

# Chapter 2

## Reasoning Against a Deterministic Conception of the World

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The nations inhabiting the cold places and those of Europe are full of spirit but somewhat deficient in intelligence and skill, so that they continue comparatively free, but lacking in political organization and capacity to rule their neighbours. The peoples of Asia on the other hand are intelligent and skilful in temperament, but lack spirit, so that they are in continuous subjection and slavery. But the Greek race participates in both characters (...) It is clear therefore that people that are to be easily guided to virtue by the lawgiver must be both intellectual and spirited in their nature. (...) it is spirit that causes affectionateness, for spirit is the capacity of the soul whereby we love. A sign of this is that spirit is more roused against associates and friends than against strangers, when it thinks itself slighted. (...) Moreover it is from this faculty that power to command and love of freedom are in all cases derived; for spirit is a commanding and indomitable element. (...) Hence the sayings "For brothers' wars are cruel" and "They that too deeply loved too deeply hate." (*Pol. VII. v.1327b20–1328a19*, trans. Rackham)

### 2.1 Introduction

In the humanities the deterministic conception of the world has been primarily discussed in relation to the justification of punishment: can a person be held responsible for acts if there is no free will and the action had already been determined before the person was born? (Nagel 1987, 37–44). Time and again this argument is used by behavioural psychologists who insist that people should not be punished by lawyers, but rather mentally treated by psychiatrists and psychologists (Kenny 1978, 1–13). Recent insights derived from brain-research are used by psychologists to revitalize this debate. The deterministic conception itself, however, has

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never been seriously challenged in this debate on justifying punishment, although determinism is currently rejected in science.

The introduction of determinism was one of the main issues of the Enlightenment. Determinism refuted the Aristotelian view on the world, which assumed an intelligent force in nature. According to Aristotle there was a double impulse working in every living creature, one of which was intelligent. He described the intelligent impulse as a free and indomitable element in the natural make-up of human beings, while the capacity to reason tends to subject and enslave human beings to rules. Determinism attacked this enchanted Aristotelian picture of the world and rejected the idea of an intelligent – spirited – force in nature. By this determinism, a reversal of the Aristotelian view was brought about: to be driven by natural force meant now to be enslaved, while the capacity to reason could now free people of this enslavement.

It seems relevant to ask whether the rejection of determinism by current science could lead to a return of the Aristotelian view on nature. Popper is one of the very few authors who asked this question.<sup>1</sup> Most authors do not treat this issue seriously.

Solum (this volume, Sect. 1.3), for example, explicitly announces that he will develop an account of the virtues that is consistent with current science, even though this could entail some important divergences between contemporary theories and Aristotle's account. He does not specify these divergences. Therefore the question remains open what exactly is the divergence between Aristotle's account and current science.

Kenny (1978, 13–26) stated that the philosopher can and should remain agnostic on these questions. The consequence of this was that he did not acknowledge the fact that physical determinism had been rejected by current science.

Nagel (1987, 37–44) argued that the rejection of determinism by current science had not solved the problem of the justification of punishment. This meant that human action was the result of pure chance and that therefore nothing was identifiable as the cause. He thus did not seriously take the Aristotelian view into account.

Strawson (1973, 1–25) has given the most elaborate and original analysis of the possibility of a justification of punishment. He stated that people adopt punitive or tolerant reactive attitudes towards wrongdoers because of situational facts and *not because* they believe in the general truth of determinism or indeterminism. By this argument Strawson denied that the development of a moral community could be influenced by the choice for or against a deterministic view on the world.

The arguments of Strawson, Kenny and Nagel seem to be designed to divert attention from the way determinism leads to a connection between rationality and domestication, resulting in discipline and slavery. This connection was not only pointed out in classical times by Aristotle, but was extensively discussed by authors

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<sup>1</sup> See Briegel (2012) for a current attempt to combine an indeterminist physical approach with the possibility of creative machines.

such as Foucault, Marcuse, Habermas and Berger<sup>2</sup> in the period in which the essays of Strawson, Nagel and Kenny were written.

Foucault (1979) showed how the Enlightenment had created a society of discipline and punishment. Not only Foucault, but also, for example, the Frankfurters<sup>3</sup> tackled the same issue contemporaneously with their theories about the Military Industrial Complex<sup>4</sup> and the exchangeable subject, while Berger (1966) wrote about the imprisonment of the individual by society and the relevance of a destabilization of routines as defended by critical sociologists.

Foucault (1988) turned to the Ancient ‘technologies of the self’, but most other participants in this debate simply tried to save the project of Enlightenment. As a remedy they propagated a severe form of democratization of authority.<sup>5</sup> In doing so, they negated the inherent connection between Enlightenment and determinism, and the possible consequences of a rejection of determinism for the project of Enlightenment.

This chapter will describe the indeterminist view of Aristotle and will explore the inherent connection between determinism, Enlightenment and enslavement. It will analyse the attempt of Popper to save the project of Enlightenment within the context of indeterminism and use his analysis to explain how the Aristotelian view could agree with the indeterminism of current science. It will conclude with the consequences of a choice for determinism or indeterminism for politics and law.

## 2.2 The Greek Concept of Free Spirit: Desire

According to Plato, the human soul has three parts. In the dialogue *Phaedrus* he used his famous metaphor of a chariot with a black and a white horse to explain these three parts and their interplay (245–247). The driver of the chariot is the intellect, the black horse is lust and the white horse is an element described by Plato in terms of ardency, rage and scolding oneself. To explain the working of these three elements Plato described how the soul acts when somebody suddenly falls in love. The black horse of his soul wants to run immediately to this person, while the white horse halts, befallen by a sudden shame. The driver has the greatest difficulty to keep the chariot on the road. So the black and the white horse represent a double impulse of attraction and restraint, which simultaneously stimulate a human being to act. The intellect can steer between these two impulses, but does not itself develop any power to act.

Aristotle (*EN* I.xiii.1102a17–1103a10) also recognized three parts of the soul: the vegetative, the appetitive/desiderative and the rational. The vegetative part is

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<sup>2</sup> This discussion referred to by earlier authors such as Weber.

<sup>3</sup> For example Marcuse (1955, chpt. IV).

<sup>4</sup> The term gained popularity after its use in the farewell address of President Eisenhower in 1961.

<sup>5</sup> Leading in this respect Habermas (1981).

purely irrational and doesn't act, the appetitive part acts and is partly irrational and partly rational, while the intellect doesn't act, but thinks and is purely rational. In this respect there seems to be a great continuity between the conception of Plato and Aristotle, although there are also some differences. Aristotle did not for example believe in an immortal soul.<sup>6</sup> He rejected the idea that the intellect has control over the desiderative element, like a driver over horses<sup>7</sup> (*EN VII.ii.1145b21–1146a*). Moreover, he considered the idea of a low passion to be not very important or attractive<sup>8</sup> (*EN VII.xiv.1154a22–1154b11*). In principle every desire is good. The important point for Aristotle was the development of the strength of will to follow the lead of the rational element of the desire. Aristotle describes the desiderative element in the following way:

But there seems to be another element of the soul (desire LHC), which while irrational, is in a sense receptive of reason. Take the types of man which we call continent and incontinent. They have a principle – a rational element in their souls – which we commend, because it urges them in the right direction and encourages them to take the best course; but there is also observable in them another element, by nature irrational, which struggles and strains against the rational. Just as in the case of the body paralysed limbs, when the subject chooses to move them to the right, swing away in the contrary direction to the left, so exactly the same happens in the case of the soul. (*EN I.xiii.1102b6–1102b28*, trans. Thomson/ Tredennick)

Many authors think that merely the lust can be perceived as a bodily desire. They do not situate the root of moral behaviour in the body, but in the intellect.<sup>9</sup> According to Werner Jaeger (1945, 186–187), Plato's dialogue *Phaedrus* had no relevant connection with the concept of love as elaborated upon in his dialogue *Symposium*. Maybe Jaeger shrank back from the fact that in *Phaedrus* the homo-erotic love between elder men and younger boys is in fact treated. One should however realise that in Plato's days this kind of love was part of public life – while the love between men and women obviously was not. Further there is no type of relationship which is so gratifying when care and teaching dominate it, but which is at the same time so susceptible to turn into corruption by sexual desire. It is this counterbalance between wrongfulness and goodness on which Plato focused and to which he also turned in the final passages of *Symposium*.

