axioms (laws) of corporeal nature:

> God is the First Cause of movement and [...] He always preserves an equal amount of movement in the universe. The first law of nature: that each thing as far as it is capable, continues always in the same state; and that which is once moved always continues so to move [...]
>
> The second law of nature: that all motion is of itself in a straight line; and thus things which move in a circle always tend to recede from the centre of the circle that they describe [...]

> The third law: that a body that comes into contact with another stronger than itself, loses nothing of its movement; if it meets one less strong, it loses as much as it passes over to that body [...] (Descartes 1969: II, xxxvi-xl).

Descartes is looking for regularity — the law for him is a relationship set by God, from which we can easily deduce the details. And the above laws cover a wider area than simply the physical. He explains the first law by saying that if something is a square, it will remain a square unless there is intervention (cf Descartes 1969: II, xxxvii). What causes these laws to be what they are is the immutability of God (Clay 1915: 95).

It is important to note that the deductivist approach, in combination with the wide extension ascribed to each law, necessitates abstractionism in order to make the laws applicable to all non-thinking phenomena. This renders the first law, in particular, almost meaningless — in contradistinction to Newton's formulation, which limited the law of inertia to the physical sphere, and could give it a much more concrete meaning. A second consequence of this abstractionism, noted by Descartes himself, is that "the principles are so simple and general" and "the power of nature is so ample and vast" that every single effect can be deduced in many different ways from the principles. To determine the correct way requires a further search by dint of experiment, which in turn can be explained in different ways. Taking into account Descartes's intention of deducing effects from first causes which find their single unity in God, and limiting the deduction to the basis of "certain germs of truths naturally existing in our minds", this was in fact a major failure of his mathematical method, although Descartes believed that he could explain all objects of sense by his principles (Descartes 1969: VI, 51; cf Clay 1915: 96).

It is also important to say something about the functioning of these natural laws. In *The discourse on method*, part V, Descartes relates his thought experiment about possible worlds. Starting from the single principle of the perfection of God, he demonstrated (i) the laws of nature as of such necessity that even if God created more worlds, "there could have been none in which these laws were not observed", and (ii) how the matter in the original chaos had to arrange itself to create a universe similar to the one we know. Thus God is

somehow bound to the laws, which assume an absolute role, anticipating the absolutising of law in Auguste Comte or Albert Einstein (Venter 1999b: 169ff). The laws assume an almost independent role, such that Descartes can imagine an evolutionary process which verges on the border of deism.[6]

Three important aspects of Descartes's view of natural law have to be noted. First, Descartes's separation of thinking from extended body and the formulation of laws governing the actions of corporeal substances (the three laws quoted above being part of his analysis of material things) suggests a reduction in the meaning of "nature" to that of the non-thinking, and an alienation of the thinking subject from non-thinking nature as an object. He uses a discourse in which "nature", "law in nature", and "law of nature" are directly associated with the material universe, and in this way contributes to a shift of meaning away from the human sphere, for these expressions.

Secondly, Descartes defines a much more pointed meaning of "law" of nature than Calvin, for example. In Descartes it represents the regular and necessary development of matter. But this metaphorical shift still demands a correlate in God as the eternal "lawgiver".

Thirdly, Descartes believes that knowledge of these laws can help us obey another law which commands the promotion of the general good of mankind, by coming to know the power of the elements and the heavenly bodies to the same degree that we know the crafts of artisans, and "applying them in the same way to all the uses to which we are adapted, and thus rendering ourselves lords and possessors of

6 "I was not, however, disposed from these circumstances to conclude that this world had been created in the manner I described; for it is much more likely that God made it at first such as it was to be. But this is certain [...] that the action by which he now sustains it is the same with that by which he originally created it; so that even although he had from the beginning given it no other form than that of chaos, provided only he had established certain laws of nature, and had lent it his concurrence to enable it to act as it is wont to do, it may be believed, without discredit to the miracle of creation, that in this way alone, things purely material might, in course of time, have become such as we observe them at present; and their nature is much more easily conceived when they are beheld coming in this manner gradually into existence, than when they are only considered as produced at once in a finished and perfect state" (Descartes 1969: V, 36).

nature" (Descartes 1969: VI, 49). In other words, the alienation of the thinking subject from nature is also a relationship of overpowering. The scientism of Descartes is the beginning of the elevation of humankind above nature (note the words "lord" and "possessor"), such that in Kant human reason itself appears as the "lawgiver". Descartes may therefore be seen as the starting point of what Owens (1987) calls the narratives of mastery, but this notion did not immediately take hold of every important thinker, for thinkers like Boyle and Newton relativise the range of what can be rationally known about the laws of nature in Descartes's sense.

5. The natural scientists: Boyle and Newton

5.1 Robert Boyle (1627-1691)

Boyle, a younger contemporary of Descartes, was an experimentalist who would rather do with limited theory than without confirming experiments. In his little work, *Chemista scepticus*, he rejects both the Aristotelian theory of elements and that of the alchemists, stating that the progress of science is not delayed if we do not know the absolutely original components of matter, for as long as we can analyse material bodies into their components, we have what is necessary to our knowledge. On the positive side of his doctrine, as expressed in his work, *The excellences and grounds of the mechanical philosophy*, he promoted the mechanical theory of corpuscles as the basis for the explanation of chemical processes.

