

Law from an evolutionary perspective

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Abstract: This contribution aims to show the relevance of the evolutionary perspective for law. This perspective is not an explanation of anything which is true or false, but a research program – more or less fruitful – aimed at finding evolutionary explanations of phenomena both biological and cultural. This research program is fruitful if it succeeds in producing increasingly good explanations of the phenomena to which it is applied. To give an impression of what the evolutionary perspective may bring to law, three topics are discussed:

- the transfer of movables as an illustration of path dependence and multi-level selection,
- theories about the justification of punishment as an illustration of why evolution does not necessarily select the ‘best’ theory, and
- the function of law to promote the survival of humanity, or of particular human cultures, as an illustration of biological and cultural coevolution (very briefly).

Keywords: evolutionary perspective, biological evolution, non-biological evolution, unit of evolution, group selection, fitness

I. INTRODUCTION

In *The Concept of Law*, Hart described the mutual dependence between law and humanity: law can only exist if there are humans, while humans can only exist if law has a particular content (Hart 2012, 185-200). Hart referred to the symbiotic relation between human beings and law and in doing so, he adopted the evolutionary perspective on law. In this article, I will follow Hart’s example and try to increase our understanding of law by analysing some of its aspects from the same evolutionary perspective. I am not the first author to do so; see, next to Hart, for instance Brown (1920), Stein (1980), Elliott (1985) and Deakin (2002). In several publications, with a prominent place for his book *Evolutionary Theory and Legal Philosophy* (Zaluski 2009), Zaluski took arguments from evolutionary theory to sketch a picture of human nature. From this picture, he drew lessons for legal philosophy. In his book *Five Uneasy Pieces*, Smits (2011) argued that the evolutionary perspective can help explain differences between legal traditions.

This contribution deals with the evolutionary perspective on law. This perspective is not the same as the evolution theory in biology that was developed by, amongst others, Darwin and Wallace. Historically speaking, the evolutionary perspective on phenomena developed out of the biological evolution theory, but the evolutionary perspective adopts a higher level of abstraction. In what manner this is the case will be explained in section II. As the biological evolution theory is still the main source of inspiration for the evolutionary perspective, most

¹ I want to thank Wojciech Zaluski and Hugo Decker for valuable comments on an earlier version, which has led to important modifications of the text. The remaining mistakes – or, perhaps sometimes, the resulting mistakes – are completely the responsibility of the author (to the extent that responsibility exists; see section VI).

examples of the evolutionary perspective are drawn from the application of this perspective to the development of biological species.

Sections VIIIf. of this contribution apply the evolutionary perspective to law, with prominent places for theories of the transfer of movables and of criminal law and punishment. These sections only scratch the surface of what the evolutionary perspective can offer the theory of law, but hopefully enough will be scratched to reveal the potential.

II. EVOLUTION AS A RESEARCH PROGRAM

A misleadingly brief characterisation describes the evolution theory as ‘Struggle for life and survival of the fittest’. If ‘fittest’ is defined as ‘most suited to survive’, this characterisation borders on a tautology. It gives the information – which might theoretically be incorrect – that there is a struggle for life and that what is most suited to survive actually survives. However, if we ignore these details, the message of the brief characterisation is that what survives, survives. True, but not very informative.

The theory of evolution as it was developed in biology is far more sophisticated. Moreover, several crucial ideas of the evolution theory as developed by its main founder, Charles Darwin, have become issues for debate. If the evolution theory is correct, what precisely does evolve? What is it that survives for the reason that it is the fittest? What is meant by survival, and what is meant by fitness? These questions have in the course of time received different answers and some of these answers still circulate in alternative versions of the evolution theory.

There is no single evolution theory, not even a single theory of biological evolution. Therefore, it is better not to treat the idea of evolution as a true or false description of the world. A better interpretation is that there is a research program in the sense of Lakatos (1970): a set of assumptions and heuristics for finding explanations from an evolutionary perspective. Whereas scientific theories are true or false, depending on whether they match the facts, research programs are more or less fruitful. A fruitful research program generates succeeding theories which become better in the course of time. An example would be the research program in physics that became associated with Newton (Newtonian mechanics). This program was successful for several centuries, leading to more and more refined theories, but was (partially) replaced in the course of the 20th century by a program based on relativistic mechanics (Dewitt 2018). Behaviourism, cognitivism and connectionism are examples of research programs in psychology (Gardner 1985). Different evolution theories, such as Darwin’s theory of biological evolution and the recently proposed memetic theory about the evolution of ideas (Dawkins

2016; Dennett 1995; Blackmore 1999) are results from a research program that is based on the evolutionary perspective. Running ahead of the distinction that will be made later (sections IV and VII) between biological and non-biological evolution, the evolutionary perspective encompasses both forms and both forms of evolution are without distinction relevant for the fruitfulness of the evolutionary perspective.

A research program is not true or false, and it cannot be falsified by a single experiment or counterexample. It is more or less fruitful for a particular domain. The issue is whether the program leads to a series of increasingly better theories. One of the questions that needs to be answered in the research on law and evolution is whether the evolutionary perspective can fruitfully be applied to law and legal theory.

