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# Final Causes and Teleological Explanations – Introduction

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Our practice of employing teleological explanations, that is, of explaining phenomena with regard to their ends or goals, is quite usual and wide-spread. We say, for example, that Lisa drives a nail into the wall in order to put up a picture. Or we say that people generally go to work in order to earn money and to gain social approval. We say that beavers splash water with their tails in order to warn their fellows against a threatening danger. And we say that the heart pumps blood in order to supply the organism with oxygen. Moreover, we sometimes also explain the existence of features and traits with regard to the function or purpose they serve. Thus, we say that cars are furnished with an air bag in order to protect their driver in an accident, or we say that fish have gills in order to breathe.

Even though such sentences sound familiar, it is all but clear how we are to make philosophical sense of them. Do all of these sentences have the same logical structure, as their common grammatical structure suggests? Or is their grammatical surface structure rather misleading because it conceals some deeper logical divergences? Indeed, there is reason to suspect the latter, considering the explanations we give when we are asked why we accept these sentences. When Lisa drives a nail into the wall in order to put up a picture, the teleological relation holding between her driving a nail into the wall and its purpose to install a device where she can fix her picture at is provided by her mind or, more precisely, by her desire to put up the picture and her belief that driving a nail into the wall is an appropriate means of satisfying this desire. Most of the other teleological sentences mentioned above seem to require a different explanation. Take the general statement that people go to work in order to get social approval. Although people are of course able to think, the truth of this sentence does not depend on the fact that they consciously think that going to work is a means of earning social approval. Presumably, this general sentence aspires to reveal the real motivation for going to work, whether or not people are conscious of it. Likewise, if we accept the sentence that beavers splash water in order to warn their fellows, we do not necessarily assume that beavers have conscious and fully-fledged beliefs, and surely we do not want to ascribe any of such intentional states to hearts that pump blood in order to supply the organism with oxygen. This suggests that at least teleological sentences about intelligent agents ought to be analysed in a different way than those about things (like organs) to whom we do not want to ascribe any cognitive capacities.

These brief remarks pose a problem. How should we account for our common practice of providing teleological explanations or descriptions? When we simply notice that teleological sentences concerned with intelligent agents are to be dif-

ferently analysed than those dealing with non-intelligent things, we do not make much progress, because this distinction immediately gives rise to the question of what each analysis consists in. Are teleological explanations of human actions, which rely on the fact that the agent in question exhibits certain desires and beliefs, simply an instance of a causal explanation, namely an explanation stating that a belief and a desire jointly *caused* a certain action?<sup>1</sup> Or do teleological explanations of human actions constitute a distinctive kind of explanations that is to be distinguished from causal explanations?<sup>2</sup>

Furthermore, it is important to know more about the proper analysis of teleological sentences dealing with things that lack cognitive abilities, as they prominently figure in biology. Here different strategies can be – and in fact often are – employed. Many authors have maintained that there is a continuity between teleological sentences dealing with intelligent agents and those that do not, arguing that the analysis of the former has to be assimilated to the analysis of the latter, or vice versa. The first strategy is prominently employed by Aristotle, who says that nature does everything for a purpose and that in acting teleologically humans do imitate nature (*Physics* II.8, 199a9–20). There are also contemporary philosophers who pursue this strategy and try to understand the teleological structure of human actions as a special case of the teleological structure that is exhibited by biological processes.<sup>3</sup> But historically, this strategy remained for a long time a minor position in Western philosophy due to the influence of Christianity. Assuming that an intelligent God created the universe, many philosophers tended to assimilate teleology in nature to teleology exhibited by intelligent agents. Or to put it more properly, teleology in nature was assimilated to the kind of teleology that is manifest in artefacts. An artefact, a washing machine for instance, owes its purposes to the intentions of its designer. This means that a washing machine has the purpose or function to clean clothes because it was made by an intelligent engineer for this purpose, that is, because the engineer *wanted* the washing machine to clean clothes. In a similar way, or so many Christian (and Islamic) authors argued, we have to think about teleology in nature. Natural things possess certain purposes because God created them for these purposes, thereby endowing the universe with a teleological order.

Other authors, however, have strictly distinguished teleological sentences that pertain to actions of intelligent agents from others that do not. But if there are radically different analyses for these two types of sentences, the question arises which of them can legitimately be called “teleological”. Unfortunately, there is all but a shared agreement here. Some authors claim that only explanations concerned with intentional actions can be called “teleological” in the proper sense of

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<sup>1</sup> This view is prominently defended by Davidson (1963).