Boyle contributes to a clearer concept of "nature" in his *Tractatus de ipsa natura*. He distinguishes three meanings of "nature": (a) as a creative divine force, (b) as the essence of things, and (c) as the orderly and fixed processes or system of the universe. He rejects a personification of nature as in (a), as well as an Aristotelian substantialisation of nature as in (b) (cf Clay 1915: 117). Instead he opts for (c):

> When sometimes it is said that this or that acts by Nature, it is less properly said that the thing happens through Nature, than according to Nature: wherefore Nature is here not to be considered as a distinct and separate agent, but rather as a rule (*regula*), or better as a system of rules (*systema regularum*) according to which those agents or bodies in which they operate are determined by the great cause

> (author) of things to act or be acted upon (Boyle, *De ipsa natura* 7, quoted in Clay 1915: 118; my translation from the Latin, JJV)

It should be noted — as Clay does — that an important shift has taken place in the natural sciences : the quest for the substance or form of a thing has been replaced by a search for rules, and "nature" has assumed the meaning of a system of rules. Gradually an anti-metaphysical trend was taking hold, to be concluded by Auguste Comte two centuries later. Recognising the metaphorical character of the term "law of nature", Boyle calls it "an improper and figurative expression" (for we say rather that an arrow is moved by an external impulse than by a law; cf Mason 1956: 136). But he uses the term "nature" inconsistently: it is neither substance nor accident; it is neither gifted with an intellect nor driven by a blind fate; it is rather the aggregate of corpuscles in movement (while elsewhere it is the law itself).[7]

Thus Boyle uses "nature" to indicate both a system of rules and the aggregate of bodies which move in conformity with those rules. But the meaning of "nature" is here limited to the mechanical aspect of reality. Behind the system of rules or law of nature Boyle presupposes an intelligent being, after the analogy of a clockmaker. Thus the idea of a first cause as the lawmaker is retained. Although the mechanistic approach dominates, there remains a theistic presupposition which may even have been teleological.

5.2 Isaac Newton (1642-1727)

Newton, a younger contemporary of Boyle, was the great systematiser of the seventeenth century, and would become the admired model of intellectual work in the eighteenth century. Newton combined the mathematical approach with the heritage of experimental science in his great work *Philosophia naturalis principia mathematica* (1687). He used the laws of movement from Galileo, Descartes and Huyghens, Patrizzi's ideas of absolute space and time, Kepler's laws

7 Nature is an aggregate of bodies which constitute the form of the world, considered as a principle according to the power of which they act or are acted upon, in conformity to the laws (*legibus*) of movement precribed by the author of Nature (Boyle, *De ipsa Natura* 21, quoted in Clay 1915: 119; my translation from the Latin, JJV).

and idea of attraction, and Huyghens's idea of inertia, and he integrated all this into one quantified system. In this way he stimulated the growth of the Cartesian ideal in the eighteenth century, in the human sciences as well, notably in the thought of Turgot.

Newton's work follows the structure of Euclidean mathematics: definitions precede axioms, which are then used in a deductive form of physics (cf Clay 1915: 121). Newton's expression "axioms, or laws of motion" (*axiomata, sive leges motus*) indicates that, like Descartes, he viewed these axioms as laws (as far as natural science is concerned). The influence of Descartes is visible in the formulation of Newton's first law:

> [Definition 3:] The power of matter has the ability to resist, by which each body, in as far as it is in itself, perseveres in its condition of rest or uniform motion in a straight line (Newton 1968: 3).
>
> [First law:] Each body remains in its condition of rest or of uniform motion in a straight line, unless it is forced by intervening powers to change its condition (Newton 1968: 19).

Although Newton views the laws as axioms, he explicitly adds the dimension of the general validity of the laws for individual phenomena known by particular experiences. Thus Newton explains his laws by referring to concrete examples of things exhibiting these laws, be it a spinning top or planetary motion. In this regard Newton follows an explicit rule of method (summarised towards the end of the *Optica*) in which the experimental method is conducted after the analogy of the method of mathematics (reminiscent of Descartes's methodological proposals in his *Discourse on method*): analysis preceding synthesis, and rejecting "hypotheses".[8]

8 "As in mathematics, so in natural philosophy, the investigation of difficult things by the method of analysis ought ever to precede the method of composition. This analysis consists in making experiments and observations, and in drawing general conclusions from them by induction, admitting of no objections against the conclusions but such as are taken from experiment, or other certain truths. For hypotheses are not to be regarded in experimental philosophy. And although the arguing from experiments and observations by induction be no demonstrations of general conclusions, yet it is the best way of arguing which the nature of things admits of, and may be looked upon as so much stronger by how much the induction is more general" (Newton 1974: 178; cf Van der Hoeven 1979: 84; Clay 1915: 124).

Newton's avoidance of "hypotheses" (cf Van der Hoeven 1979: 83ff) specifically concerns the role of empirical knowledge — against results based upon experiment, he would only allow objections based on further experiment, not "hypotheses" deduced from assumptions. He was therefore prepared to keep experimental results in debate, but within the strict requirement of empirical objections. Also important here is a certain tension: that the analytical method, following the example of mathematics, is given preference; induction is measured against this. Newton went further than only imitating analysis, however. As we have seen above, he structured his works after the pattern of Euclidean mathematics, and quantified his physics. Given the stature of Newton, especially in the eighteenth century, the Cartesian methodological tradition was given some support and this may have affected the social and human sciences (as can be seen from the discussion of Petty, Locke, and Hobbes below). Centuries later the person whose work displaced the Newtonian paradigm, Albert Einstein, would still maintain that the truly creative principle in physics does not reside in the laboratory, but in mathematics (cf Einstein 1960: 83; Venter 1999b: 174ff).