III. TWO LEVELS AND TWO DISTINCTIONS

An evolutionary theory – that is a theory that uses the evolutionary perspective – can fulfil different functions. Take the following quotation from the last edition of Darwin's *On the origin of species*:

The giraffe, by its lofty stature, much elongated neck, forelegs, head and tongue, has its whole frame beautifully adapted for browsing on the higher branches of trees. It can thus obtain food beyond the reach of the other Ungulata or hoofed animals inhabiting the same country; and this must be a great advantage to it during dearths So under nature with the nascent giraffe the individuals which were the highest browsers, and were able during dearth to reach even an inch or two above the others, will often have been preserved; for they will have roamed over the whole country in search of food.... Those individuals which had some one part or several parts of their bodies rather more elongated than usual, would generally have survived. These will have intercrossed and left offspring, either inheriting the same bodily peculiarities, or with a tendency to vary again in the same manner; whilst the individuals, less favoured in the same respects will have been the most liable to perish.... (Darwin 1859: 177f.)

Here Darwin explains how the long neck of the giraffe evolved and uses this explanation to describe what must have happened.² Explanation and description of the characteristics of a species are two functions of evolutionary theories. The evolutionary perspective, which is a research program rather than a scientific theory, is more abstract. It provides us with a general account of how evolution works and guides us in formulating theories with evolutionary descriptions and explanations for concrete species and their characteristics. The theory of why giraffes developed long necks is an explanatory and descriptive theory, developed within the research program provided by the evolutionary perspective.

According to this evolutionary perspective, it is often fruitful to look for an explanation of a species' characteristics by using two distinctions and two levels. (See Table 1) The two levels

² It has, by the way, been argued that Darwin's explanation is incorrect, or at least incomplete. Sexual selection may (also) have played a role in the development of long necks. See [Giraffe Neck: Why Do Giraffes Have Long Necks? \(scienceabc.com\)](http://scienceabc.com).

are on one hand a species or a member of a species and on the other hand the genetic basis of the species, respectively the genotype of a member. The process of evolution would consist of the interaction between these two levels. To make the exposition more easy to understand, I explain the levels and the distinction by means of a biological example. In sections VII f., the exposition will abstract from this biological context.

	Species	Species members
Genetic level	genetic basis	genotype
Phenotypical level	the species itself	phenotypes

Table 1: Two levels and a distinction

The genetic basis of a species is the common core of the *genotypes* of the individuals of the species. For instance, the genes of giraffes will not be identical for all individuals, but individuals which belong to the same species will have a large part of their genotypes in common. For example, the genes of Harry the giraffe will be quite similar to the genes of Harry's giraffe nephew Harold, or even to the genes of Heloise, a giraffe with whom Harry is not closely related. The common genes belong to the genetic basis and the differentiating genes are individual variations. The borders of the genetic basis may be fuzzy if there is no clear-cut distinction between which genetic characteristics belong to the species and which are merely individual variations.

The first distinction is between a species and its members, such as between giraffes as a species of animals and the members of this species, such as Harry, Harold and Heloise, which are three different giraffes.

The second distinction is between the genotype and the environment of an individual. Every member of a species has its own genotype, and this genotype determines to a large extent what this member will be. However, the environment also plays a large role. What Harry will be is determined by Harry's genotype in combination with the environment in which Harry will live, ... or die. The *environment* of an individual is everything which determines what the individual is, except its genotype. In Harry's case, the environment would include, amongst others, the availability of parental care, or of food, the presence of predators, but also the symbionts in Harry's body.

The distinction between the genotype and the environment of an individual is not objectively given. Genotype and environment together consist of the factors that determine what the

individual will be, but the division between genotype factors and environmental factors is a matter of scientific fruitfulness.³

The individual that is the product of a genotype and its environment is also called a *phenotype*, a name that reflects that there is a way how the individual looks (and feels, etc.). So, Harry and his fellow giraffes are all phenotypes.

Having the notions of a genotype and a phenotype in place, we can say that a genotype *expresses* itself in an environment and that the result of this expression is a phenotype. Analogous to how a phenotype is the expression of a genotype in the phenotype's environment, a biological species expresses the genetic basis of the species in the environment of the species. The relation between genetic basis and its expression depends on the relations between genotypes and their phenotypes. The genetic basis of giraffes expresses itself in the species of giraffes, but the 'real' expression takes place on the level of individual giraffes such as Harry. Because the genotype of Harry expressed itself in Harry's environment to produce Harry, and because similar expression took place in other giraffes, such as Harold and Heloise, we can say that the genetic basis of giraffes is expressed in the species of giraffes in the environment in which the members of the species live.⁴

IV. BIOLOGICAL EVOLUTION

Biological evolution is the development of a biological species in time as described from the evolutionary perspective.⁵ The evolutionary perspective presupposes that there will be differences between the phenotypes of members of a species. These differences are caused by changes in genotypes which are called *mutations*. Because mutations take place in the genotype of an individual, they will be transmitted to descendants of this individual. For instance, a part of the genotype of Harry differs from the genotypes of most giraffes and this difference will be transmitted to Harry's descendants.

