

# On Reducing Final Causes

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Final causes are commonly taken to be ends or purposes, so that explanations in terms of them seem to be confined to the actions or products of beings that may consciously pursue aims. In this contribution I will present a different account of final causality. I will first portray final causes as paradigmatic and typical forms of natural processes. (I will speak of the “form” instead of the “course” of a process, since “course” and “cause” sound too similar.) In this basic sense of “final cause,” every process for which there is such a thing as a typical form will also have a final cause.

In the main part of this talk, I will introduce some derived versions of the proposed basic notion of a final cause. They will be defined in terms of the typical form of, and relations among processes. These derived notions will be shown to match common teleological concepts such as “purpose” and “function.” On this basis, I will finally address the question whether teleological explanations may be reduced to explanations that do not mention any final causes. I will argue that although in principle, explanations in terms of derived final causes may be reduced to explanations in terms of basic final causes, there is no way of reducing away all final causality without reducing away *all* causality. The reason is that all causes are causes of something specific, and hence, all causal processes have a determinate typical form. Therefore, all causal processes have a final cause in the basic sense introduced here.

## 1 Natural Processes

Consider a particular beaver engaged in building a dam. Suppose that this beaver is right now felling a tree by biting chips of wood off its trunk. As we know, beavers do this in order to build dams, and they build dams in order to increase the water level so that the entries to their nests are protected. On what basis can we say that the beaver bites chips off the tree *in order to* build the dam? We do not usually suppose that beavers think and consciously deliberate about what they are doing. This is indicated by the fact that beavers tend to keep maintaining their dams even when they are intact

and when there is no apparent reason for doing so. We also need not suppose that beavers are designed to build dams by some conscious being. This is of course one possible theory, but probably not the best one. At any rate, atheists can also agree that beavers fell trees in order to build dams.

The basis on which we can say that the beaver is biting into a tree in order to fell it, in order to build a dam, in order to raise the water level, and so forth, is our general knowledge about the *kind* of process we observe. We expect a beaver to build a dam when we see it felling a tree because we know that this is what beavers in general do. That is, we have an account of the life form that this particular beaver instantiates, and on the basis of this account, we can provide more or less far reaching descriptions of what this beaver is doing right now when it is biting into a tree. “Building a dam” is a more general description, and “biting into a tree” a less general description of what the beaver is doing here and now.

What a beaver does when it is felling a tree is what I will call a natural process. In general, I take natural processes to be processes for which there is such a thing as a typical course that they may reasonably be expected to take, such that one may determine what course would be typical or atypical for this kind of process exclusively on the basis of an account of the being that undergoes this process and for which this process is characteristic. That the felling of a tree and the building of a dam are natural processes means that the more or less general descriptions that properly apply to it emerge from a consideration of what kind of animal beavers are in general.

My definition of “natural process” is complex and it may be good to rehearse its elements. First, a natural process is a process for which there is such a thing as a typical form. We may distinguish between typical and atypical instances of such kinds of processes with a view to this typical form. For instance, when a beaver is engaged in felling a tree but then stops, this instance of tree felling is incomplete and does not possess all features of a typical instance of its kind. We see this by comparing what actually happened to what beavers typically do. Or again, if a beaver would fell a tree by using a saw, this instance of felling a tree would be complete but still highly atypical for a beaver.

Second, in the case of natural processes, the distinction between typical and atypical instances can be drawn exclusively on the basis of an account of the kind of

thing that undergoes this process and for which this process is characteristic. Again, there are certain things that are typical for such things, and on the basis of our knowledge about what is typical for them, we can also see what processes they typically undergo. Beaver nests are typically located in deep-water ponds, and if we know this, we may see why it is typical for beavers to see to it that the water level rises.