Trust in the mathematical method is based on the belief in universal design. Newton refers to the fact that all animals are symmetrical left-to-right, and he pays special attention to the wonderful construction of the eye (cf Newton 1974: 65). In his preface to the second English edition of the *Principia*, Roger Cotes, a friend of Newton, interprets him in the tradition of Occamist voluntarism, which implied that "the freedom of God to make whatever world He wished encouraged a sense of the contingency of nature, for the study of which empirical rather than *a priori* methods were appropriate" (Brooke & Hunter, quoted in Hooykaas 1997: viii). In Cotes's interpretation the mathematical method is somewhat relativised. According to him, Newton avoids the purely *a priori* approach of Descartes since he fears that such arguments inevitably lead to the acceptance of a natural necessity and of atheism, as do the hypotheses of those who explain matters by occult qualities. Observation and experiment remain the starting point — "all sound and true philosophy is founded on the appearances of things" — as well as the criterion for

rejection of any scientific proposition, again because it is not *a priori* possible to tell what God had to do.[9]

Cotes's interpretation allows for freedom and design in divine creation; God is not bound by the designs, yet sustains the pattern. This is in accordance with Newton's own way of looking at nature and the governance of God, and reminiscent of the Calvinian *Deus legibus solutus est sed non exlex*.

Towards the end of the *Optica*, defending himself against the Cartesians' criticism of his theory of gravity, Newton states that while some have hypothesised that everything is mechanical and banished the search for causes to metaphysics, he feels that it is the task of the philosophy of nature to conclude from the phenomena to the first cause "which surely is not mechanical" (cf Van der Hoeven 1979: 85; Clay 1915: 127). Newton is not afraid to include metaphysical conclusions in his physics, relating the order of natural things to an intelligent and omnipresent God.[10] Believing that the heavenly bodies remain in their orbits on the basis of the laws of gravitation, he does not, however, see how they could have found their regular places in the beginning from these laws. Towards the end of Book III of the

9 "From this fountain it is that those laws which we call the laws of Nature have flowed, in which there appear many traces indeed of the most wise contrivance, but not the least shadow of necessity. These, therefore, we must not seek from uncertain conjectures, but learn them from observations and experiments. He who is presumptuous enough to think that he can find the true principles of physics and the laws of natural things by the force alone of his own mind and the internal light of his reason must either suppose that the world exists by necessity and by the same necessity follows the laws proposed or, if the order of Nature was established by the will of God, that he himself, a miserable reptile, can tell what was fittest to be done. All sound and true philosophy is founded on the appearances of things; and if these phenomena inevitably draw us, against our wills, to such principles as most clearly manifest to us the most excellent counsel and supreme dominion of the All-wise and Almighty Being, they are not therefore to be laid aside because some men may perhaps dislike them" (Cotes in Newton 1974: 132-3).

10 "All these things are so well ordained; does it not become clear from the phenomena of nature that there must be an incorporeal, living, intelligent, omnipresent Being, who sees into the interior of the infinite space as its field of perception" (Newton, *Optica*, quoted in Clay 1915: 127).

*Mathematical principles of natural philosophy (*III, *general scholium)* he discusses the complexity and regularity of the systems of heavenly bodies, which regularity he feels could not be brought about by "mere mechanical causes". Rather this "most beautiful system of the sun, planets and comets, could only proceed from the counsel and dominion of an intelligent and powerful being" (Newton 1968: III, 388). He rejects the hypothesis of Descartes that a situation of material particles arbitrarily distributed, with the necessary amount of movement and ordained laws, could by themselves have had the capacity to bring about the present world (the almost deist evolutionary hypothesis mentioned above). Such blind metaphysical necessity which is everywhere the same could not have produced the wide variety of phenomena adjusted to different times and places, which have to be ascribed to the thoughts and will of a necessary Being (cf Van der Hoeven 1979: 90). Thus Newton correlates creatures in their variety with various aspects of their creator — God is more than a simple mechanical lawgiver. The anti-metaphysical tendency which we have found in Boyle (and which was, in the eighteenth and nineteenth centuries, completed by Turgot and Comte) did not take root at once. Newton still clearly took an opposite line.

Newton therefore distinguishes different aspects of the infinite Being. "God" correlates with servanthood (he is the master who is served and exercises real authority), but "Eternal" and "Infinite" do not, since I can say "my God" but not "my Eternal". But God is also eternal and infinite, and therefore constitutes duration and space (an idea reminiscent of the *analogia entis* theory of Thomas Aquinas) (cf Newton 1968: III, 389; 391). He uses panentheistic language: all things are in God and move in Him, but such that He is not affected by this. We know Him from his wise creations and from the final causality in things; we honour Him and pray to Him on the basis of his government, for "a God without government, providence and final causes is nothing but Fate and Nature" (Newton 1968: III, 391; cf Van der Hoeven 1979: 90). Newton here resists both the deist idea that laws automatically govern the cosmos and the notion of a blind fate. But he also rejects the pantheistic idea that God is the soul of the world — rather, God governs all things. Van der Hoeven (1979: 91) notes that Newton, who found more laws in nature than anybody

before him, did not give primacy to the metaphor of God as lawgiver. The laws are an indication of God's good governance, but that which transcends the laws is even more so, for it indicates that God uses the laws as part of His governance. Newton attempted to incorporate a Christian idea of God, in terms of good governance, providence and final causes, into his philosophy of nature.

Thus Newton approaches Calvin in his insistence on an involved God who personally governs, as well as in playing on more aspects of God than just the lawmaker metaphor. It is clear that the understanding of "natural law", even primarily applied to sub-human nature, could have a more determinist form (as in Descartes) and a somewhat more relativist form, as in Boyle and Newton. The nucleus of this difference is given by differing views on God and His relationship to the law, and in coherence with this, by the way in which the law is known.