Plato described the white and the black horse as follows:

The right-hand horse is upright and cleanly made; he has a lofty neck and an aquiline nose; his colour is white, and his eyes dark; he is a lover of honour and modesty and temperance, and the follower of true glory; he needs no touch of the whip, but is guided by word and

<sup>6</sup> "...not the least absurdity is the doctrine that there are certain entities apart from those in the sensible universe, and that these are the same as sensible things except in that the former are eternal and the latter perishable" (*Met. III. ii. 997b5–10*, trans. Tredennick).

<sup>7</sup> See however (*Phdr.* 253–257) where there is hardly any control of the driver.

<sup>8</sup> See however also (*EN I.xiii.1102b6–28*, trans. J.A.K. Thomson/H. Tredennick): "Probably we should believe nevertheless that the soul too contains an irrational element which opposes and runs counter to reason – in what sense it is a separate element does not matter at all."

<sup>9</sup> Barnes (1955) however, is very explicit about this root of moral behaviour in the body, which makes the behaviour of animals and human beings comparable.

admonition only. The other is a crooked lumbering animal, put together anyhow; he has a short thick neck; he is flat-faced and of a dark colour, with grey eyes and blood-red complexion; the mate of insolence and pride, shag-eared and deaf, hardly yielding to whip and spur. (*Phdr.* 253–257, trans. Jowett)

The fact that the condition of the will – the indomitable, lion-like element in Aristotle’s terms – is shown in bodily posture and reactive attitude is an important fact, which underscores the bodily interpretation of the Greek concept of desire.

Aristotle described desire as a general force, which is active in human beings and animals. He referred in this respect to spiders, which show some kind of intelligence in weaving their webs (*Phys.* II.viii.199a20–25). At the same time desire is a specific force in each individual, formed by the experiences which it has had. In the last part of *Politics*, Aristotle explains how the state should take care of the development of a right sense of pain and pleasure by promoting literature in the education of children: “habituation in feeling pain and delight at representations of reality is close to feeling them towards actual reality” (*Pol.* VIII.v.1340a20–30, trans. Rackham).

## 2.3 Desire and Habituation

For Aristotle, reality meant endless variability and continuous growth. His biology is a “natural history” (*Hist. An.*) in which scientific study is primarily focused on descriptive taxonomies.<sup>10</sup> Aristotle believed that at a genus level, formative principles are induced in matter and that reality exemplifies the complete gradation of full presence and complete absence of such a principle. A full description of this continuously moving and changing endless gradation would ask for a description in terms of potentiality and would be completely inarticulate. Without specifying different species and subspecies, indicating different ranges within this endless gradation, without stating that something belongs either to this or to that type and that a third possibility is not open, there would be no science possible, nor any reflection on actions. The art of definition and the related principle of contradiction are thus for Aristotle “Strukturformelle der Realität” as Segalerba (2011) formulates it.

To understand the art of definition means to be able to understand why Aristotle’s works on logic are certainly not inconsistent with his metaphysics, but continuous, specifying respectively the scientific method and the ontology.<sup>11</sup> To understand the art of definition it is important to realize that taxonomic guides – to birds for example – often work with pictures, which emphasize the differences between species. These pictures are ideal types. As is further explained in Sect. 2.6, Aristotle

<sup>10</sup> Only as late as the mid-eighteenth century were systematic taxonomies made. In earlier times people lacked a belief in one true criterion, which is necessary for such an enterprise and which was indeed introduced by Linnaeus. The first edition of *Systema Naturae* was published in 1735. See for a more detailed discussion of the subject Huppes (2005, or 2008).

<sup>11</sup> See for a different opinion D.W. Graham (1987) and Klaus Brinkmann (1996).

deems it one of the largest mistakes of Plato to have reified these ideal types. For Aristotle circles and other pictures are simply means by which people reason about the world (*Met.* VII, x, 1036a). Therefore it is in a certain sense arbitrary how these pictures are made, as they hold no truth value.

However, when somebody is able to make a guide which helps many people to memorise detailed differences between phenomena and to think about these things in an orderly way, the maker of such a guide is a very good scientist. In this sense – when not taken as a mirror of reality, but as a frame of reference – such a guide exemplifies an insight in the order of things: in the nature of the completely abstract (imageless) formative principles as well as in the details of the variety and growth these principles induce in the actual world.

One cannot acquire knowledge of the actual world by simply reading the guide. One has to study hard cases and discuss them against the background of the frame of reference offered by the guide, in cooperation with people who have done so already for many years. This way the ideal types of the guide are ‘filled’ with experiences.<sup>12</sup> The guide is nothing else than a help to organize experiences and to be able to communicate these experiences with others. This art of definition and the intellectual order and communication it constitutes has been the great discovery of the Greek Academicians.

Concerning action Aristotle does acknowledge another way of perceiving reality. When one aims for a result which can be clearly specified, for example in medicine the decrease of fever, it is not only possible to acquire knowledge about the effects of certain actions, but also to gather knowledge about the reasons why a specific action generates such an effect<sup>13</sup> (*Met.* I.i. 981a–981b15). But in the field of law and morals people strive for happiness and there can be no such learning of general rules and remedies. In this field a type of learning is possible which is called habituation.

As also acknowledged by Jaeger (1945, 215–227), there is a great continuity between Plato’s *Laws* and Aristotle’s thought in this respect.<sup>14</sup> In *Laws* Plato explains what habituation means. The training of continence is discussed in the first book by way of a comparison of the laws in Crete, Sparta and Athens on drinking behaviour. While in the other places drinking is strictly regulated, the public meetings for drinking are deemed important in Athens for their educational effect on the youth. Only by really experiencing the dangers of incontinence one can be trained to fight one’s weaknesses. The state has to create the institutions – a more or less safe environment – in which the youth can be confronted with its weaknesses and can cross boundaries.

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<sup>12</sup> See Robert R Sokal (1974) for research in which imaginary animals served to illustrate how different individuals of the same specialisation take different classification decisions. Classification is never evident.

<sup>13</sup> To treat a patient, however, the physician has to adjust the general remedy to the particular situation of the individual patient.

<sup>14</sup> See for Aristotle especially *EN* book I.

For example, to internalise the rule that one should not drink more than one glass an hour, does not mean for Plato and Aristotle to put oneself in the place of the father/mother, or any other authority, but rather to associate such a rule with personal experiences. Habituation is about acquiring strength and not about obedience or conscience. Although the drinking-rule may function as a warning to be careful with alcohol and may specify a safe guideline, it is, according to Plato and Aristotle, certainly not good to simply follow guidelines blindly. This would lead to a mediocre practice, to the enslavement by a rationality, which is poorly instructed by experiences and simply follows the lead of others.

