

Final Causes

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Abstract. I will argue, on the basis of a systematic reading of Aristotle's *Physics* B3, that final causes are for natural movements what formal causes are for natural things. As a consequence, final and efficient causality are complementary in the same sense in which matter and form are; they are two sides of the same coin.

This means that the final cause of a natural movement is the typical course that it takes when it is completed. For elementary processes, the specification of their efficient cause directly includes a description of their final cause. In the case of complex natural movements, however, we often know the final cause of a complex movement before knowing the efficient causes of its more basic parts. In such cases, it may seem that the final cause is an external purpose or effect that is not matched by a complementary efficient cause.

FINAL CAUSES

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Overview

1. Introductory remarks
2. *Physics B3*
3. Discussion
4. Objections



Introductory remarks

Background & motivation

The main claim

A word about words



Background and motivation

What's the point?

Provide an account of natural movements (and perhaps all causal processes) in terms of a form of reasoning.

1. Practical reasoning
2. Types and typicality

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Background and motivation

2. Types and typicality

Something instantiates a type not by actually having certain properties, but rather by being subject to a certain *standard of typicality*.

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Background and motivation

1. Practical reasoning

It turns out that practical reasoning is in a certain sense the mirror image of theoretical reasoning.

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The main claim

Final causality is in a certain sense a mirror image of efficient causality.

(In the same sense in which form and matter are complementary)

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The main claim

Final causes are for natural movements what formal causes are for natural things.

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The main claim (bolder)

Final causes are for *all causal processes* what formal causes are for things.

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The main claim (by authority)

Every agent, whether human or not, necessarily acts for an end. For the causes are related to another such that when you remove one of them, you remove the other. The most basic cause of all, however, is the final cause. The reason for this is that matter is not put into form unless it is moved by some agent, because nothing that is potential becomes actual merely by itself ...

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The main claim (by authority)

... But further, an agent does not move without a certain end in view (*nisi ex intentione finis*). If an agent were not determined to achieve some certain result, we could not say that he did anything specific rather than something else. That an agent produces a specific result must mean that he is determined to produce something certain, which may then be called his end. (*Summa Theologiae* I-II, 1,2 c.a.)

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The main claim

An efficient cause is something that actively brings about a certain effect under certain circumstances.

The workings of an efficient cause are somehow directed towards an effect.

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The main claim (by authority)

Beings that lack reason tend toward their end by a natural inclination. They are, as it were, moved by something else and do not move by themselves. For they do not understand the reason that is provided by an end and therefore, they cannot ordain anything to an end, but are only directed towards it by something else. In this sense, the whole of nonrational nature relates to God as a tool to an agent. (Iallae 1,2 c.a.)

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The main claim (by authority)

Yes, all directed activity involves a final cause.

No, not all directed activity involves conscious and responsible agents.

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A word about words

distinctions

final cause \neq aim, goal, good, purpose

no intelligent design assumed

no backwards causation

identifications

final causality = teleology

movement = change = process

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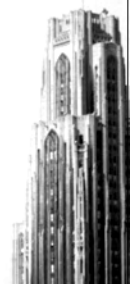
Physics B3

the “material cause”

the “formal cause”

the “efficient cause”

finally, the “final cause”



The “material cause”

The material cause is that *out of which* a thing came to be such that it still *is* out of it in some sense.

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The “material cause”

The beaver’s dam came to be out of and still is out of wood (and mud, stones, ...).



The “formal cause”

The formal cause is that *into which* a thing changed when it came to be.

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The “formal cause”

The wood (mud, stones, ...) changed into a wooden dam.



The “formal cause”

The formal cause is that which the changing thing was supposed to become. It did *not* become a form. (what it was to be: τί ἦν εἶναι, 194b27.)

The formal cause is the *essence of the compound*, as specified in its correct definition.

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“material” vs. “formal cause”

When asking for the material cause, we look at a compound and ask out of what it is.

When asking for the formal cause, we look at the constituents and ask into what compound they turn.

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things vs. movements

These were questions about the things that change.

Now we turn to questions about the changes themselves.

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The “efficient cause”

The efficient cause is that *out of which* a change came to be what it was.

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The “efficient cause”

Building the dam came to be out of certain things the beaver did.



The “efficient cause”

The efficient cause is not only the first step, but includes all necessary steps that the beaver takes when building the dam.

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The “final cause”

The final cause is that *into which* a change turns, i.e. its *direction*.

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The “final cause”

The things the beaver did were directed at building the dam.



The “final cause”

The formal cause is the essence of a compound.

The final cause is the *essence* of the complete change, which includes its origin, its end and the course that it would typically take.

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“efficient” vs. “final cause”

When asking for the efficient cause, we look at a complete process and ask what steps it involves.

When asking for the final cause, we look at a sequence of steps and ask what the complete process is in which they figure.