6. "Natural law" in early capitalist economics

While one shift of the meaning of "natural law" occurred in the natural sciences, another shift was taking place in the area of social or human sciences (in as far as one can talk of "sciences" at this stage), especially in economics, relating "natural law" to free choice. This apparently originated in early capitalist thinking, but also found some expression in thinkers like Hobbes and Locke. Although the shift in the human sciences had its roots in the medieval meaning of "natural law", it occurred in interaction with the understanding of knowledge in the Cartesian tradition.

During the Middle Ages, especially in Thomas Aquinas, "natural law" referred to the law of God for human life as expressed in and through reason. It served as a check on human behaviour and as a rationalisation of the hierarchical *status quo* and it induced individuals to accept their status in that order. With regard to the economy it rationalised intervention by the church and the state wherever there was undue hardship. But in the later sixteenth and seventeenth centuries "natural law" acquired a new meaning, and became the rationalisation of a new type of economy: the freedom of the individual to work for personal advantage was considered natural, and gradually the advantage of the individual was considered as identical with the

advantage of the commonwealth. Willey (1961) quotes a rhyme which expresses the new meaning: "God and Nature fixed the general frame, and bade self-love and social be the same". Isolated economic man struggling with and dominating nature became the norm, he says. "Natural law" was given a critical sense in defence of economic freedom, which became the dominating meaning:

> On the whole, however, one may perhaps risk the generalisation that it was the idea of a controlling Law of Nature which officially dominated the Middle Ages, rather than that of the liberating Rights of Nature; and that in passing into the seventeenth and eighteenth centuries, "Nature" ceases to be mainly a regulating principle, and becomes mainly a liberating principle [...] The Law of Nature, which in the Middle Ages had been a check on unregenerate impulse, had now been transformed into a sanction for *laissez-faire* and free competition for the spoils of the world (Willey 1961: 16-7).

This "liberating" aspect of nature as natural rights, the other side of the coin of natural law, came to full expression in the eighteenth century physiocratic economics of Quesnay, a free marketeer *par excellence*. But the tendency in Turgot and Comte to give preponderance to the sub-human neutralised it somewhat.

As early as 1549, in *A discourse on the common weal of this realm of England* by an anonymous author (cf Ekelund & Hebert 1983: 39ff), strong criticism is expressed of the practice of granting monopoly privileges and controlling the use of land by law. This document comes from the mercantilist tradition. It tried to sustain a dualistic position which on the one hand promoted state intervention in the economy (at the time of the gradual rise of the national state) and on the other hand defended the free market principle:

> [...] writers began to argue that man's freedom to pursue his own economic interests would, through the operation of natural law, promote social welfare (Chalk 1951: 333).

The *Discourse* explicitly states that "proffitt or advauncement norishethe euerie facultie, which sayinge is so true, that it is allowed by the common Judgement of all men". Profit is therefore to be used as a stimulus for virtue: all men should "be provoked to good deades by rewardes and price" (quoted in Chalk 1951: 335). The belief is clearly expressed that what is profitable to one is also profitable to another and therefore to the whole commonwealth. In another document

written by John Mason in 1550 it is argued that the natural course of prices cannot be stopped by legislation.[11]

Importantly, freedom and determinism here enter into a dialectically polarised relationship: the economic choices of individuals are free, but the course of nature (which may be understood as the aggregate of these choices) is a necessary one, against which the authority of the state is both powerless and distorting. At the determinist pole the normative character of economic laws does not come to expression, and thus questions such as that of economic justice are largely subsumed under or even consumed by individual interest.

The new meaning of natural law, especially the aspect of natural rights, penetrated British society. In 1604 the "natural rights and liberty of the subjects of England" was used as argument in defence of the abolition of monopoly privileges by a committee of the House of Commons, and in 1656 Joseph Lee, a country clergyman, argued that the advantage of private persons tends to the public good (Chalk 1951: 340).

6.1 Sir William Petty (1623-1687)

Petty, a somewhat older contemporary of Boyle and Newton, systematised the economic speculations of the new tradition into a more or less coherent doctrine. Petty was influenced by the growing natural sciences, and therefore attempted to base economics on the method of these sciences: like Newton he followed a quantitative empirical approach, thus becoming the precursor of Locke, Turgot and the positivists.[12]

11 "I have seen so many experiences of such ordinances; and ever the end is dearth, and lack of the thing that we seek to make good cheap. Nature will have her course, *etiam si furea appellatur*; and never shall you drive her to consent that a penny-worth of new shall be sold for a farthing [...] For who will keep a cow that may not sell the milk for so much as the merchant and he can agree upon?" (John Mason, *Tudor economic documents* II, 88; quoted in Chalk 1951: 337).

12 "The Method I take to do this, is not very usual; for in stead of using only comparative and superlative words, and intellectual arguments, I have taken the course [...] to express myself in terms of number, weight, or measure; to use only arguments of sense, and to consider only such causes, as have visible foundations in nature" (*Economic writings of Sir William Petty* 1899, I: 244; quoted in Chalk 1951: 342).

Petty was a doctor of medicine with a good background in mathematics, and his philosophical stance is also indicated by the title of one of his works, *Political arithmetick*. He had in fact adopted the strict sense of "natural law" from the natural sciences, and wanted to follow the same approach in the social sciences. He considered it vain to oppose natural law by positive civil law. Natural law became reconverted from natural science to the social sciences.[13]

Petty uses strong expressions, for example describing any attempt to resist nature as equal to stopping the winds and the seas. He wants money and interest also to be handled on the basis of free market principles, and in this context explicitly refers to the laws of nature in criticising England's laws:

> Perhaps they are against the Laws of Nature, and also impracticable: For we see that the countries which abound with Money and all other Commodities, have followed no such Laws ... (*Economic writings of Sir William Petty* 1899, II: 445; quoted in Chalk 1951: 344).