Habituation leads to a type of knowledge about human affairs which is closely connected to the descriptive taxonomies in biology. The formulation of rules is the formulation of ideal types. At the one hand rules are arbitrary, as many legal theorists have argued, while at the same time an ingenious composed set of rules can exemplify – in the same way as an taxonomic guide – an insight in the natural order of human affairs. Such a set of rules constructs a conceptual world, which can be used as a frame of reference to articulate and memorise experiences. The formulation of common rules institutionalises a practice of reflection by which experiences can be ordered and communicated. This reflection and communication constitute an insight in what belongs to human affairs.

Rules have to be connected continuously with actual experiences. Only by experiencing situations in which it is hard to discern the good and the bad, can the individual develop personal knowledge about what it means to act well and how the rule has to be interpreted. The fact that rules are arbitrary and represent at the same time an insight in formative principles cannot be explained to scientists who believe in determinism. As will be explained in Sect. 2.6, determinism is founded on the reification of ideal types. The incapacity of determinism to understand the constitutive features of the legal academic tradition has caused the slow decay of this tradition.

Although strength is developed by habituation, for humans there are, like for every other animal, differences in the strength and eagerness with which different people are born (*EN* III.1114a8–1114b15). It is remarkable how lenient and tolerant Aristotle is concerning incontinence (*EN* V.1134a6–23). For him, evidently, everything is better than to be domesticated.

## 2.4 The Indeterminism of Aristotle

Barnes (1955, 20–21) states that Aristotle's notion of 'akribeia' has aroused little scholarly comment and remains somewhat obscure. 'Akribeia' means that a subject matter only allows for a modest amount of precision. Barnes describes how Aristotle accepted precision in mathematical science, which consists of analytical truths, but not in biological science. He indicates how Aristotle was "[i]mpressed by the seemingly infinite variety of human circumstances and situations" and thinks it worth to

underline “[t]he fact that Aristotle is here adopting an extreme position, not unlike the one taken up by some existentialist thinkers” and to point out that Aristotle thought that:

The most we can hope for is a group of roughly accurate generalizations – principles which will meet most ordinary situations, but which are always liable to come unstuck.<sup>15</sup>

By rejecting the possibility of precise general propositions in biological science, Aristotle revealed his indeterminist view. He stated (*Met.* VI. ii.1027a-1–20) that the accidental exists and that matter allows for deviation from the usual.

Aristotle acknowledged only two ways to talk about the real world: on the one hand in terms of the laws which govern it (the formulas) and on the other hand in terms of the particulars which are partly governed by laws, and partly by the variation of which matter admits (combination of formula and matter). While the laws just ‘are’, being independent of generation and destruction, particulars are perishable. People only can obtain empirical knowledge by studying particulars. However, particulars cannot be defined; they only can be grasped intuitively (*Met.* VII. xiv–xv.1039b20–1040a20). Therefore, according to Aristotle, empirical knowledge can only consist of rough generalisations. Knowledge of the laws which govern the world is partly mathematical and can be stated with precision, and partly empirical, consisting of speculative, rough generalisations.

When Aristotle’s indeterminism is applied to his ethics, the following account of his ideas is possible. The double impulse involves a moment of choice. However, there is not a strict dichotomy of choice or no choice at all, but rather somewhat more or less room for choice: some creatures being more capable of adaptive behaviour than others. Since every individual being or concrete event is a very complex composite, it is impossible to state anything about these things with any precision. How free a person was in his or her choice in a concrete case cannot be a scientific statement of fact, but only a personal – speculative – judgement about his or her character.

The more strength a person has, the more he is free. According to Aristotle some people are born as slaves and others as masters. This is one of the most contested elements of his theory and can easily lead to the conclusion that after all Aristotle defends a deterministic view.<sup>16</sup> To understand this part of his theory, one has to place it against the background of his indeterminist view on nature: the endless variety of the world and the fact that this variability is the essence of being. This means that people are not born either as a slave or as a master, but with more or less talent for being strong. Aristotle distinguishes between slaves by law and slaves by nature. People who are masters by nature can be enslaved by law, while people who have the position of a master, can be slaves by nature.

The indeterminist view of Aristotle has been completely lost in the reception and tradition of his ideas. This can be explained by the fact that Aristotle’s texts gained

<sup>15</sup> See also Kenny (1978, 13–26) who uses the term defeasible rules for this phenomenon, and who clearly reveals his own belief in physical determinism by reserving this notion for the field of ethics alone.

<sup>16</sup> In this volume see the essays by Engle en Yankah.



a renewed impact on the Western world through the way they were re-interpreted by Thomas Aquinas in accordance with the development of a very strong, religious, deterministic outlook on the world. Because today very few people have read Aristotle's original *Metaphysics* thoroughly, Thomas' interpretation is still generally accepted. Barnes' remark that the notion of 'akribeia' remains somewhat obscure has to be read against this background.

## 2.5 Introduction to the Concept of Truth

The study of Truth is in one sense difficult, in another easy. This is shown by the fact that whereas no one person can obtain an adequate grasp of it, we cannot *all* fail in the attempt; each thinker makes some statement about the natural world, and as an individual contributes little or nothing to the inquiry; but a combination of all conjectures results in something considerable. Thus in so far as it seems that Truth is like the proverbial door which no one can miss, in this sense our study will be easy; but the fact that we cannot, although having some grasp of the whole, grasp a particular part, shows its difficulty. (*Met. II. i. 993a30–993b10*, trans. Tredennick)

Only knowledge of the world of particulars is knowledge of the world in its full sense, according to Aristotle. At the same time he acknowledged that knowledge of particulars is impossible, because to know means to be able to define something in general terms (*Met. VII.xiv–xv.1039b20–1040a20*). This insight however did not lead to cynicism or relativism, but was celebrated by the Greeks and the Romans as the key notion of ethical theory: the complexity of the world makes it impossible to grasp it or to be enslaved by it. It means that nature is a free place.

Both the Greeks and the Romans favoured the idea that the more one knows, the more one understands that it is impossible to know anything with certainty about the world of particulars. Especially in legal theory and in the field of ethics this was expanded upon as an insight to promote moderateness and temperance and to avoid absolutism. Because truth was unattainable, the full focus was given to institutional devices for the division of power and the protection of the independence of authority.<sup>17</sup>

There was, however, a difference between the Greeks and the Romans in the way they valued scientific study. Both shared the idea of habituation and the value of a broad and reflective knowledge of the feelings aroused by practical experience. For Plato and Aristotle however, the study of science added a dimension over and above the political level, in which the human being situates himself in an order in which not only humans partake, but all living beings. Having a broad practical experience makes a person prudent, but the rough knowledge of eternal things makes a person wise (*EN VI.vii.1141a19–b8*). A wise person is not very interested

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<sup>17</sup> See not only the discussions on money and age for those who held jurisdiction, on the education of them and on the function of philosophy to gather strength, but specifically also all the institutional arrangements for unpopular offices (*Pol. VI.v.1321b40–1322a30*).

in money or applause. This is important for a politician, in order to be impartial and have integrity.