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Discussion

the system of causes
typical course vs. result state
derived final causes



The system of causes

<i>questions</i>	<i>about the thing</i>	<i>about the change</i>
<i>out of what?</i>	constituents wood (mud ...)	basic steps movements of the beaver
<i>into what?</i>	essence of compound what it was to be a wooden dam	essence of complete change what it was to be a building of a dam

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Typical course vs. result state

The final cause of a process is not its result, but its essence (i.e. what you specify in its definition).

The question about the final cause of a movement is answered by specifying its essence: saying what movement it is.

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Typical course vs. result state

The things that have final causes are really potentials, and that into which the actualization of a potential turns is a *state* rather than the essence of a movement.

(Gotthelf)

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Typical course vs. result state

We specify capacities in terms of changes.

Not everything that results in a dam is building it.

Some processes do not have a result other than their completion.

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Typical course vs. result state

Capacities and potentials have final causes in a *derived* sense.

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Derived final causes

Where something moves something else, we may also call that for the sake of the end that comes to be on the way to the completion, such as thinning, purging, the drugs and the tools in curing. All these will also be for the sake of the end, and they differ from another only in that some of them are doings, some instruments. (194b35–195a3).

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Derived final causes

Def. “remote final cause”

A *remote* final cause of a change A is the final cause of the larger process in which A constitutes an essential step. (before or after the “break in the series”)

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Derived final causes

Def. “external final cause”

An *external* final cause of a change A is the final cause of a process to which A contributes without being its part.

(where that which undergoes A is not that which undergoes the other process)

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Derived final causes

Def. “function”

A *function* of a thing is the external final cause of a process that it typically undergoes.

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Derived final causes

Where something moves something else, we may also call that for the sake of the end that comes to be on the way to the completion, such as thinning, purging, the drugs and the tools in curing. ...

tools are used for preparing a drug, the use of which causes purging, which causes thinness, which causes health.

(Aquinas *in Phys.* B3 no. 181).

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Derived final causes

Where something moves something else, we may also call that for the sake of the end that comes to be **on the way** to the completion, such as **thinning**, purging, the drugs and the tools **in curing**.

curing is a *remote* final cause of thinning and purging.

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Derived final causes

Where something moves something else, we may also call that for the sake of the end that comes to be on the way to the completion, such as thinning, purging, the drugs and the tools, in curing.

Preparing the drugs is an *external* final cause of what happens with the tools.

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Derived final causes

Where something moves something else, we may also call that for the sake of the end that comes to be on the way to the completion, such as thinning, purging, the drugs and the tools, in curing.

Preparing the drugs is a *function* of the tools.

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Objections

is every result a final cause?

no directedness without director

complexity and reduction



Is every result a final cause?

No, only every *typical* result, that is every result that would be mentioned in a correct definition of the change in question.

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Is every result a final cause?

Although rain fall regularly leads to plant growth, plant growth is not its final cause.

So there seems to be something that regularly happens but is still mere chance in the sense that it does not have a final cause.

(Physics B8)

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Is every result a final cause?

Typical is what belongs to the type.

It is not essential for rain fall that it makes plants grow.

(There is nothing wrong with rain that does not make plants grow.)

It is not essential for plant growth that rain falls.

(Whereas water supply *is* so.)

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No directedness w/o director

We can only direct our movements by exploiting a more basic directedness of certain physical and chemical processes.

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Complexity and reduction

I claim that the efficient and the final cause of a change are two sides of the same coin.

For *elementary* changes, the efficient cause, the final cause, and the change itself all *coincide*.

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Complexity and reduction

But cause and effect must differ.

The information that the efficient cause of A is whatever may be manipulated in order to get A is not informative.

We want a description that does not describe it *only* in terms of its effect.

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Complexity and reduction

A good account of a causal process must provide two independently identifiable handles on it: the efficient and the final side.

But these need not be different *things*.
(indeed, *should* not: we want a description *of* the cause not *as* cause.)

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Complexity and reduction

Final causality seems to be more complicated.

External and remote final causes are often more interesting, and sometimes we know the remote and external final causes before knowing the proximate and internal ones.

But this does not mean that there *are* no internal and proximate final causes.

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Complexity and reduction

Compare:

Even if we are able to completely decompose a *thing* into its basic elements, this does not mean that

- (a) the thing would not have a form or
- (b) its basic elements would not have a form.

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Complexity and reduction

Even if we are able to completely decompose a *process* into its basic elements, this does not mean that

- (a) the process would not have a final cause or
- (b) its basic elements would not have a final cause.

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Complexity and reduction

That is, although remote and external final causes are more interesting, it is not remoteness or externality that makes something a final cause.

Every directed movement has a final cause and what is commonly called teleology is only a matter of the *mereology of complex process types*.

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THE END