On the one hand Petty extended the natural science meaning of "natural law" to include the social disciplines and practice once more; on the other hand he continued the original (Stoic) field of validity of "natural law" for human behaviour. In this he approached his older contemporary, Hobbes (our next focus), and in a sense also John Locke. Importantly, a certain ambiguity is introduced into the concept of "natural law". It is a necessary process against which it is not practical to take any steps, and it also acts as a norm which ought to be obeyed but can be disobeyed. In this way early capitalist thinking contains one of the dialectics of the Enlightenment — that between individual freedom and social determinism. With the progressive historicising of reality this was embedded into the dialectic of nature (individuality) versus culture (socialisation) (cf Venter 1999a) which, combined with the assumption of progress, developed eventually into the kind of narrative of mastery mentioned by Owens.

13 "We must consider in general, that as wiser physicians tamper not excessively with their patients, rather observing and complying with the motions of nature, than contradicting it with administrations of their own; so in politicks and oeconomicks the same must be used" (*Economic writings of Sir William Petty* 1899, I: 60; quoted in Chalk 1951: 343).

7. "Natural law" and politics — Hobbes and Locke

7.1 Thomas Hobbes (1588-1679)

Hobbes apparently retained the older, human meaning of "nature" and "natural law", in which it is associated with "right reason" (found in the passage from Gerard Malynes quoted above), when he argues that even in the (hypothetical) state of nature, where humankind would be driven by mere impulse, self-preservation in this naturally competitive condition would be an impulse as sure as a stone moves downward, but such self-preservation is in accordance with right reason. The competitive nature of humankind, though tamed by civil society, is a reality which enforces itself: every human being is in a constant battle for power, honour and wealth; I want more than my neighbour, and will outdo him/her if I can (cf Venter 1996: 179ff). This is the basis of the modern narratives of mastery as found in the idea of a society based on competition (Turgot, Adam Smith, Kant). Critical postmodernists have to note that the present-day competitive society of pragmatist postmodernism is a continuation of this master narrative.

Even though the older tradition of "natural law" finds expression in his definitions, Hobbes is in fact not far removed from his younger contemporary Petty's interpretation of "natural law" in terms of the natural sciences. Hobbes himself still follows a deductivist, mechanistic (Cartesian) approach imitating many of the natural scientists of his time. He identifies the dictate of right reason that leads to, and is valid for, civil society as the "law of nature":

> [...] wherefore to seek peace, where there is any hope of obtaining it, and where there is none, to enquire out for auxiliaries of war, is the dictate of right reason, that is, the law of nature (Hobbes 1972: 118; cf Venter 1996: 180).

7.2 John Locke (1632-1704)

Whereas in Hobbes the state of nature is in practice untenable (for it is a war of all against all), and therefore the dictates of right reason actually function only in civil society, Locke was much more positive about the state of nature. He believed that rationality did or does also function in the state of nature, and that we are under the protection

of natural law insofar as we can trust in rational behaviour (Locke 1988: *Two treatises on government* II, ii, 6; cf Harris 1968: 56ff).

Textbooks on the history of philosophy tend to contrast Locke's empiricism with the rationalism of Descartes. Locke indeed differed from Descartes — he rejected innate ideas, and argued that all our initial (simple) ideas have their origin in experience, which encompasses sensation and reflection (cf Locke 1894: *An essay concerning human understanding* I, i-iii; II, i-vii). But this was only a difference about the initial material which reason needs to do its real work in establishing true knowledge. Once the material is used to form complex ideas or relations, the process of knowing proceeds, as in Descartes, by intuitive linking and deductive inference. Locke states that our complex ideas (except those of substance) are of the mind's own making, synthesised by free choice without regard for any connection which they may have in nature, and are therefore archetypes in themselves which were not designed to (and therefore do not) represent anything beyond themselves. Thus our reasoning concerning these has a necessary truth since nothing other than internal conformity is intended — and then, surprisingly, Locke (1894: IV, iv, 5) adds that we "cannot miss of a certain and undoubted reality". Locke believed not only mathematics to be of this kind of certainty, but also moral knowledge; even natural theology shares in this deductive, rational certainty.[14]

14 "Though God has given us no innate ideas of himself, though he has stamped no original characters on our minds, wherein we may read his being; yet having furnished us with those faculties our minds are endowed with, he hath not let himself without witness; since we have perception, and reason, and cannot want a clear proof of him as long as we carry ourselves about us. Nor can we justly complain of our ignorance in this great point, since he has so plentifully provided us with the means to discover and know him, so far as is necessary to the end of our being, and the great concernment of our happiness. But though this be the most obvious truth that reason discovers, and though its evidence be (if I mistake not) equal to mathematical certainty; yet it requires thought and attention, and the mind must apply itself to a regular deduction of it from some part of our intuitive knowledge, or else we shall be as uncertain and ignorant of this as of other propositions which are in themselves capable of clear demonstration" (Locke 1894: IV, x, 1).

Locke, therefore, does not differ much from Descartes in his trust in reason and the content he gave to it. It is not surprising that he shows a positive attitude towards reason when in the *Two treatises of government* he gives a special place to reason in the state of nature, since he was using the older of idea natural law as "right reason".