The Romans on the other hand did not value science as highly as the Greeks did. Cicero (1928) described the point of view of the Greeks in the following way:

What power, moreover, what office, what kingdom can be preferable to the state of one who despises all human possessions, considers them inferior to wisdom, and never meditates on any subject that is not eternal and divine; who believes that, though others may be called men, only those are men who are perfected in the arts appropriate to humanity.

He then confronts this position with the question

For why is it that the grandson of Lucius Paulus, the nephew of our friend here, a scion of a most worthy family and of this most glorious republic, is asking how two suns could have been seen, instead of asking why, in one State, we have almost reached the point where there are two senates and two separate peoples? (*Rep.* xvii28–xix31, trans. Keyes)

That Cicero did not value science in the way the Greeks did, doesn't mean that he was not very well acquainted with Aristotle's view. For the Romans the philosophy of the Greeks was still common knowledge and authors did not need to refer to their Greek source. This may be the reason why in later days the indeterminist view of the Romans is generally ascribed to Stoicism, indicating the mechanistic interpretation of it by Epicurus and Lucretius (Pullman 1998).

The indicated lack of depth in Roman culture – as far as wisdom is concerned – is filled but at the same time altered considerably by the introduction of a religious conception of truth. Augustine introduced the concept of truth – explicitly in discussion with the Ancient understanding – in his essay *Contra Academicos*. The concept rests upon the assumption that there is a place – a Panopticum or Archimedical point, currently indicated by the more prosaic 'helicopter view' – from which everything can be seen and known. It is a religious concept. God occupies the panoptical point and is the all-knowing and all-seeing creator and governor of the world.

This religious concept of truth certainly brought back the dimension of the eternal, with its specific function for integrity in political life, but it did so in opposition to the great achievement of the Greeks, namely their scientific research attitude. This meant that the reintroduction of Greek philosophy in the Renaissance had to face the integration of science and religious belief.

The God, introduced by Aristotle as the unmovable Mover, a Mind which had no grip on matter, which only was the seat of the eternal presence of formative principles and the source of the attraction which these exercise on living things. The God, introduced in philosophy by Augustine, was a Mind with creative power, determining everything, the eternal presence of the formulae as well as the details of the life-cycle of particulars.

Notwithstanding this enormous difference, there still is a great similarity between Augustine's theory and Ancient Greek theory, because Augustine defended the belief that it was only possible for somebody to act as a good person, when he had been selected by God. This way Augustine saved uncertainty as a key notion in

ethics, although it gained a completely different connotation: as an act of faith rather than an epistemological insight.<sup>18</sup>

Science and religion both have a function for political life, creating a level at which political power can be embedded and moderated. The pragmatic attitude of the Romans led to the rejection of Greek science. Religion was introduced to fill this gap. Through the fusion which resulted from the reintroduction of Greek philosophy, religion became a pragmatic source for absolute power. This power-claim was then successfully attacked by science. Through the claim of truth, however, science brought the secularisation of the panoptical point, which represents an even more dangerous absolutism. A conscious return to indeterminism could break this absolutism.

## 2.6 Determinism and Enlightenment

When Greek philosophy was reintroduced in the Western world, it brought about the integration of science and religion. The belief in a natural language played a decisive role in this integration. Natural language is the key-assumption for a deterministic view of the world. Aristotle rejected the existence of a natural language and attacked Plato, for having introduced this belief. Aristotle thought that it had been one of the biggest mistakes of Plato that he assumed:

[t]hat the problem of definition is concerned not with any sensible thing but with entities of another kind; for the reason that there can be no general definition of sensible things which are always changing. These entities he called 'Ideas', and held that all sensible things are named after them and in virtue of their relation to them; for the plurality of things which bear the same name as the Forms exist by participation in them. (*Met. I. v. 987b3–11*, trans. Tredennick)

Between these Ideas and sensible things Plato introduced mathematical symbols as intermediates, according to Aristotle. Aristotle rejected this Platonic view in which theoretical notions such as the "circle" have an independent existence (the absolute circle) and are represented by a symbol (a drawing).

For Platonists say nothing more or less than that there is an absolute Man, and Horse and Health, in which they closely resemble those who state that there are Gods, but of human form; (...) Again, if anyone posits Intermediates distinct from Forms and sensible things, he will have many difficulties; because obviously not only will there be lines apart from both Ideal and sensible lines, but it will be the same with each of the classes. (*Met. III. ii. 997b10–20*, trans. Tredennick)

Firstly the position of Aristotle will be further clarified. Thereafter the different relevant variants of determinism will be treated generally.

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<sup>18</sup> How the new religious outlook on the world could be brought in agreement with the Ancient philosophy by the epistemological notion of God's Providence was very well explained by Boethius' *Consolation of Philosophy* (1969, Book IV and V).

### 2.6.1 Aristotle

It can be concluded that Aristotle rejected both the independent existence of an Absolute Idea (in religious terms, the image God had in mind when he created) and of an Intermediate (the image in the mind of human beings). For Aristotle there are only particulars and the independent existence of general laws.

The formulas – the general laws – have according to Aristotle an independent eternal existence by their seat in the mind of the unmoved Mover. They exercise an attraction to living beings, such that these beings will attain that which belongs to their form. This is their finality and explains the growth in particulars.

However, for Aristotle the formulae of man and horse are the same, because it is at the level of genus and not of species that the formula merges with matter. Species are the variations between total privation and total completion of matter by a formula (*Met. X. iii. 1054b–1059a*; *Phys. I. vi–II. ii.188b and 194b*). There is no Absolute Idea to which the names of species refer, neither do these names refer to concepts in the human mind which have an independent existence as Intermediates. This means that Aristotle rejects natural language.

Aristotle did acknowledge mathematical knowledge as precise and sure knowledge about necessity. But these mathematical propositions – determinate laws such as:

What is drawn up must cool and what has been cooled must become water and descend.  
(*Phys. II. Viii. 198b10–199a10*)

– are only hypotheses. “In mathematics the principle is the principle of reasoning only, as there is no action” (*Phys. II. ix. 200a1–30*). In other words, the propositions of mathematics are analytic and not synthetic.

### 2.6.2 Different Relevant Variants of Determinism

#### 2.6.2.1 Fundamental Religious Determinism

Fundamental religious determinists stick to the Augustinian belief of Grace as a gift of God, which rests on Gods will and not on his reason. They believe that God determines the world at the level of each particular event, and they deny the possibility for a living being to know anything about Gods ways. This view comes in a certain sense very near to the Aristotelian view. Both views, determinism and indeterminism, lack of free will and free will, are extremes which converge in their conception about what a man can know. Both cherish the lack of certainty about the world of particulars as a key notion of ethics. The practical difference between both is a different attitude towards wisdom and a different outlook on life: for the religious determinist, faith and a life at the edge of despair; for the Aristotelian, speculative intelligence and the joy of a complete life. Both views share however the values of individualism, freedom and moderation, while both also dislike Absolutism.

### 2.6.2.2 Cultivated Religious Determinism

The view of *cultivated religious determinists*, such as Thomas Aquinas, is often indicated as the belief in a free will, because it rejects a belief in predestination. As Thomas Aquinas played an important role in the reintroduction of the ideas of Aristotle, his view has mistakenly been portrayed as an Aristotelian view. It is quite important to avoid this mistake, as it conceals Aristotle's indeterminism. Thomas Aquinas accepted Absolute ideas for every class of things that indicate a fixed goal for every member of the class, which goal is the essence of their being and can be intuited by experience. This makes correspondence between knowledge and a world of natural classes possible. A person can understand Gods plan to a certain degree by reflecting on the concepts which are naturally acquired through experience.<sup>19</sup> One can choose to act accordingly and therefore one can influence one's final destiny. In this view, 'that which is called free will' is in fact to 'act according to Gods general plan'. It is here that the reversal of freedom and slavery starts.