What does it mean that a feature is *typical* for a kind of entity? It cannot mean that all instances of this kind actually possess this feature. There may be instances of a kind that do not have the form that is typical for entities of this kind: these are the *atypical* instances. Further, “typical” is not a statistical notion. The typical features of a kind are certainly not always features that more than 50% of them possess, and they need not even be possessed by any significant proportion of the set of actual instances. Imagine, for instance, that by some sort of accident all living beavers lose their tails. In such a case, all existing beavers will be atypical instances of their kind. A complete and adequate account of the nature of beavers will still mention that they have tails, although it might be added as a footnote that for a certain period of time, this happened not to be true of any beaver for contingent reasons. But such a footnote would not add anything to a correct account of what beavers are; it would only mention something that accidentally happened to all beavers at a certain time. Not having a tail will not be typical for beavers in this case. (In the case which we are imagining, the type “beaver” does not change, which is of course also possible.) It follows that in general, the typical is not the same as the statistically normal.

To be sure, our account of what is typical for a kind of things must in some way be based on knowledge about its particular instances. In order to find out what is typical for beavers, we must study particular beavers. My point is only that it would be naive to suppose that the typical features of a kind simply are the features that all or most of them actually share. In order to see what is typical for beavers, we need to know several facts about their form of life. Among other things, we need to know how beavers maintain themselves, how they reproduce, and what they need to do in order to do so. Where we discover that a feature that beavers tend to have contributes to something that is important in their life, we will have strong evidence for the assumption that this feature is typical for beavers. In any case, in order to find out

what is typical for a kind of thing, we need an account of their life form, and this account is most often not reached simply by way of statistics, although statistic might help sometimes. Zoologists know how to develop such accounts.

Natural things such as beavers differ from artifacts in that their own nature determines what is typical for them. That which determines what is typical for an artifact is not its *own* nature. By definition, an artifact is what it is only because it is produced or used by another being, and it is the nature of this other being that determines what is typical for the artifact. For instance, it does not follow from any account of the nature of trees and stones that they are used by beavers in order to build dams. A tree or stone that is unsuitable for dam building is not *thereby* an atypical instance of a type; whereas a beaver that is incapable of building dams is atypical. Hence, if we consider a beaver dam without referring to beavers, we will not be able to draw any distinction between typical and atypical instances of this kind. In order to draw this distinction, we need to refer to beings other than the dams themselves, namely to beavers.

I emphasize the distinction between natural and artificial things and processes in order to make clear that the criteria according to which we may correctly distinguish between typical and atypical instances of a type need not always refer to our own aims and values. In order to distinguish between typical and atypical instances of human artifacts, we need to consider our own life. But natural things such as beavers are not artifacts. They may be assessed as typical or atypical by exclusively considering their own life form.

## 2 Process Prototypes

You may have noticed that in the beginning, I shifted from saying that a particular beavers is felling a tree in order to build a dam to a consideration of the typical form of what this beaver is doing. This is in fact the basic idea of this talk. We may say that a beaver is felling a tree in order to build a dam because for a beaver, felling trees typically contributes to building dams. The claim about the final cause of felling a tree is at the same time a statement about the typical form of what is going on.

I will argue that the most basic final cause of a process, whether natural or not, is the form that typical instances of this kind of processes have. It is easy to see on this

basis why all *natural* processes must have a final cause. For every natural process, there is such a thing as its typical form, and this typical form is determined by the nature of the thing of which the process is characteristic.

But my claim does not only apply to natural processes. Even in cases where we can distinguish between typical and atypical instances of a kind of process only by considering things that are not directly involved in them, there may be such a thing as a typical form of these processes, and this typical form is what I call their final cause.

Finally, there may be processes for which there is no such thing as a typical form. Such processes will not have a final cause.

### 3 Derived Final Causes

So far, I have introduced and defended what I take to be the *basic and primary* notion of an Aristotelian final cause. The final cause of a process, in this sense, is its typical form. But this account is incomplete as a general account of final causality, since there are at least two derived ways in which one may talk about final causes.

First, one may relate a certain process not to its own typical form, but to the typical form of another process to which it contributes or of which it typically constitutes a part. Second, one may apply the notion of a final cause not only to processes, but also to things, capacities, and features. Let me introduce some tentative definitions.

*A remote final cause* of a process P shall be the typical form of another process Q where both P and Q are characteristic of the same thing, and P is typically involved in Q. For instance, when a beaver bites wood off a tree in the course of felling it, both processes (biting and felling) are undergone by the same thing (the beaver), and the first is typically involved in the second.