While in Hobbes the brutish state of nature was introduced as the terrifying alternative to uncritical submission to totalitarian state authority (cf Venter 1996: 177-84), in Locke it functions as the relativiser of state authority, based upon submission to divine law. Apparently Locke believed Hobbes to be mistaken in not accepting that natural law is properly called "law" and therefore not binding on anybody outside of the civil state — the reason for this mistake being that Hobbes did not take into account God as the lawgiver (cf Laslett 1988: 80). Behind reason as natural law is God as the lawgiver; nowhere has any person absolute power over another. Locke thus believes that human beings in the state of nature can through reason have a positive relationship with natural law (as the law of God). Natural law has to have a rational content, but Locke rejected innate ideas, and this created a consistency problem for him:

> The trouble was that Locke began by basing right and wrong on God's commands and punishments, but [...] adopted a hedonistic ethic as well, an ethic of the Hobbesian sort. Meanwhile he passionately believed in the possibility of demonstrating ethics mathematically, though he was perpetually complicating everything with his anthropological relativism, noting the variety of ethical values among the world's peoples and hinting that virtue and vice were simply customary (Laslett 1988: 82).

For Locke the existence of God was not only evident, but knowledge of Him also pertained to the ends and happiness of humankind. Understanding our relationship to Him and to one another as creatures under His law, Locke says, relativises our power over one another, for we are all equal before our Creator and equally in His service.[15]

15 "But though this be a state of liberty, yet it is not a state of licence [...] The state of nature has a law of nature to govern it, which obliges every one: and reason, which is that law, teaches all mankind, who will but consult it, that being all equal and independent, no one ought to harm another in his life, health, liberty, or possessions. For men being all the workmanship of one Omnipotent, and infinitely wise Maker; all the servants of one Sovereign Master, sent into the world by his order and about his business, they are his property, whose work-

Natural law is reason, and its contents determine certain duties, which can be summarised as respect for life, health, liberty and possessions. This relativises any power one person may have over another (cf Locke 1988: II, ii 8), for humankind belongs to God, who made us all equal. Locke defends the stewardship of one human being towards another: self-preservation goes hand in hand with the preservation of all humankind. The state of nature is the state of creation, which not only encompasses liberty but also equality, which in turn implies the obligation of mutual love (Locke 1988: II, ii, 5).

Political power is also relativised: one cannot deduce it from the parental authority of Adam, since there is no way to determine who has inherited Adam's authority, nor can it be deduced from the right of the strongest, for that would entail a perpetual challenging of state authority. Both of these would lead to a totalitarian state in which the limits of political power were not clearly recognised. Locke clearly distinguishes the power of a magistrate over a subject from that of a father over his children, a master over his servant, a husband over his wife and a lord over his slave (relationships which can all inhere in one person). He thus limits political power to the right of making laws (with the death penalty and lesser penalties) with regard to the regulation and preservation of property, as well as defending the community against foreign attack, while using the force of the community itself in the execution of these laws, all of this being limited to the public good (Locke 1988: II, i, 1-3).[16]

> manship they are, made to last during his, not another's pleasure. And being furnished with like faculties, sharing all in one community of nature, there cannot be supposed any such subordination among us, that may authorize us to destroy one another, as if we were made for one another's uses, as the inferior ranks of creatures are for ours. Every one as he is bound to preserve himself, and not to quit his station wilfully; so by the like reason when his own preservation comes not in competition, ought he, as much as he can, to preserve the rest of mankind, and may not unless it be to do justice on an offender, take away, or impair the life, or what tends to the preservation of the life, the liberty, health, limb, or goods of another" (Locke 1988: II, ii, 6).

16 In distinguishing and limiting the different power relationships in which one person can operate, Locke gives a clearer anticipation of the neo-Calvinist doctrine of sphere sovereignty of the different "social" groupings than that found by Spykman (1976) in Calvin's own writings.

The meaning of "law" is important in this context. In any state of "created beings capable of laws", laws are the conditions of freedom. In Locke's own words:

> For Law, in its true Notion, is not so much the Limitation, as the direction of a free and intelligent Agent to his proper Interest, and prescribes no farther than is for the general Good of those under that Law. [...] and that ill deserves the Name of Confinement which hedges us in only from Bogs and Precipices. So that, however it may be mistaken, the end of Law is not to abolish or restrain, but to preserve and enlarge Freedom (Locke 1988: II, vi, 57).

The law of nature, understood correctly, must then be the condition of that liberty which is such an essential characteristic of the state of nature. Under the law of nature (as under the positive law of the state), one is free to the degree of one's mature knowledge of the law, so that one's actions may be within the bounds of it (Locke 1988: II, vi, 59).

When Locke says that reason (the law of nature) teaches us that "being all equal and independent", there cannot be a subordination of the kind "that may authorise us to destroy one another, as if we were made for one another's uses, as the inferior ranks of creatures are for ours", he anticipates Kant's idea of human dignity. Kant states of human beings that, being equal to all rational beings, no human being is to be used merely as an instrument, as can be done with brute animals (cf Venter 2000: 151-5). In content the law of nature is directly connected with living a dignified life, for "the fundamental law of nature, man being to be preserved", stipulates that if all cannot be preserved, then at least the innocent, and that any attacker can be handled in the way of beasts of prey (Locke 1988: II, iii, 16). A criminal who violates the "right rule of reason" "declares himself to quit the principles of human nature, and to be a noxious creature" (Locke 1988: II, ii, 10), relinquishing his right to dignified treatment. One has to read "preservation" here in a wide sense, since it implies resistance against absolute power, for any attempt to acquire absolute power over a person implies a state of war against him, which has to be understood "as a declaration of a design upon his life", to enslave that person and thus take away his freedom, and together with freedom all the rest, for freedom is the "foundation of all the rest" (Locke 1988: II, iii, 17). Locke supports the view of Hooker that the independent individual does not have the self-sufficiency to

supply him/herself with the means fit for the dignity of man, and therefore will naturally seek society with others (Locke 1988: II, ii, 15).