In an environment in which not all members of a species can survive and reproduce, there will be a competition on life and death between the members of the species amongst each other and between the species and other species. In this competition the fittest individuals and species survive. Here it is important to distinguish between the fitness of species and the fitness of

³ We will meet this choice again in section VI when we discuss the unit of evolution.

⁴ Technically speaking, the expression of the genetic basis of a species supervenes (McLaughlin and Bennett 2021) on the expression of the genotypes of the members of the species.

⁵ The following account of evolution is strongly simplified and cuts many corners. However, I believe it to be defensible according to modern insights.

individual members of a species. The fitness of a species depends on the fitness of the members of the species, but – as will be argued briefly in section VI – not in a straightforward fashion.

Fitness plays a central role in evolutionary theory, but the very notion has become a topic for debate. When Darwin used the notion, he had in mind the fitness of an individual member of a species to survive. Later, other characteristics also became important, for instance the capacity to find mates for reproducing (Lewens 2018). Here, the notion of fitness of individuals will be used in the sense of the capacity to produce offspring which itself will also have this capacity. This capacity obviously includes the capacity to survive until reproduction has taken place.

Sometimes a mutation makes an individual fitter than its fellows. Suppose that giraffes used to have ‘normal’ necks and that, because of a mutation, Harry’s neck is longer than the neck of most giraffes. If his longer neck allows Harry to get more or better food or to find sexual mates more easily, the mutation makes Harry fitter than other giraffes. Moreover, because the mutation is genetic, it will be passed to Harry’s offspring, which will also have longer necks and will therefore be fitter than giraffes that lack this mutation. In the long run, Harry’s descendants will have a bigger chance to survive and to reproduce and will dominate the species.

In general, if a mutation in the genotype of an individual member of a species and its descendants (if any) leads to differential fitness, this will influence the relative frequency of this mutation in the species. Less fit individuals will not spread their genotypes as well as other species members, and the mutation will disappear from the species. Fitter individuals will spread their genotypes better than the original members of the species, and the mutation will become more frequent in the species. After some time, the mutation may even become dominant and then the genetic basis of the species has changed.⁶ Not only the individual members of the species will, on the average, be more fit; the species as such will have become more fit, because it has *adapted* itself to its environment.

Such a process would be an instance of *natural selection*. Natural selection is the process in which some genotypes replace other genotypes in a species because the phenotypes in which they express themselves are more fit for the environment in which the species lives. It is not a matter of conscious decision making, but ‘only’ a change in the relative frequency of a kind of genotype in a population as the result of differences in fitness.

⁶ Or – if the change has been very substantial – the original species may have gone extinct and have been replaced by a different species. The difference between a change in the genetic basis of a species and a replacement of a species by a related different species is merely conceptual, comparable to the difference between a change in the characteristics of an object and the transformation of the object into a different one.

V. ADAPTATION AND PATH-DEPENDENCE

Because it is the species that adapts itself to its environment, Individual members of a species do not (biologically) evolve; only species do, in the form of a change in their genetic basis. This process of natural selection allows a species to adapt to the demands of its environment. Again, this is not a matter of decision making, but ‘merely’ a side effect of differential reproduction of different genotypes. There is no goal-directedness in adaptation, and this allows non-teleological explanations of phenomena which seem to be goal-directed.

As adaptation is not goal-directed, a typical step of the way towards an adapted species will itself be an adaptation that increases fitness. Every next step is a modification of the result of the previous step. The result is *path-dependence*: every change depends on the evolutionary path that was taken before. A whale, a mammal from a species that somewhere in evolution moved from living on land to living in the sea, will adapt itself to the requirements of living in the sea, while its evolutionary relatives who continued to live on the land will adapt themselves to terrestrial requirements. Evolutionary changes depend on the past.

VI. THE UNIT OF EVOLUTION

The focus of the exposition until here has been on the biological evolution of species such as giraffes and the unit of evolution was tacitly assumed to be the full genotype of a single member of the species, such as the genome of Harry. Evolution of the species and changes in its genetic basis were taken to supervene on mutations in the genotypes of individual members of the species. These assumptions are not obvious. First, it may be assumed that evolution does not take place on the level of individual genotypes, but either on a lower level, for instance the level of individual genes, or on a higher level such as the genetic basis of a species. And second, the emphasis on biological evolution may be dropped. In this section, the level of evolution will be discussed briefly; sections VIIff. address non-biological evolution.

The unit of evolution is what is assumed to mutate in the course of time. Traditionally, different versions of this unit are assumed to combine with the rest of the world, which is called the ‘environment’, to produce phenotypes. The differential fitness of a phenotype determines whether and in what quantities the unit will be reproduced. More concretely: there is a unit of evolution that determines, in combination with its environment, the fitness of Harry the giraffe for its environment, and this fitness in turn determines the reproduction of the unit. If the unit is taken to be Harry’s genotype, the issue is whether Harry will succeed in reproducing his

genotype. If the unit is taken to be a single gene, such as the gene for a long neck⁷, the issue is whether Harry will produce more of those genes. And, finally, if the unit is taken to be the genetic basis of giraffes, the issue becomes whether Harry will contribute to the spread of this genetic basis and, indirectly, also of the species of giraffes.