<sup>2</sup> This view was quite *en vogue* before Davidson’s seminal article (1963); cf. for example Taylor (1966). More recently this view – sometimes called “teleological realism” – has been defended by Schueler (2005) and Sehon (2005).

<sup>3</sup> Although they differ radically in the way they execute their programs, Millikan (1995) and Thompson (2008) agree that the teleology displayed in human actions is to be construed as a special case of the teleology that is found in biology in general.

the term,<sup>4</sup> while others maintain that “teleology” only designates purposefulness in nature as it is most conspicuously found in the arrangement of organs in living beings.<sup>5</sup> How is this dispute to be resolved? How are we to decide what is the *proper* meaning of “teleology”?

In the face of these terminological questions, it is helpful to turn to the history of philosophy. Focusing on the way the term in question was originally used can often help to figure out its meaning – if not its proper meaning so at least its original one. Unfortunately, in the case of “teleology” this strategy is hardly successful. Christian Wolff, who coined the technical term “teleology” in the early eighteenth century, introduced it as a label for a branch of natural philosophy or, more precisely, for the branch that is concerned with the investigation of natural purposes (Wolff 1728, §85).<sup>6</sup> This use speaks in favour of all those who want “teleology” only to designate purposefulness in nature. But this advantage of the second party over the first is immediately annihilated by the fact that Wolff thought that natural purposes consist in God’s intentions (“Absichten Gottes”) (Wolff 1726, I §1, 1f.). Thus, Wolff also agreed with the first party that real teleology requires intelligent agents capable of intentional actions. Therefore, both proponents of the claim that proper teleology is only to be found in intentional actions and defenders of the view that teleology pertains to the biological world in general, can justify their terminological decision by invoking Christian Wolff, the inventor of the term “teleology”, as their authority.

The reason for the terminological difficulties with “teleology” consists in the fact that Christian Wolff, by way of coining this term, did not just introduce a label for a certain scientific enterprise (viz. the investigation of purposes in nature), but simultaneously put forward the substantial theoretical claim that natural purposes are owed to God’s intentions. If one pays attention to this fact one can not only see that Wolff combined taxonomic and theoretical efforts, but one can also understand why there have been heated debates about Darwin’s theory of evolution in contemporary philosophy. Did Darwin ultimately abolish teleological thinking in biology, banning the idea of God fixing natural purposes with his intentions? Or did he rather provide a secular and scientific foundation for teleology by claiming that there are indeed purposes in nature and that they can be explained in terms of natural selection and adaptations?<sup>7</sup> An answer to these questions depends on the way one understands Wolff’s ambiguous term “teleology”: as an expression referring to processes designed by God, or as a more general expression designating purposes in nature.

In the light of terminological difficulties of this kind, it is not astonishing that many philosophers of biology have dropped the problematic term “teleology” and preferred instead the apparently more innocuous term “teleonomy” when talking about natural purposefulness that does not presuppose any form of unwanted intentionality. However, as Boris Hennig argues in his contribution to this volume,

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<sup>4</sup> This terminological decision is reached by Sehon (2005, 152f.).

<sup>5</sup> This option is embraced by Toepfer (2004, 4).

<sup>6</sup> A historical survey of the term “teleology” and the concept of teleology is provided by Busche (1998).

<sup>7</sup> This debate has been led quite intensively by Ghiselin (1994) and Lennox (1993 & 1994).

the common employment of this rather novel term can be problematic as well if it is fraught by a misunderstanding of its original historical meaning.

Philosophical discussions about our common practice of explaining various phenomena with regard to their outcome are hence not only difficult as it is unclear to what extent we are justified in doing so, but also puzzling since the umbrella term “teleology” is notoriously ambiguous and evokes theistic associations that are not inherent to the phenomenon at stake. Rather, these associations are due to a historically contingent – even though very influential and widespread – attempt to justify our habit of explaining various things by appeal to their purposes. However, it would be wrong to assume that the debate about teleological explanations is characterised by terminological difficulties only because of Christian Wolff’s introduction of the ambiguous term “teleology”. The debate about teleology is by far older than Wolff’s expression and was usually led in terms of “final causes”. This term traces back to Aristotle who (in *Physics* II.3, 194b23–35) famously distinguished four kinds of causes that are to be addressed if one intends to give a comprehensive account of natural change, namely (1) the *matter* that undergoes the change, (2) the *form* actualised in this change, (3) the change’s *trigger* and (4) its *end* or *purpose*. In line with this distinction Aristotle’s successors tended to call the ends that need to be taken into account in the explanation of the change of things “final causes”.<sup>8</sup> Now, it was exactly this term that was increasingly held to be problematic and that gave rise to serious doubts about teleological explanations.