*An external final cause* of a process P shall be the typical form of another process Q where P is typically involved in Q, and P and Q are characteristic of *different* kinds of things. For instance, the movements of the heart of an animal are characteristic of the heart and not immediately of its possessor. It is not the animal that contracts and pumps blood, but only its heart. But this movement contributes to processes that are characteristic of the animal that possesses the heart. The movements of the animal are an external final cause of the movements of the heart.

Moreover, there are at least two different senses in which persistent *things* may be said to have final causes. First, the final cause of a thing may be taken to be the *internal* final cause of what it typically does. The final cause of a beaver, in this sense, is what beavers typically do (biting into trees, building dams, reproducing). This kind of final cause may be identified with what Aristotle would call the *ergon* of a beaver. Second, the final cause of a thing may be taken to be the *external* final cause of the processes in which it is typically involved. This is properly called the *function* or *purpose* of the thing. The function of the digestive system is the proper metabolism of the organism to which what it does typically contributes, and the function of a beaver's dam is to create and maintain a deep-water pond and to thereby contribute to the survival and the reproduction of beavers.

There is also a distinction between proximate and remote functions of things. The proximate function of a beaver dam may be holding up water, since this is what it immediately serves for, and its remote function may be increasing the water level, and even more remotely the maintenance and reproduction of the beaver.

#### 4 Reduction

Let me now address the issue of reduction. Allan Gotthelf, for one, has claimed that the Aristotelian notion of a final cause "is reserved for the processes of complex entities which are not reducible to element-potentials" (1987:214 n. 19). If Gotthelf wants to stress that final causes cannot be reduced to efficient causes, I entirely agree. There are complex (efficiently) causal processes, and there are simple causal processes; and complex causal processes may be divided into their simpler elements. But likewise, there are complex final causes and simple final causes, and the complex final causes may be divided into their simpler elements. For as I have argued, the final cause of a process is its typical form, and this means that a complex process should have a complex typical form. But when we divide this complex form into its elements, we will not thereby reduce final causes to efficient causes.

There is no trade off between explanations of a process in terms of its final versus its efficient cause. The reason is that all causal processes must have a specific form, since a cause is always the cause of something specific. To call something a cause is to suppose that it is a process of a certain kind and that there is a form that instances

of this kind typically have. We cannot simply call biting into the trunk of a tree a cause and leave it at that. If it is a cause at all, it is a cause of something, for instance of felling the tree, and as such, there is a form that instances of its kind have by virtue of being the cause of this event. Hence, all causal processes, whether natural or not, must at least have a proximate and internal final cause.

Conversely, every natural process that has a final cause is also a causal process (that is, an efficiently causal process). For instance, we can only say that for a beaver in certain circumstances, felling a tree is the remote final cause of biting into its trunk because in these circumstances, biting into the tree will be an efficient cause of felling it.

It is tempting to associate the notion of efficient causality with simple and elementary processes and to speak of final causality only in cases where processes have a complex typical form. The reason seems to be that it is often easier to know the typical form of a complex, macroscopic process than to know the typical form of its elementary parts. In several cases, that is, we will be able to know the typical form of a complex process before we know the typical form of its elementary parts. In such cases, we may account for the parts in terms of their remote or external final causes more easily than in terms of their proximate or internal final causes. For instance, we know that beavers typically eat wood, and we may assume on this basis that the remote final cause of what happens in the digestive system of beavers is digesting wood; even though we may not know the typical form of what happens in detail.

But again, if we then get to know the elementary steps that are involved in digesting wood, this will not lead to a reduction of final causes to efficient causes. Instead, what we achieve will be a reduction of complex final causes to simple ones, and at the same time a reduction of complex efficient causes to simple ones. This will lead to an account of the elementary processes in terms of their own proximate typical form rather than in terms of their remote final cause. For instance, we may be able to establish a complete list of maximally simple processes that are involved in the metabolism of a beaver, and we may on this basis replace a reference to beaver metabolism by a detailed account of the elementary processes that typically go on if and only if such metabolism takes place. But first, this is not to deny that metabolism is the remote or external final cause of these elementary processes. Second, the elementary processes will still have their own proximate final causes.