As the unit of evolution and its environment are defined in terms of each other – together they contain all the factors that determine a phenotype, and each is what the other is not – different assumptions about the nature of the unit of evolution amount to different assumptions on what counts as environment. For instance, if the unit is assumed to be a single gene, the environment will include all other genes that are in an individual's genotype. If the unit is assumed to be the genetic basis of a species, only non-genetic parts of the world can count as environment.

The question of what the proper unit of evolution is, is not a matter of objective fact but a pragmatic issue concerning what should be *adopted* as the unit and – by exclusion – as the environment of this unit. In this spirit, Dawkins definitions of a gene should be read:

‘[...] any portion of chromosomal material that potentially lasts for enough generations to serve as a unit of natural selection’ (Dawkins 2016: 34),

and

‘[...] a genetic unit that is small enough to last for a large number of generations and to be distributed around in the form of many copies’ (Dawkins 2016: 41).

By mentioning chromosomal material, the first definition focuses on biological evolution and *defines* the gene as the unit of natural selection and therefore of evolution. The second definition abstracts from biology and emphasizes the multiplication of the unit. Both definitions may be good ones, depending on whether they lead to fruitful research programs (Lakatos 1970).

For Dawkins, genes are the units that get replicated in the process of evolution. Therefore, Dawkins calls them ‘replicators’. Phenotypes, for instance concrete plants, giraffes, or human beings, are ‘survival machines’, the vehicles by means of which genes secure their reproduction.⁸ This distinction between replicators and vehicles reflects the two levels that characterise the evolutionary perspective.

Dawkins’ view that replicators use vehicles to promote their (the replicators’) multiplication explains the title of Dawkins’ book, *The Selfish Gene*. Genes selfishly use phenotypes in which

⁷ It is assumed here, for the sake of argument but perhaps unrealistically, that the long neck of a giraffe is the product of one single gene.

⁸ In this contribution I stick to Dawkins’ original terminology, as it has gained some popularity. There are reasons to modify Dawkins’ terminology (Hull 1980; Lloyd 2020), but these reasons are not relevant in the present context.

they express themselves to promote their own (the genes') reproduction. Genes are not there to improve the existence and the survival of their phenotypes, but only to promote the continued existence of the genes. This explains so-called 'kin altruism', the phenomenon that individuals will put their lives or possibility to procreate at risk if this increases the chance of procreation of close relatives who share many of their genes with the altruist (Hamilton 1964a and b; Dawkins 1986: Ch. 6). More in general, the theory of selfish genes emphasises that the 'interests' of genes do not necessarily coincide with the interests of their phenotypes and that the natural selection of genes aims at the continuation of a line of genes, rather than the benefit or even the procreation of the vehicles in which these genes express themselves.

A direct consequence of this view is that the fitness of individual members of a species does not automatically translate into the fitness of the species. A species may survive because, amongst others, the members of the species are disposed to sacrifice themselves for (other members of) the species.

How do genes promote their survival by means of the phenotypes which are their survival machines? The general answer is that they do so by manipulating their phenotypes to make them reproduce the genes. The genes of a tree bring about that the tree will spread seeds that contain the same genes. The genes of a giraffe bring about the sex drive of giraffes, which leads to the production of young giraffes with the same genes. Of course, genes do not manipulate their phenotypes consciously; they merely lead, via biological mechanisms and influence of the environment, to phenotypes that tend to reproduce the genes. However, for explaining what goes on, it may be useful to depict the physical effects of the presence of genes in nature as genes manipulating their environment.

VII. NON-BIOLOGICAL EVOLUTION

In his book *The Selfish Gene*, Dawkins not only pleaded for treating the gene as the unit of biological selection; he also argued that there can be non-biological evolution. The evolutionary perspective makes sense if there are

- carriers of information,
- which can indirectly reproduce themselves, and
- which are susceptible to minor changes that become part of the reproduced information.⁹

⁹ For a different list in the same vein, see Dennett 1995: 343.

Nowhere do these conditions mention that the carriers of information must be biological in some sense. Actually, Dawkins mentions several kinds of cultural entities which propagate themselves by leaping from brain to brain via a process which can be called imitation (Dawkins 1986: 249; see also Dennett 1995: part III, Blackmore 1999 and Deakin 2002). Dawkins calls these entities ‘memes’ and mentions as examples scientific ideas, religious faith, melodies, and – most important for our present purpose – laws. A melody contains acoustic information. It can cause people to play it again and again, or to record it and copy the recording on many carriers such as vinyl records, tapes, CD’s, or MP3 or FLAC files. It can be rendered on different occasions, with variations, and some variations can become more widespread than others.¹⁰ The more popular versions inspire more people to create their own renditions and create, in that manner, more ‘off-spring’.

The question is not whether approaching non-biological phenomena from the evolutionary perspective is true, but rather whether it is fruitful. Does the evolutionary perspective applied to memes lead to better insight or better explanations of the non-biological phenomena, or to interesting new research questions? In the following sections I hope to illustrate by means of three examples that the application of the evolutionary perspective to law can, in this sense, be fruitful.

VIII. PATH-DEPENDENCE, GROUP, AND MULTILEVEL SELECTION IN LAW

The evolutionary perspective on some phenomenon is that this phenomenon is seen as having two layers. One layer is the carrier of information; the other layer is the expression of this information in the environment of the carrier. The carrier is replicated (or not) and the fitness of the expression in the environment is fed back to copies of the carrier.