Spinoza in particular is famous for his critique of final causes. In the appendix to the first book of his *Ethics* he wrote that the “doctrine concerning the end turns nature completely upside down: For what is really a cause, it considers as an effect, and conversely” (*Ethics*, Appendix to Part I, 112). That is, Spinoza took it to be absurd to conceive of ends as *causes*. In his view, causes must precede the things they are supposed to explain and can accordingly not be brought about by the processes in question. Yet, the fact that Spinoza harshly criticised the talk of final causes does not imply that he rejected every form of teleology whatsoever.<sup>9</sup> This is what Paul Hoffman and Justin Steinberg show in their contributions to this volume. As Hoffman argues, the striving for self-preservation that according to Spinoza’s *conatus*-doctrine is displayed by every singular thing very well meets the criterion of being teleologically directed at a particular end – the criterion that had been formulated and employed by Thomas Aquinas. So, despite his critique of “final causes”, Spinoza endorsed a sort of pervasive natural teleology not unlike the sort of teleology many Aristotelians before him had endorsed. Moreover, Steinberg argues that Spinoza had a conception of representational content according to which the content of inadequate ideas is causally efficacious.

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<sup>8</sup> It is interesting to note, however, that Aristotle himself did never employ the term “final cause” (although of course he conceived of the end of a natural process as a cause). For the terminological history of the final cause and its reception in the Christian and Islamic philosophy in medieval times see Johnson (2005, 16–30; 42–44).

<sup>9</sup> Note however that a range of scholars, most prominently Bennett (1984, 215), think that Spinoza rejected teleology altogether. Others, for instance Carriero (2005) and Cook (2006), argue that Spinoza tries to reduce apparently teleological behaviour to a sort of inertial striving.

Therefore, Spinoza can – contrary to what is sometimes assumed – also be seen as allowing for explaining human actions in a teleological way, namely by appealing to the representational content of their wishes and beliefs.

Spinoza provides a vivid example of the fact that debates about teleology are fraught with terminological difficulties no matter whether they are led in terms of final causes, teleology or teleonomy. Moreover, the debate about whether or not Spinoza allowed for teleology is a telling example for the importance of history of philosophy in systematic perspective, as the contributors to this volume practice it: the arguments presented by authors in the past need to be carefully reconstructed as answers to a certain set of questions. Very often, one cannot understand what these authors said and thought if one simply looks at singular, isolated passages. Their statements must be read and interpreted in a wider context, and the argumentative role they played in an all-embracing theory must be studied carefully. It is not unusual for a proper systematic analysis of arguments to lead to novel interpretations of historical authors – interpretations that may turn out to be interesting options for solving philosophical problems which are still being discussed. In this vein then, studying the *history* of philosophy can have a genuine *philosophical* value.

The prospect of possibly revealing systematically interesting philosophical positions, however, is not the only distinctive philosophical (as opposed to historical) value of doing history of philosophy. Another aspect that makes the history of philosophy philosophically significant is the fact that the knowledge of the history of a philosophical problem can help to better understand the problem itself. This holds particularly for the problem of teleology. As our short survey of this problem has hopefully made clear, the debate about teleological explanations is imbued by terminological difficulties that can only be discerned and handled if one is aware of its history. Scholastic philosophers, for example, discussed teleological explanations in terms of final causes and tended to use the term “cause” more and more as a designation for a concrete entity that is able to bring about certain effects. This use gave rise to the difficulty Spinoza pointed out: how can a purpose, which is (at best) only realised at the end of a process, be causally responsible for this very process? One cannot understand why this question arose unless one pays attention to the way scholastic authors had transformed the notion of cause. Even when looking at contemporary debates it is important to look at transformations. For instance, it is questionable if biology employs any proper teleological notion if one takes it to be an analytical fact about teleology (as it has been introduced by Christian Wolff) that real teleology is grounded in the intentional states of a rational subject. Now and then the debate about teleological explanations and the legitimate ascription of purposes is characterised by conceptual and terminological uncertainties which often make it hard to decide whether there is a merely verbal dispute or substantial disagreement. Since the awareness of the history of the debate about teleological explanations facilitates the identification of these terminological difficulties, there is hope that an examination of the history of teleology can help to clarify the concept of teleology and thereby also remove the conceptual (and all too often also ideological) minefield that threatens a great deal of contemporary debates about teleology.