### 2.6.2.3 Scientific Determinism

*Scientific determinists* took the nominalist stance of Ockham. Ockham (1974, *Summa Logicae*, Part I, 3) accepted Absolute Ideas for every class, but not the natural development of insight into Gods ways through experience.<sup>20</sup> He rejected thus the possibility to know anything about the finality of things through conceptual analysis. However his belief in an independent status of concepts as intermediates made it possible for him to distinguish between concrete concepts (which indicate a natural class) and abstract concepts (which indicate the Absolute Idea).

The main argument of Ockham for the independent existence of Intermediates referred to the mysteries of faith: the fact that a man can also be the son of God and that bread can also be the body of Christ. He distinguished between abstracta such as 'Manhood' (being the son of God) and concreta such as 'Man' (Part I, 7, trans. Loux).

According to him it is possible to say that Man walks, while it is impossible to say that Manhood walks. He thus accepted a complete correspondence between the names of species and a world in which particulars can be recognized as members of

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<sup>19</sup> See also *Averroes Middle Commentary*, (Anatolio's Introduction), trans. H.A. Davidson (1969): "Speech designates the conceptions that are present in the human mind, those conceptions have their reference in things that exist outside the mind; and the totality of existent things provides knowledge of the Cause of their existence and confesses that He created them. Therefore everyone who truly desires to seek God stands in need of the science of logic."

<sup>20</sup> "Thus, suppose a spoken word is used to signify something signified by a particular concept of the mind. If that concept were to change its signification, by that fact alone it would happen that the spoken word would change its signification, even in the absence of any new linguistic convention. (...) For one thing the concept or impression of the soul signifies naturally, whereas the spoken or written term signifies only conventionally. We can decide to alter the signification of a spoken or written term, but no decision or agreement on the part of anyone can have the effect of altering the signification of a conceptual term."

a natural class. This made it possible to describe and gather further knowledge – not about essential nature – but about the appearance of particulars. This scientific determinism is further developed by Hobbes (1968):

The first author of Speech was *God* himself, that instructed *Adam* how to name such creatures as he presented to his sight; For the Scripture goeth no further in this matter. But this was sufficient to direct him to add more names, as the experience and use of the creatures should give him occasion; and to join them in such manner by degrees, as to make himself understood; and so by succession of time, so much language might be gotten, as he had found use for; though not so copious, as an Orator of Philosopher has need of. For I do not find any thing in the Scripture, out of which directly or by consequence can be gathered that *Adam* was taught the names of all Figures, Numbers (...) and least of all, of *Entity*, *Intentionality*, *Quiddity*, and other insignificant words of the School. But all this language gotten, and augmented by *Adam* and his posterity, was again lost at the tower of *Babel*, when by the hand of God, every man was stricken for his rebellion, with an oblivion of his former language. And being hereby forced to disperse themselves into several parts of the world, it must needs be, that the diversity of Tongues that now is, proceeded by degrees from them, in such manner, as need (the mother of all inventions) taught them; and in tract of time grew everywhere more copious. (Leviathan I. IV.)

Although Hobbes thus rejected the idea that concepts such as ‘intentionality’ can be founded on the Scripture, and defended the view that language develops for pragmatic reasons, he nevertheless based the primordial correspondence between language and natural classes on the Scripture. A short way to express the same belief in the possibility of correspondence is the statement of Galilei that the world is written in mathematical terms.

#### 2.6.2.4 Sceptical Determinism

*Sceptical determinists*, such as Descartes and, much later, Hume, were impressed by the sobering thought that the new philosophy which was developing in Early Enlightenment and which attacked the Church, could not be founded rationally. Their scepticism can be summarised by the statement: it cannot be explained rationally, but has to be accepted. Both Descartes and Hume played a crucial role in the disenchantment of the scientific understanding of the world.

Descartes rejected the diversity of animals and plants – which had been all important in the Aristotelian view. Descartes stated that sensible qualities have no existence outside human awareness. These sensible qualities have to be reduced, according to him, to the primary ‘mechanical’ properties of insensible particles (van Ruler 1995, 118–120). Instead of the idea of individual living beings having a double stimulus to act *from within* – every movement was explained by causality as an omnipresent pressure *from without*<sup>21</sup> (van Ruler 1995, 129–131). Instead of the four causes of Aristotle, there was only one cause accepted for all natural mechanisms in Cartesian philosophy: God as an efficient cause.

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<sup>21</sup> More extensively on this Huppes (2011).

Hume (Human Nature, II. 3. iii) fully and explicitly realised the consequences of this reduction of a double impulse to one mechanical impulse. He stated that a man desires what he desires. According to Hume, man doesn't have a natural instinct according to which it is irrational for him to desire the destruction of the whole world. His rationality has only an instrumental function to help him realise what he wants.

## 2.7 The Secularisation of the Panoptical View: The Rise of Pragmatism

Kant made an impressive attempt to reconcile the old and the new philosophies. He made a distinction between the phenomena with which science deals and the substances which are dealt with in ethics; he thus maintained the Aristotelian view that general knowledge can only be obtained about forms and not about substance; he envisaged the individual as an end in itself, by which he secured the Greek concept of desire; and he protected this individual finality by a formal conception of norms.

In respect of the further development of modernity, however, Kant contributed something else much more important. Kant was the first to understand the pragmatic and political turn which science had been making during the Enlightenment.

He stated in the preface of his *Kritik der Reinen Vernunft* that Gallilei, Torricelli and Stahl had:

[l]earned that reason only perceives that which it produces after its own design; that it must not be content to follow, as it were, in the leading-strings of nature, but must proceed in advance with principles of judgement according to unvarying laws, and compel nature to reply its questions. (...) Reason must approach nature with the view, indeed, of receiving information from it, not, however, in the character of a pupil, who listens to all that his master chooses to tell him, but in that of a judge, who compels the witnesses to reply to those questions which he himself thinks fit to propose. To this single idea must the revolution be ascribed, by which, after groping in the dark for so many centuries, natural science was at length conducted into the path of certain progress. (trans. J.M.D. Meiklejohn)

This means that Kant understood how science used a hypothetic-deductive method for research. Later this method was further elaborated by scientists like Peirce, Dewey, Hempel, Nagel and Popper.

During the Enlightenment, belief in God aroused a lot of discussion. This did not mean that the panoptical view in itself was debated, but that there was a competition as to who was going to occupy the panoptical point: God or Man. To be a humanist, objective, or rational, to be a good politician, a good person, a good legislator and so on, this all meant to think in these terms: if I could govern this all, knew everything, and were not tied by personal interests, what would I ask, want, know, or do? It is this type of reasoning – exemplified by the Categorical Imperative – this type of control, this type of political goal to realize paradise on earth, which is the mark of determinism.

Reading the words of Kant, cited above, the relevant question to ask is: ‘whose reason?’ In reference to truth, the bearer of this reason was for Kant a cosmopolitan community; in reference to the determination of individual destiny it was the negative freedom of the individual; and in reference to collective action it was the executive power to represent a collective.