If we translate this to law and select individual rules as the carriers – which, as we will see, may not be the most fruitful approach – the evolutionary perspective leads to the following result. The rule under consideration influences the behaviour of the people who use it, not only in the sense that they follow the rule, but also in the sense that these people may continue to use the rule, teach it in law schools, develop case law around it, copy the rule to other legal systems, adapt it to changing circumstances, etc. A ‘successful’ rule will not only be followed; it will also exist in many legal systems, will receive attention in law school courses, will reappear in new legislation, or appear in restatements or digests of case law, and exist for a long time.

¹⁰ The orchestral version by Ravel of Mussorgsky’s piano composition ‘Pictures at an exhibition’, for instance, became more popular than the original. The cover version of the song ‘She’s not there’ by Santana became more popular than the original by The Zombies.

The value of the evolutionary perspective of law depends on the fruitfulness of this perspective in explaining legal phenomena.

One way in which the evolutionary perspective on law is fruitful is that it draws our attention to the interrelation between legal rules, both in the course of time (path dependence) and at a particular moment in time (relevance of legal doctrines).

The law changes over time but, barring exceptional circumstances such as recodification, conquest or revolution, changes will typically be minor and gradual. One reason why this is the case is that legal rules function in an environment which contains other legal rules. If one rule changes, the environment will in principle remain the same and the new rule must fit in this new environment which was also quite suitable for the old rule. Earlier developments in law determine part of the environment in which new legal rules must function and – in that manner – also which new rules can function and will ‘survive’. This is the legal variant of a phenomenon that is known in evolutionary theory as *path-dependence* (see section V).

Notice, however, that path dependence in law has a different cause than in biology. In biology, path dependence is caused by the fact that mutations are small variations on a genotype that already existed and that was the result of the path evolution had taken before. The environment of the genotype plays no important role. In law, on the contrary, mutations – changes in a rule, including removing the rule from the law – can be huge, but often only minor changes can survive, that is: continue to exist. In law, the environment plays a crucial role in making evolutionary steps path dependent.

If rules are taken as units of selection and evolution, the other rules are part of their environment. That is the very reason why evolution of individual rules is path dependent. However, it may be fruitful to consider larger units of legal evolution, such as legal doctrines. A legal doctrine is in this connection defined as a set of rules that are connected because together they deal with a particular topic.

A good example are the rules for the transfer of movable goods.¹¹ It is possible to distinguish at least three different doctrines about the transfer of movables. One doctrine holds that movables, such as bicycles or books, are transferred by means of a contract to that purpose. For example, under the UK Sale of Goods Act, the ownership of a book can be transferred by means of a contract to that effect alone. No additional delivery of the book from the seller to the buyer is required. A similar system exists in France and in Belgium.

A second and a third doctrine require delivery as the means of transferring property in a movable good. Typically, there will be a contract which functions as the reason (technically:

¹¹ The following account of the part of property law under consideration is based on Van Vliet 2012.

causa) why the ownership in the good is transferred. The contract itself does not bring about the transfer of ownership but is merely the reason why the ownership should be transferred by means of a juridical act to that purpose (delivery).

The difference between the second and the third doctrine lies in the way they deal with this *causa*. Let us assume the *causa* is a sales contract: Jane bought a painting from Lisa. What if this *causa* is somehow defective, for instance if the sales contract was the result of fraud? (Jane was a well-known art trader, who informed Lisa – contrary to the truth – that the painting that Lisa wanted to sell was beautiful indeed, but not a Monet. This way Jane could buy the painting far below the market value.) The second system, which is used in Germany, abstracts from this defect in the *causa*. The transfer might be valid, unless there is another rule to the effect that fraud invalidates the transfer. The third system, which is called the causal system, makes the validity of the transfer dependent on the validity of the *causa*. This system is used in The Netherlands.

These three systems can all operate perfectly well. However, it is not possible to move a rule from the one system to another system. The rules are mutually adapted. It is therefore better to compare the qualities of one doctrinal system as a whole to the other two doctrinal systems. In the competition between legal rules, a rule typically survives if the system which it is part of survives. A social and legal environment selects one doctrinal system for the transfer of movables from the alternatives and adopts all the rules in the fittest system. In the terminology of the evolutionary perspective, this is *group selection*. Notice, however, that such group selection does not exclude selection of one rule over another within a group. Suppose that legal evolution selects the causal transfer system: movables need to be transferred and the validity of the transfer depends on the validity of its underlying *causa*. Within this causal system, it is still possible to have alternative rules for how the transfer takes place physically. Must a seller hand over the good to the buyer, or does it also suffice if the good is held by a third person who stops holding for the old owner and starts holding for the new owner (*traditio longa manu*)? From an evolutionary perspective, the fittest rule for the mode of transfer will survive. What the fittest rule is, is determined in two competitions: the competition between systems for the transfer of ownership of movables, and – assuming that the causal transfer systems wins this battle – the competition between different forms of physical transfer. Technically speaking, this is a form of *multilevel selection* (Lloyd 2018).