Hobbes viewed the state of nature as a state of war of all against all. Locke clearly distinguishes the state of nature from the state of war. Men living together according to reason, without a common superior on earth to judge between them, are living in the state of nature, while any force exerted without right against a person, whether there is a common judge or not, is a state of war (Locke 1988: II, iii, 19). The execution of the law of nature in the state of nature belongs to all men, the law of nature being easier to understand than positive law. Punishment of transgression against one's person is granted by both the right of self-preservation and the right of preserving all mankind (Locke 1988: II, ii, 12-3). Locke knows that this theory raises the problem that everyone is judge in his own case, and some at least may be irrational, selfish, or vengeful. He grants that civil government is the remedy for the disadvantages of the state of nature — but not just any government. Absolute monarchs are but men, and therefore monarchical governments are a continuance of the state of nature. Not just any social contract ends the state of nature; only one in which there is mutual agreement to enter into a community and establish a body politic (Locke 1988: II, ii, 13-5).

Property has to be preserved according to the stipulations of natural law, and this is also one of the two central tasks of the political power (as quoted above). Locke anticipates Marx's view that one's work is part of one's person, and the products of one's labour are therefore one's own. Thus preservation of the person implies the preservation of property.[17]

17 "Though the earth, and all inferior creatures be common to all men, yet every man has a property in his own person. This nobody has any right to but himself. The labour of his body, and the work of his hands, we may say, are properly his. Whatsoever then he removes out of the state that nature hath provided, and left it in, he hath mixed his labour with, and joyned to it something that is his own, and thereby makes it his property. It being removed from the common state nature placed it in, it hath by this labour something annexed to it, that excludes the common right of other men. For this labour being the unquestionable property of the labourer, no man but he can have a right to what that is once joyned to, at least where there is enough, and as good left in common for others" (Locke 1988: II, v, 27).

It is the "law of reason" which makes the Indian the owner of the deer he has killed. Although in the civilised world there are now positive laws which regulate property, the law of nature for the beginning of property (ie, appropiation on the basis of work, by common consent) is still operative (Locke 1988: II, v, 29-30). We seem to have here an individualist, capitalist view of the human "self" as property which produces further property. Locke thinks that modern man rightfully accumulates property, for the most useful property is of short duration and decays by itself, while the most durable things, such as diamonds and money, are the least useful. Inequality of wealth is unproblematic since people will always have access to the resources required for the production of useful goods (Chalk 1951: 346-7). Locke does not seem sensitive to the limitations of resources or the problem of access to available resources (poverty). In property relationships, therefore, we have the strongest perseverance of the law of nature in civil society.

This analysis of Locke's views on "natural law" reveals on the one hand an adherence to a form of rationalism in which natural law not only retains the age-old link with reason, but is even identified with reason. On the other hand Locke accommodates something of the capitalist shift by stressing that natural law conditions freedom. This is the nucleus of his teaching on the dignity and equality of all human beings. The eighteenth century probably adopted more of the Hobbesian and the natural sciences' view of nature and its law — nature as the sub-rational in Rousseau, Quesnay, Turgot, and Kant — than of Locke. But Locke's linking of rationality with freedom prefigures the other side of the Enlightenment's dialectical coin. Locke's discourse, however, is not simply a narrative of mastery, for nature and reason represent a higher law founded in the creation of humankind, which precisely forbids mastery of one human being by another. This may have been dialectical, for the law of nature does allow for mastery of the sub-human in terms of property, and property relations imply power relationships which Locke, trusting in reason, does not see. The broader context of Hobbes's political thought may rather have provided the basis for a narrative of mastery, for he popularised the idea of a permanent competition for power, honour, and

wealth, which was taken up by thinkers like Turgot, Adam Smith, and Kant in the eighteenth century.

8. Conclusion

Our picture of the conceptions of natural law in early modern times presents more variety of opinion than simply a group of narratives of mastery. "Natural law" or "the laws of nature" is a central idea with regard to control over "nature". What Owens calls "the narrative of mastery" has its origin in Descartes, who proclaimed the lordship of reason over nature through the innate axioms of reason which he called "laws of nature". But such an approach was not characteristic of the natural scientists, Boyle and Newton. The relationship between God and natural law is conceived of differently: rather more in the line of Calvin than of Cartesian rationalism. The capitalist tradition and those thinkers concerned with human affairs also continued the ancient and medieval idea of a rational law of nature for human affairs, but with the emphasis on human freedom, which in time could develop into the doctrine of autonomous mastery which is later found in Kant. However, in Locke (as in Cicero) the natural law is still a higher law, which at least prohibits simple mastery over human beings. In early capitalism, natural law provided the argument for market freedom yet dialectically imposed its own determinations of society.

The conceptions of natural law surveyed give an indication of the development of the modern ideas of "nature" and the application of "law" in areas other than the positive law of the state. In the Middle Ages "nature" referred to that part of creation which was distinguishable from the supernatural, and "natural law" was that law which God gave at the original creation — a law for human life and, importantly, which human beings could understand, with natural reason as its instrument, sustained by God. This was still the conception of "natural law" in Calvin, but Calvin's strong sense of the role of sin (and salvation) made him much less optimistic about the ability of natural reason to understand natural law.