Ever since Kant, the whole of Western philosophy has occupied itself with the unification of these three requirements. It can therefore be concluded that – contrary to what Strawson (1973) stated – the humanities have developed their ideas and theories completely and solely in reference to the thesis of determinism, i.e. the thesis of a Collective Mind.<sup>22</sup> The idea of a historical growth in which the three contradictory requirements merge into the ‘Enlightened’ unity of a Collective Mind has been predominant in the humanities since the end of the eighteenth century. Individual freedom is primarily considered with respect to its function in the development of this collective enterprise.

Just like Kant’s theory, the whole of modern Western philosophy reflects a new concept of freedom which was generated during the Enlightenment and came to full flush in the French Revolution: the freedom of the political individual to determine the destiny of the self and the world *as part of a collective*. Authors such as Arendt and Agamben have rooted this concept of the political individual in Aristotle’s text<sup>23</sup> (*Pol.* I.i.1253a1–35). Indeed it is true that Aristotle stated that a man is a political animal and that the city is prior in nature, implying that there is in every man a natural impulse to form a political partnership. However, for Aristotle politics was not about realising paradise on earth. To him governing was, like any other art, situated in a context. Aristotle explicitly rejected pragmatic science, as this would involve the idea that the human being is the highest being (*EN* VI.vii.1141a19–b8). For Aristotle politics was about habituation. Although Aristotle shares with pragmatism the value that theory is the highest virtue attainable for people, and although both acknowledge the fact that theory can only exist as a collective enterprise, they have a different conception of science: respectively indeterminist/organic and deterministic/mechanistic.

When evolution theory developed in the second half of the nineteenth century, this was the first sign of a return of an indeterminist view in science. This biological indeterminism however was rapidly transformed into social determinism. Even Peirce (1960) defended such a social determinism:

[i]deas are not all mere creation of this or that mind, but on the contrary have a power of finding or creating their vehicles, and having found them, of conferring upon them the ability to transform the face of the earth. (I, 95)

and

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<sup>22</sup> Compare the first sentences of Foucault’s *Political Technology* (1988, 145) “The general framework of what I call the ‘Technologies of the self’ is a question which appeared at the end of the eighteenth century. It was to become one of the poles of modern philosophy (...) The question (...) is: What are we in actuality? (...) Kant, Fichte, Hegel, Nietzsche, Max Weber, Husserl, Heidegger, the Frakfürterschule have tried to answer this question”.

<sup>23</sup> More on this Huppes (2011).



This activity of thought by which we are carried, not where we wish, but to a fore-ordained goal, is like the operation of destiny. No modification of the point of view taken, no selection of other facts for study, no natural bend of mind even, can enable a man to escape the predestinate opinion. (V, 268)

Popper (1972) defended in *Objective Knowledge* an evolutionary approach, which he presented as consistent with Darwinian biology. At first sight his main argument appears to be against determinism. At second sight however Popper is primarily interested in the political freedom of humans to change – as a collective – the face of the earth.

In the next section a comparison will be made between Popper and Aristotle, to clarify why Popper's fight *against* determinism and *for* freedom is, seen from an Aristotelian perspective, a fight *for* determinism and *against* freedom.

### 2.7.1 *The Objective Knowledge of Popper versus the Subjective Knowledge of Aristotle*

In his youth Popper had attacked the idea of Historicism. But, as Popper (1972, 241) confessed, he ended up more or less with this same Historicism. In his later work he defended his belief in interactionism, i.e.

the belief that non-physical aspects (aims, purposes, traditions, tastes, ingenuity) play a role in the development of the physical world (footnote 35, 223).

In the Preface of *Objective Knowledge* Popper announces that he will reject the subjectivist tradition that could be traced back to Aristotle and will replace this old theory with an objective theory of essentially conjectural knowledge. In one of the chapters he calls his theory “epistemology without a knowing subject.” (106)

His theory involves an evolutionary approach which can be summarised in three arguments: (1) growth of knowledge is a development through natural selection; (2) natural selection can be understood in terms of intelligent design by humanity; (3) intelligent design by humanity can be explained by the propensity structure of clouds. These three arguments will be elaborated below and compared with the subjectivist Aristotelian approach. Before doing so the indeterminist position of Aristotle will be compared to Popper's view.

### 2.7.2 *Indeterminism of Popper and Aristotle*

Popper (1972, 212) refers to Peirce to explain physical indeterminism:

I may perhaps quote one of Peirce's brilliant comments: ‘... one, who is behind the scenes’ (Peirce speaks here as an experimentalist) ‘... knows that the most refined comparisons [even] of masses [and] lengths, ... far surpassing in precision all other [physical] measurements, ... fall behind the accuracy of bank accounts, and that the .... Determinations of physical constants...are about on a par with an upholsterer's measurements of carpets

and curtains....' From this Peirce concluded that we were free to conjecture that there was a certain looseness or imperfection in all clocks, and that this allowed an element of chance to enter. Thus Peirce conjectured that the world was not only ruled by the strict Newtonian laws, but that it was also at the same time ruled by laws of chance, or of randomness, or of disorder: by laws of statistical probability.

Compared with the explanation given by Aristotle it becomes clear that the indeterminism of Aristotle is much more radical as Popper speaks of imperfection while Aristotle focusses on the perfection that can be realized through individual adjustment. Aristotle (*Phys. II.v.196b10–viii.199b120*, trans. Ross) distinguishes between (1) movements which are '*always the same*', which means that they are '*of necessity*', which refers to mathematical knowledge and eternal things; (2) movements which are '*for the most part*', which means that they are '*by nature*' and '*for the sake of*' i.e. functional; and (3) movements which are '*at random*' such as the movements of seeds "among the seeds anything must come to be at random. But the person who asserts this entirely does away with nature and what exists by nature." Within that which occurs driven by functionality, some are '*according to intention*' and some not. This can be interpreted as referring to respectively learning processes and feed-back mechanisms. The way Aristotle describes it allows for the interpretation that he assumed that there is a sliding scale between these two. To speak of '*spontaneity and chance*' means to refer to accidents: *spontaneous* when relating to processes which are not intended and *by chance* when relating to processes in which intention plays a role.

### 2.7.3 *Growth of Knowledge*

The theory of knowledge which Popper proposes is, according to him, a largely Darwinian theory of the growth of knowledge. He describes (258–260) knowledge as the result of a process closely resembling what Darwin called 'natural selection'. Every animal is born with expectations, which can be framed as hypotheses, and when it is disappointed this inborn knowledge creates the first problems. Knowledge does not start from observations, but from problems, practical or theoretical. While animal knowledge grows mainly through the elimination of those animals that hold unfit hypotheses, human knowledge grows by eliminating hypotheses. Human beings will conjecture a solution for the problem they are confronted with, which they then will criticize:

From the amoeba to Einstein, the growth of knowledge is always the same: we try to solve our problems, and obtain, by a process of elimination, something approaching adequacy in our tentative solutions. (261)

However at the level of applied knowledge there is a growth of differentiation and specialization,

[p]ure knowledge grows in a very different way. It grows almost in the opposite direction to this increasing specialization and differentiation. (...) we should have to represent the tree of knowledge as springing from countless roots which grow up in the air rather than down, and which ultimately, high up, tend to unite into one common stem. (262/3)

Popper (263/4) explains this upside down tree as our wish to find *true theories which agree to the facts*, together with the fact that *our curiosity and passion to explain by means of unifying theories* is universal.