IX. RETRIBUTION, PSEUDO-RETRIBUTION, OR UTILITARIANISM?

The evolutionary perspective aims at explanation, not at justification. In this section and the following ones (IX-XII), this perspective will be used to explain why criminal law is still by and large retributivist, rather than utilitarian. Finally, the question how criminal law can be made more utilitarian will also be addressed from an evolutionary perspective.

There are two main lines to justify the existence of criminal law and to argue what criminal law should punish. The one is retributivist and the other one is utilitarian (Golding 1975, Ch. 4 and 5). According to the retributivist line, criminal law should redress the wrong that was done in the form of a crime. It assumes that this is possible by punishing the criminal who committed this wrong and who therefore 'deserves' to be punished. Practical implications of this view are that more serious crimes should be punished more severely, and that the amount of punishment should vary with the blameworthiness of the criminal. Retributivist criminal law looks backward, to what has been done and to the blameworthiness of the criminal. In its pure form – which does not exist in actual societies – retributivist criminal law pays no attention to the positive or negative consequences of the punishment.

Utilitarian criminal law justifies punishment by means of its positive consequences which, in case of justified punishment, should outweigh the negative consequences. The negative consequences of punishment are obvious: the criminal who is punished typically will not like it and may suffer long time psychological damage. Moreover, society must bear the costs of punishment, which may be considerable. However, there are also advantages. It is often believed that (the threat of) punishment will deter potential criminals, including the person who is punished. Moreover, the victims of the crime may be satisfied by the fact that the crime is punished, as may society at large. And last, but not necessarily least, the punishment may rehabilitate the criminal, allowing him or her to play a normal role in society again after the punishment. According to the utilitarian theory, punishment is justified if, and to the extent that, the positive consequences of punishment outweigh the negative consequences.

It should be noted that the satisfaction of the victims and of society at large belong to the positive consequences of punishment. This satisfaction may depend on the seriousness of the crime, or on the blameworthiness of the criminal. If a crime is considered serious and/or if the criminal is seen as blameworthy, people may feel that the criminal deserves to be punished and may feel relieved if this punishment takes place and is severe enough. In such a case, retributivist and utilitarian justification seem to coincide. That appearance is not fully correct. The satisfaction of the victim or of society at large depends on *experienced*, not on actual desert.

Moreover, on this view it is not the experienced desert that justifies the punishment, but the satisfaction that results from punishing somebody who was experienced as deserving it. Justification based on satisfaction of society is utilitarian, not retributivist. Because of the seeming connection to retributivist punishment, I will call this form of utilitarian justification *pseudo-retributivist punishment*.

X. WHY PEOPLE ARE ATTACHED TO RETRIBUTIVE PUNISHMENT

Do the reasons that people adduce to justify punishment also explain actual cases of punishment? Carlsmith (2008) found that when people are asked for reasons why they punish, they often mention utilitarian reasons such as deterrence. However, when asked to judge cases that reflected alternatively consequentialist or retributivist reasons for punishing, people imposed punishments in a manner consistent with a retributivist approach to punishment. For instance, they were apparently motivated by the seriousness of the crime, or by the mental state of the agent during and preceding the crime, more than by the expected (dis)advantages of punishment. This indicates that retributivist motives play an important role in the decision to punish. This role is bigger than people think when they reflect on their own reasons for punishing.¹²

Retributivist motives, which focus on the desert of an agent, apparently provide a better explanation for the imposition of punishment on this agent than consequentialist ones. As we will see later, the grounds for retributive punishment are quite shaky. This raises the question of why people want punishment of criminals to redress the wrongs of the past. The answer may be found in an explanation from the evolutionary perspective.¹³ In the early stage of human development, humans presumably lived in small groups which needed to cooperate closely in order to survive. However, for individual group members it will sometimes have been advantageous to defect from cooperation, e.g. by not sharing the food of a captured animal with other group members. If other group members react to such defective behaviour by defecting themselves when an opportunity arises, the group as a whole is worse off and may lose the struggle for life with other groups (Bicchieri 2006; Bowles and Gintis 2011).

On a more abstract level, this kind of problem is called a ‘social dilemma’. Social dilemmas are situations where the members of a group would benefit from cooperation between the group

¹² This lack of insight in one’s own motives for acting is in line with modern findings in cognitive science. See, for instance, Wilson 2002 and Bargh 2017.

¹³ The following evolutionary explanation is only one of the possible ones. My point here is not to claim that this is the only or the ‘best’ evolutionary explanation, but rather that the existence of misguided social practices can have an evolutionary explanation.

members, but where they would benefit even more if they would defect while the others would continue cooperating. All group members struggle to answer the question of whether they should continue to cooperate if other group members sometimes defect. In experiments through computer simulation, it turned out that in most circumstances *tit for tat* is the best strategy (Axelrod and Hamilton 1981). This strategy is that a group member should initially cooperate. However, if other members defect, the cooperative group member should on the next occasion also defect. In general, a group member should cooperate or defect if the other members cooperated respectively defected at the last occasion. A group whose members follow this strategy will in general fare better than groups where the members following a different strategy.