It was Descartes who expanded the use of "natural law" into the areas presently studied by the so-called "natural sciences". He did so on the basis of two fundamental doctrines: (i) the only basis of all true

knowledge is an *a priori* deductive one; (ii) all non-mental phenomena are extended and follow mechanical principles. Thus he covered all extended entities under one set of regularities, which could be called "natural laws" since they were considered as innate (axiomatic) and rational as the laws for human behaviour. These laws were viewed as general and valid for all situations of extended entities (ie, eternally true) and thus presupposed a foundation in the eternal God. Thus in God's thinking about creation, these laws were valid for all possible worlds, and therefore in some sense binding upon God. The eternal, rational law became an absolute in itself, founded in the immutability of God. In this sense Descartes was not far removed from the scholasticism of Thomas Aquinas.

Mason is correct in attributing to Descartes the expansion of the meaning of "natural law" to include sub-human "nature". Surprisingly he does not see the reminiscences of a scholastic idea of law in Descartes, but rather searches for the roots of Descartes's view in the metaphor of a despotic ruler — a metaphor that is supposed to be found in Bodin, preceded by Calvin. The idea of a despotic ruler is clear in Bodin, but I find it more difficult to sustain a similar interpretation of Calvin, due to his multi-faceted idea of God and of law, and the relativising of earthly authority in the Calvinist tradition.

Boyle and Newton could follow Descartes in using "natural law" as applicable to sub-human nature in the fields of astronomy, physics, and chemistry. It is noteworthy that in Newton an idea of God different from that of Descartes correlates with a different view of "natural law" and a different scientific practice. Newton (and in this he approached Calvin) had a multi-faceted idea of God and understood the will of God in a voluntarist sense. Although he structured his work in accordance with Euclidean principles, he insisted on an experimental (*a posteriori*) base for all theory, for he probably did not believe in eternal laws in the sense that Descartes did — rather that the government of God is something wider than simply his laws.

The older meaning of "natural law" as the rational guide for human behaviour was sustained in sixteenth and seventeenth century capitalism. But a new perspective revealed itself in the use of the term: whereas it formerly authorised intervention by the church and the state in human behaviour, it now became the ratio for non-inter-

vention. The understanding (from the sixteenth century, before Descartes) was now that "nature" (as the balance of prices) follows its course, and that intervention by the state would be both unsuccessful and mischievous. Here we already have the dialectic of individual freedom with the determinism of aggregate choices — the advantage of the individual cannot but be socially beneficial (a dialectic which returns in eighteenth-century thought, such as that of Adam Smith and Immanuel Kant). As "nature" became autonomous, its laws were eroding the very freedom ascribed to it. This would come to completion in the thought of Turgot and Comte.

This humanly focused meaning of "natural law" was not totally divorced from the Cartesian (natural science) tradition, for social thinkers such as Petty, Hobbes and even Locke all attempted to construct deductive, quasi-mathematical social sciences. "Natural law" acquired a determinist (necessitarian) sense, probably from its use in the context of natural science, strengthened by the ideal of a natural sciences approach in the social sciences. Locke was the exception in this regard, retaining a normative meaning and allowing for freedom in the way natural law is positivised, rather than the necessitarian approach from the natural sciences. In Locke, therefore, the focus on human behaviour is retained, and a strong sense of freedom as well as distinct rights are included. It was probably from Locke that Quesnay (the leader of the physiocratic school in the eighteenth century) adopted his insistence on freedom and rights as the essential aspects of the functioning of natural law, except that he attempted to unify the natural sciences meaning with the human meaning and thus opened the way for Turgot and Comte to take a one-sided natural sciences approach.

It is also to be noted that in most cases the acceptance of a law of nature implied the existence of a divine lawgiver. The content of the idea of the lawgiver, especially the way in which his relationship with the law is conceived, determines the status of the law and the way in which it is known. Thus the more voluntarist approach of Newton (that God is personally involved in more ways than only as the lawgiver) allows for a more relativist look at laws, while the eternalising of the law in God in Descartes absolutises law for all possible worlds. The separation of law from the lawgiver, on the other hand, when it

is considered as autonomous nature in action through individual freedom, dialectically absolutises the law of nature again in a deterministic sense. In the nineteenth-century humanism of the mature Auguste Comte this led to fully-fledged "legalism".

A study of "natural law" highlights some of the deeper tensions in modern humanism. When natural law was generalised into a necessity which was supposed to liberate humankind from the bonds of nature, the question came up whether reason — the new "supernatural" — is part of nature or not, and how it is that nature (which produces reason) can work towards that which is suppressive of nature. When natural law becomes the means of putting nature to use and exploitation (in other words, structuring nature according to the human image) — what Owens calls "the narratives of mastery" — the question arises as to how the product of nature can become the structural lawgiver of nature. These are the kinds of questions one is faced with when reading thinkers by whom the faith in progress is more explicitly stated than by those discussed above — thinkers like Adam Smith, Turgot, Kant, Comte, and Marx.

When postmodernists like Owens critically reject as monolithic the "narratives of mastery" of modernity, the question arises whether the role of "natural law" as a higher or divine law which exactly limits human mastery, at least in some early modern thinkers, passed unnoticed. If such a higher law is rejected, then of course the world debate on issues such as human rights, for example, becomes problematic too. And furthermore, when postmodern society profiles itself as a competitive society, one may ask whether a real narrative of mastery, such as that of Hobbes (and also of Turgot, Kant, and social Darwinism), has not been continued and developed into an encompassing world narrative, and whether postmodernism is able to completely dissociate itself from this.

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