A comparison with Aristotle clarifies the difference between subjective and objective knowledge, which Popper pointed out. For Aristotle, knowledge about the world of particulars had primordial meaning. The particular, however, could not be described. The individual is affected by a particular in the form of a double impulse which leaves a range of reactions open to him or her. One can intuitively understand the quality of the individual configuration of one's environment by one's tendency to act in a certain way. Descriptive knowledge is about general things and generates from the comparison of personal experiences. This generality means a loss of 'truth value'. The meaning of general knowledge is that it prevents an indulgence in feelings. General knowledge creates distance and makes it possible to put the (always ambivalent) personal experiences into a broader perspective. To act solely on general knowledge is inadequate (*Met. I.i.–ii.980a22–982a3*).

From an Aristotelian perspective, Popper's idea 'that perception always happens in the light of expectations which can be framed in the general terms of hypotheses', has led to a kind of expropriation of the personal intuitive understanding of things. This expropriation has especially affected the 'arts' and craftsmanship.

### 2.7.4 *Intelligent Design*

What Darwin showed us was that the mechanism of natural selection can, in principle, simulate the actions of the Creator, and His purpose and design, and that it can also simulate rational human action directed towards a purpose or aim. If this is correct, then we could say from the point of view of *biological method*: Darwin showed that we are all completely free to use teleological explanation in biology – even those of us who happen to believe that all explanation ought to be causal. For what he showed was, precisely, that *in principle* any particular teleological explanation may, one day, be reduced to, or further explained by, a causal explanation (...) we have to add that the phrase 'in principle' is a very important restriction. Neither Darwin nor any Darwinian has so far given an actual causal explanation of the adaptive evolution of any single organism or any single organ. All that has been shown – and this is very much – is that such explanations might exist (that is to say, they are not logically impossible). (Popper 1972, 267)

Popper more or less follows here a line of reasoning, which is also used by Hempel (1959, 122) in one of his essays in which he treated the question whether teleological accounts must be seen as pseudo-explanations.<sup>24</sup> Hempel explained that

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<sup>24</sup> "A magnetic field is not directly observable any more than an entelechy; but the concept is governed by strictly specifiable laws concerning the strength and direction, at any point, of the magnetic field by a current flowing through a given wire and by other laws determining the effect of such a field upon a magnetic needle in the magnetic field on the earth. And it is these laws which, by their predictive and retrodictive import, confer explanatory power upon the concept of a magnetic field"(122).

the kind of phenomenon which people want to explain by a teleological – functional – account is

[s]ome recurrent activity or some behavior pattern in an individual or a group; it may be a physiological mechanism, a neurotic trait, a culture pattern, or a social institution, for example. And the principal objective of the analysis is to exhibit the contribution which the behavior pattern makes to the preservation or the development of the individual or the group in which it occurs. (123)

Hempel explained that the functional account involves the fallacy of affirming the consequence in regard to the premise (127) or is trivial. Only with additional knowledge (130) or further specification of the statements (134) can it get explanatory import. Hempel concluded that

The preceding considerations suggest that what is often called ‘functionalism’ is best viewed (...) as a program for research guided by certain heuristic maxims or “working hypotheses.” (142)

In an attempt to exhibit the value of science for the preservation and development of human society, Popper refers to the argument – also used by Hempel – that only a causal explanation can establish truth value. However he adds something to this account and is quite aware that this would be highly objectionable to many biologists (and certainly also to Hempel, LHC). He states that Darwin’s idea of natural selection suggests – and thus explains – the existence of a ‘strong tendency or disposition or propensity to struggle for survival’, which becomes part of the genetic structure of all organisms and which shows in their behavior and in much if not all of their organization (268).

A comparison with Aristotle highlights the following points. Aristotle was not acquainted with paleontology, which forms the hard backbone of Darwinian analyses. He did not think in terms of the struggle of species (according to Aristotle these are speculative rational reconstructions) or the history of the world. He did think however about the conceptual difficulties of theories about the generation of particulars (*Met.* II.i.–ii. 993b–994b33). These difficulties were the main reason for Aristotle to turn from efficient causation to final causation. The difference between Darwin and Aristotle is primarily that for Darwin the moving force is ‘need’, a one-sided impulse of sexual desire and wish for food, while for Aristotle the moving force is ‘love’, a double-sided impulse leaving a wide range of possible reactions open.<sup>25</sup> The difference between Popper and Aristotle is greater because it involves

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<sup>25</sup> Darwin stated in the preface of his *Origin of Species* that Aristotle’s *Physics* foreshadowed the principle of natural selection, but that his remarks on the formation of teeth show how little Aristotle fully comprehended the principle. Indeed Aristotle’s account on the formation of teeth doesn’t say anything about the competition of species or about the origin of species, it gives an account of the fact that the natural growth in particulars presupposes a kind of tendency or orientation: “Similarly if a man’s crop is spoiled on the threshing-floor, the rain did not fall for the sake of this – in order that the crop might be spoiled – but that the result just followed. Why then should it not be the same with the parts in nature, e.g. that our teeth should come up of necessity – the front teeth sharp, fitted for tearing, the molars broad and useful for grinding down the food – since they did not arise for this end, but it was merely a coincident result; and so with all other parts in which

the replacement of individual feed-back and learning mechanisms by collective feed-back and learning.

### 2.7.5 *Central Propensity Structure*

Popper wondered how the small deviations which accidentally occur come to be used by an organism. Most deviations will be lethal. He concluded that only a central propensity structure – a (collective, LHC) Mind – which includes an aim-structure and a skill-structure, can guarantee the use of such deviations (275). He explained this central propensity structure initially by way of the metaphor of an ‘automatic pilot’.

In later work he connected this idea with the distinction between determinism and indeterminism. For him, determinism was a nightmare because it destroys the idea of creativity, the idea that the brain can create something new (222). He envisaged determinism in terms of the metaphor of a clock (physical systems which are highly predictable in their behavior) and indeterminism in terms of clouds (disorderly and more or less unpredictable physical systems): the solar system is closest to the clock metaphor and a cloud of small gnats closest to the other extreme (207).

Popper used the concept of a cloud to elaborate the idea of a central propensity structure, which exercises a plastic control (not by force, but by feedback or learning LHC):

Like the individual molecules in a gas, the individual gnats which together form a cluster of gnats move in an astonishingly irregular way. It is almost impossible to follow the flight of any individual gnat, even though each of them may be quite big enough to be clearly visible. (...) Their keeping together can be easily explained if we assume that, although they fly quite irregularly in all directions, those that find that they are getting away from the cloud turn back towards that part which is densest. (...) This assumption explains how the cluster keeps together even though it has no leader, and no structure – only a random statistical distribution resulting from the fact that each gnat does exactly what he likes, in a lawless or random manner, together with the fact that he does not like to stray too far from his comrades. (...) Yet the cluster of gnats is an example of a whole that is indeed nothing but the sum of its parts – and even in a very precise sense; (...) the movement of the whole is, in this case, precisely the (vectorial) sum of the movements of its constituent members, divided by the number of the members. (208–210)

Before turning to a comparison with Aristotle, some remarks have to be made about the concept of a cloud as developed by Popper. Animation techniques have resulted in a different view on vector movement: not the (common) wish to be near

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we suppose that there is purpose? Wherever then all the parts came about just what they would have been if they had come to be for an end, such things survived, being organized spontaneously in a fitting way; whereas those which grew otherwise perished and continue to perish, as Empedocles says his ‘man-faced oxprogeny’ did. Such are the arguments (and others of the kind) which may cause difficulty on this point. Yet it is impossible that this should be the true view” (*Phys. II. vii–viii* 198b1–199a1, trans. Ross).

to the densest part is the essential characteristic but the fact that every single gnat wants to stay near to the gnats nearest to it. When some start to move for some reason, the rest follows as a consequence of this characteristic. Although Popper stated that his concept of a cloud is an example of a whole that is nothing but the sum of its parts and not the kind of holistic whole which he had attacked in his studies on historicism, his belief in a kind of control issued by the densest part constitutes just this kind of holistic whole and is explicitly used by him as a model for human government.