Notice in this connection that it is not necessary that the group members follow the tit for tat strategy intentionally. It suffices if they behave according to this strategy. So, if they would only *feel* like collaborating or defecting at the proper moments and *act on this feeling*, this suffices. Let us call a group whose members, for whatever reason, are motivated to behave in a manner consistent with the tit for tat strategy a tft-group. Tft-groups would fare better than other groups in the struggle for life and would become prevalent in humanity. Most of us are members of tft-groups and that explains why people want to retaliate if a group fellow did something wrong and also why they would welcome somebody back (rehabilitation) if the retaliation is over. It is an explanation of a disposition in people to retaliate. This disposition, as reflected in a desire to punish wrongful behaviour, in turn explains the retributive practice in criminal law that Carlsmith found.

XI. WHY RETRIBUTIVISM IS WRONG

From an evolutionary perspective, it can be explained that people want to retaliate for wrongful acts and exhibit punishing behaviour that fits in a retributivist view. However, this does not mean that retributivism is the right approach to punishment. Something can be both explainable and wrong, and I will briefly argue why retributivist punishment is wrong.¹⁴ In my argument, I will treat pseudo-retributivism as a form of utilitarianism.

Retributivist punishment is only possible if the person who is to be punished is responsible for her or his wrongful act and is also blameworthy. I assume here for the sake of argument that responsibility and blameworthiness go hand in hand and will only focus on responsibility.

¹⁴ The argument is most likely too brief to convince people who were not already convinced. Non-convinced readers should continue to read to explore the value of the evolutionary perspective from the, in their eyes incorrect, presumption that retributivism is wrong.

There are two notions of responsibility that are relevant here. One notion is responsibility as defined in a particular social practice. Responsibility in this sense is present if and only if an act and an agent satisfies the conditions for responsibility as defined in this social practice. A good approximation for most Western societies would be that an agent is responsible for her or his intentional actions, unless there was force majeure (illness, undue influence etc). The social practice also defines what counts as force majeure. Let us call this kind of responsibility *conventional responsibility*. The second notion presupposes that responsibility exists objectively, in the sense of independent of any social practice. Let us call the corresponding notion of responsibility *objective responsibility* where ‘objective’ stands for independence from minds and *a fortiori* human practices. According to this second notion, retributivist punishment is only justified if the punished person was objectively responsible for his crime (Hage and Waltermann 2021).

The notion of conventional responsibility is relatively unproblematic. Sociological inquiries can elucidate under what circumstances people hold somebody responsible. However, the justification of a social practice which involves retributivist punishment that works with the conventional notion of responsibility is problematic. What if the social practice is wrong? Is punishment in agreement with the practice then still justified? Moreover, how can it be shown that a social practice is wrong, or right?

One answer would be that a social practice of holding people responsible for their actions is justified if this practice is quite successful in holding a person conventionally responsible if and only if this person is also objectively responsible. Conventional responsibility would then be an epistemic approximation of objective responsibility. However, this presupposes that we have a workable notion of objective responsibility. Regrettably, such a notion of objective responsibility is lacking. It is practically impossible to discover responsibility that exist in a manner that does not depend on our social practices. There is good reason to assume that objective responsibility does not exist.¹⁵

The second answer would be to point to the desirable consequences of this practice. This might, for instance, be done by showing that society fares better if we continue our social practice of conventional responsibility. It seems that this makes it possible to justify our practice of holding people responsible and, as a result, to justify retributivist punishment. However, this is a form of pseudo-retributivism. The punishment that would be justified would

¹⁵ This is obviously not a hard proof that objective responsibility does not exist. However, it is the most powerful argument possible, as the only reason for assuming the existence of objective responsibility is that human beings actually work with the notion of responsibility. If this social practice cannot be grounded in objective facts, it is rational to assume that the sought for grounding does not exist.

be utilitarian, rather than retributivist. We would justify punishment on the basis of responsibility and hold a person responsible because this makes society at large better off.

Suppose that this two-pronged argument is correct. In that case retributivist punishment lacks a solid foundation.

XII. CONCEPTIONS OF CRIMINAL LAW AS MEMES

Both the ideas that criminal law is a means to redress wrongs from the past (retributivist) and that it is a means to make the world a better place (utilitarian) can be seen as memes which compete, in competition with each other, for existence in human culture. Memes must survive in social reality, analogous to how biological species must survive in physical reality. From the evolutionary perspective, the success of conceptions of criminal law depends on their selection by social reality and their fitness to deal with this aspect of reality.

Rules exist in social reality by being applied if this is appropriate, typically when they are applicable (Hage 2022). Conceptions of criminal law cannot exist in the same way, and if we want to apply the evolutionary perspective to them, we need to find a criterion for the existence of a conception of (a branch of) law. To cut a potentially long discussion short, I propose the follow criterion: a conception of a branch of law exists (in social reality) if rules and principles embodying that conception exist in the sense that they are applied if applicable.¹⁶ This means that if punishment is justified by pointing to the beneficial consequences, this corroborates the view that the utilitarian conception of criminal law exists. Analogously, the retributivist conception of criminal law exists if punishment is typically justified by pointing to the harm that was wreaked, or if punishment is refused because the criminal was not accountable for his actions.

The legal practice of punishing criminal behaviour uses both retributivist and utilitarian arguments. According to the proposed tests for the existence of conceptions of branches of law, the retributivist and the utilitarian conception of criminal law exist simultaneously in the social practices of most countries. They cohabit social reality, just like different kinds of finches can inhabit a biological habitat.

¹⁶ This criterion seems to work well in many situations, but there are possible counterexamples. One would be if existing rules fit in one conception of criminal law, but also in a competing version. Refining the criterion to catch off such situations would go beyond the scope of this contribution.

XIII. FITNESS AND GOODNESS OF MEMES

A meme continues to exist in social reality if it is fit for that social environment. Fitness is, by definition, the capacity to continue existing, and nothing other. There is no inherent connection between the fitness of a meme and some standard for goodness, unless this standard is the capacity to continue existing. I have argued above that the retributivist conception of criminal law seems not to make sense, as the objective responsibility of human beings which is required for this conception cannot be found. So, rationally speaking, the retributivist conception of criminal law is not good. However, as long-lasting social practices illustrate, the conception is very fit for the existing social environments. How good or bad is that, can we do something about it and, if so, how should we go about?

A similar problem was raised in connection to patterns of reasoning by the cognitive psychologist Stanovitch (2004). He argued that people developed, in the course of their evolution, a number of heuristics that allow them to quickly answer urgent questions. In this connection, a heuristic is a reasoning pattern which works fast and will often lead to a useful conclusion, but which does not necessarily satisfy the standards for correct reasoning that were developed in our intellectual history, such as logic, Bayesian statistics, or scientific method. People have a natural tendency to use these heuristics, as they are inborn. Although this is often helpful in their daily lives (Gladwell 2005; Gigerenzer 2007), it can also lead to fallacies or to prejudices (Kahneman and Tversky 1982; Kahneman 2012). Stanovitch therefore pointed out that people should resist their tendency to use their gut feelings in reasoning tasks. Regrettably, he paid more attention to the analysis of the human predicament in the field of reasoning than to methods for replacing gut feelings by rational thinking. I have learned from my own teaching experience that mere instilling knowledge about rational thinking – for instance a course on logic – does not suffice.

Conceptions of law that after some time still have adherents must possess some degree of fitness. They seduce people to use them in the selection of the legal rules and principles that they will apply. If we want to change conceptions of law by terminating existing ones and putting new ones in place, we must make the outdated conceptions less seductive and make the new ones ‘sexy’. One way to do so is to produce rational arguments to show why the new conceptions are better. My very brief argument for utilitarian, rather than retributivist criminal law illustrates this approach. Most likely it is not the most efficacious approach. What works best in this respect is a matter for empirical research. One suggestion that may indicate a direction is to use artistic forms, such as metaphors, novels, theatre plays, films, or video clips

which invoke emotions rather than reason (Brožek 2020: Ch. 2; Del Mar 2020: Ch. 3). But then, some people are moved by reason, more than by emotions. Most likely there is no single best strategy.

XIV. HART REVISITED. THE INTERACTION OF BIOLOGICAL AND CULTURAL EVOLUTION

In evolution, a species adapts itself to its environment. Other existing species are part of that environment. If one species adapts itself to, amongst others, another species, and this other species adapts itself to the former species (A adapts to B and B adapts to A), we speak of coevolution.¹⁷ Coevolution can take place in biological evolution, as when a plant and a pollinator adapt themselves to each other, or in a so-called ‘arms race’ in which a predator and its prey evolve to capture, respectively escape from, the other. It can also take place in cultural evolution, as professional musical performance and musical education coevolve, or in arms races between countries.

A non-legal example of the coevolution of a cultural and a biological phenomenon deals with dairying as a social practice and the capacity to digest lactose. The latter capacity has developed in Western cultures in coevolution with the practice of using milk products on a large scale, including drinking whole-milk (Richerson and Boyd 2005). A famous legal example is Hart’s theory about the symbiotic relation between law and humanity. This theory, with predecessors in the works of Hobbes and Locke, holds that humans need law to survive, and that law needs humans to exist. The interesting twist that Hart gave to this theory is to emphasize its link to natural law theory or to functional theories of law in general (Moore 1992): law cannot have any content if it must fulfil its function of keeping humanity alive. This can be the starting point of a research program focused on studying the role of law in the existence of humanity or of specific human cultures.

XV. CONCLUSION

This contribution aims to show the relevance of the evolutionary perspective for law. It started with a brief exposition of the evolutionary perspective. This perspective is not an explanation of anything which is true or false, but a research program aimed at finding evolutionary explanations of phenomena both biological and cultural. This research program is

¹⁷ See <https://www.britannica.com/science/coevolution>.

fruitful if it succeeds in producing increasingly good explanations of the phenomena to which it is applied. The emphasis in this contribution lies on applying the evolutionary perspective to legal phenomena, in the hope of showing the fruitfulness of the perspective in the legal domain. To give an impression of what the evolutionary perspective may bring to law, three topics were discussed:

- the transfer of movables as an illustration of path-dependence and multi-level selection;
- theories about the justification of punishment as an illustration of why evolution does not necessarily select the ‘best’ theory; and (very briefly)
- the function of law to promote the survival of humanity or of particular human cultures as an illustration of biological and cultural coevolution.

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