Compared to Popper, Aristotle had quite another view on creativity, since for him human action and human freedom were part of nature.

Thus if a house, e.g. had been a thing made by nature, it would have been made in the same way as it is now by art; and if things made by nature were made not only by nature but also by art, they would come to be in the same way as by nature. The one then is for the sake of the other; and generally art in some cases completes what nature cannot bring to a finish, and in others imitates nature. (*Phys. II.viii.199a1–20*, trans. Ross)

The influences of human action will therefore be of a kind which can also be issued in other ways by other natural phenomena.

Aristotle's view on desire and love easily fits in with the interpretation of vector movement, as proposed by animation techniques: as far as there is social cohesion in a group, this will be the result of the quality of the relations between people who interact, and not of a collective identity or intentionality. For Aristotle the simple formula 'Love your neighbour' will be counterbalanced by a contradictory impulse, which can cause the group to fall apart. Habituation creates stability as it constitutes a common frame of reference, which enables communication about personal experiences.

## 2.8 Determinism and the Concept of Law, a Few Conclusive Considerations

Traditionally there are two concepts of law: law as the codified ruling of an authority, which claims obedience, and law as a written academic tradition, which is instructive as a conceptual frame of reference for anyone who has to make agreements with others or has to account for decisions in conflicts.

As a result of the introduction of the concept of truth during the Enlightenment, the academic tradition of law has been incorporated and usurped in the codified ruling which claims obedience. The legal study has gradually lost its status of being academic, of being a (practical) science. The search for and production of scientific truth replaced the academic tradition of law as the main source of instruction for Governments. The scientific discussion annexed the themes and problems of the academic tradition of law, while vice versa the political discussion annexed the academic discussion of science. It has become impossible to discuss human affairs without ending up with conflicting claims about "what is shown by empirical research." The scientific discussion in turn has become completely contaminated by vested interests.

Although it was already clear from the start that determinism was untenable,<sup>26</sup> even today people normally talk about scientific truth and the difference between norms and facts as if they believe in determinism. The main reason may be that they are afraid to promote relativism and irrationalism.

Aristotle would agree with them. In the quote with which this chapter starts Aristotle describes the inhabitants of the cold places of Europe as free. They are free but without any political organisation, like the gnats in a cloud. The Asians however are cultured and have political organisation, but they are like slaves. It is important, according to Aristotle, to make a mix of these two forms of being: free and/or rational.

Aristotle distinguished between the art of definition (method) and metaphysics (ontology). When people do not practice the art of definition, relativism and irrationalism will reign. However, when people reify their ideal types or definitions they will lose contact with reality, they will be enslaved by their own definitions.

Determinists think that legal norms are either describing regularities in behaviour or prescribing behaviour. They thus reify the definitions of law. From the perspective of law as an academic tradition, norms are ideal types, just like circles for mathematicians. They create a conceptual world. The legal ideal types do not correspond with reality, but they are necessary to be able to talk and think about right and wrong. To create political order people will have to practice the art of definition.

Within the context of a set of definitions, one can speak of truth or justice being established. But to keep contact with the real world, people will have to study ontology. They will have to try to understand the world at large, with all the variability and complexity it contains. At this level there is no truth or certainty to be obtained. At this level the arbitrariness of all definitions hits the mind. This is why wisdom is so important for Aristotle and why the exercise of power has to be embedded in the study of ontology.

Aristotle valued science highly. He realised that science can only proceed when clear definitions are established, but that at the same time these definitions endanger freedom and contact with reality. This insight was generally shared by the Greeks and has resulted in the Antique world in the design of constitutions with an impressive array of measures and institutional arrangements to guarantee that the exercise of authority was continuously checked and counterbalanced. The Enlightened belief in (objective) truth has promoted the view that all these measures and institutional arrangements are hindrances to an effective and evidence based ruling.

The academic tradition of law has been the main moral force in Europe in old times and could be so in the future in a global society. To summarise the characteristics of this concept of law: Clear and definite definitions can only function when

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<sup>26</sup> As Popper (1972, 212 fnt 11) reveals “Newton himself may be counted among the few dissenters, for he regarded even the solar system as *imperfect*, and consequently as likely to perish. Because of these views he was accused of impiety, of ‘casting a reflection upon the wisdom of the author of nature’.”



they are not reified. Only then a common understanding and discussion can be free from vested interest. The exercise of power has to be divided, checked and balanced. Only those citizens are free, that take actively part in the many civil services that are needed in a society and exercise power accordingly. The rule of law reigns when the people who exercise power let themselves be instructed by the definitions of the law, but are at the same time conscious of the gap between these definitions and the real world. Only those, who struggle to bridge this gap and reflect about their actions, acquire a more general understanding of human life as such. This understanding is the essence of happiness.

Traditionally authoritative ruling has been part of the law. This is the public law, which is enforced by violence and administrative forms or procedures. Public law claims obedience, but this claim cannot be legitimated on a worldwide scale. This means that this type of law can only function on a global level as far as effective control is possible. Law as an academic tradition does not claim obedience. It creates a collective asset which people can use or not: a Collective Mind without aspirations to be a collective actor, who determines the world and changes the face of the earth.

The discovery of the societal function of a common conceptual order, has been the great invention of the Greeks, brought to theoretical understanding by Aristotle. This is the civil law, to which people voluntarily comply as far as they feel instructed by it, meaning that they experience these definitions as helpful to get a better understanding of reality. The creation of sets of definitions which have coherence and are used by generations of people, is the work of great scientists, who have a deep understanding of the formative principles in their field. Great legislators, such as Solon and Lycurgus, were such scientists.

To know a set of definitions is not enough. One cannot acquire knowledge of the actual world by simply learning the definitions, *i.e.* by reading the code. One has to study hard cases and discuss them against the background of the frame of reference offered by the definitions, in cooperation with people who have done so already for many years. This way the ideal types of the codes are 'filled' with experiences. It has been the great contribution of the Romans to have developed such a legal practice.

Legal theorists are amazed that Roman Law has been a great moral and political force in the mediaeval society which was so completely different from the Roman society. But the conceptual world created by Law as an academic tradition doesn't determine behaviour and doesn't create expectations, like the Collective Mind of determinists like Popper. According to Aristotle the abstract formative principles of human dealings can materialise in many ways. Behaviour is explained by the fact that feelings just happen to people and that their behaviour is stimulated by these feelings. The conceptual world makes it possible to talk and reason about what happens. It makes it possible for people to think their own existence and this again makes them happy and gives them a feeling of completeness which makes them calm, moderate and strong.



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Aristotle and The Philosophy of Law: Theory, Practice  
and Justice

Huppes-Cluysenaer, L.; Coelho, N.M.M.S. (Eds.)

2013, XIII, 276 p. 2 illus., Hardcover

ISBN: 978-94-007-6030-1