

A Brief History of Ends/Goals: How Can Goals (Motivation) Emerge from a Goalless World?

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Abstract: This paper will be devoted to the discussion of the concept of goal in human understanding. The scientific discussion of it can be traced back to ancient Greece, where it was called teleology. This triggered a lot of questions: as theories prostrating the universe as uniformed emerged, these types of teleological ideas were attracted by natural philosophers studying determinism: things do not exist to serve a purpose, they exist only because, under the influence of other things in the world, they have to be there. The sun is not there to provide brightness to the world, it was there long before the exitance of the world. Nevertheless, the unsettling problem is that human beings do, a lot of times, think in a goal-directed way, so how to reconcile the fact that no teleological language can explain natural phenomena with the fact that teleological thinking exists in human understanding becomes the million dollar question. Still, there could be a solution, not as straightforward as the problem, but sufficient to demonstrate how goals can emerge from a goalless nature. With the conatus theory as the basis, this paper is going to review how it can be the building block of the nowadays negative feedback loop model and such a model is also a variation of Hume theory of association and passion.

Keywords: Ends/goals, Teleology, Conatus Theory, Negative Feedback Loop, Like V.S Want, Motivation

1. Introduction

Ends, or goals, may seem to be a normal part of everyday human life; we act in certain ways to get to certain ends: athletes exercise every day to perform better, philosophers read more to think deeper, etc. People know that there is some kind of purpose behind their actions. Then when people think of the events in the world, they may nevertheless use terms that are related to goals to describe the reason for events' existence. However, after reflecting on that, it may be found that projecting this purpose-related thinking onto non-human events may lead to huge mistakes. For example, some children from collectivist cultures are taught that the sun exists to brighten the world or that air exists to help us breathe. This may seem normal even to most sane people. Nevertheless, it is a huge scientific misunderstanding that can be traced back to ancient Greece, and it is called teleological thinking. The sun probably came into existence before Earth, and there is the atmosphere probably before the existence of any living things. In a randomized world, it would be naturally wrong to say that certain events happened purposefully to achieve certain ends, and that is why this teleological thinking has been criticized by metaphysicists for centuries. However, at the same time, we are so certain that we

are guided by aims, which raises a question: we know that nothing can come from nothing. As Descartes proposed, the cause must have at least the same reality as its cause. Then how could this endless/goalless world give birth to humans' goal-driven actions? This is not a metaphysical question anymore; this paper will access it from an epistemological or psychological perspective with neurological evidence to back it up.

2. Teleology from Ancient Greece

In many ancient cultures, anthropologists found similar teleological belief patterns. Nevertheless, the one from ancient Greece is almost the paradigm for it since the teleological beliefs are systematized, which later on influenced theology, physics, biology, and even psychology.

Though I would try my best to talk as little theology as I could, I still need to begin the discussion with it since it is what teleology directly serves. What teleology stresses is that something or everything in the world exists for some purpose. Considering many things (or most things) are out of human control, then human beings cannot be the ones that give them purpose. Then there must be something that is above everything, capable of assigning goals.

Some classic examples of teleological thinking are, as what you may find in many children's books, the sun's mission is to light up the Earth, and the end of a seed of an oak tree is to become an oak tree [1], in which the latter one was actually proposed by Aristotle. However, we can see that none of these expressions are, in any way, near scientific. The sun formed before Earth, and the seeds of oak trees are not able to grow into oak trees if we treat them purely as snacks. This type of belief would not be logically consistent without the presumption of an Omni-power being assigned missions, and the reason is that these things are not able to be in their own power, meaning that they are not able to decide how or what to act upon. The sun does not shine because it wants to, be because of nuclear fusion; the seed does not sprout because it is following its mission, but because the seed absorbs water automatically through a purely physical process of penetration, which activates the plumule to start absorbing nutrition through penetration. Under the presumption that this world exists independent of any sort of God, it is safe to say that without living beings, any teleological statements would be wrong to apply to the world.

However, now several questions arise, and that starts with why did we think about the world in terms of teleological language in the first place? This tendency has to come from somewhere, and since it is not innate to the objects or any other objects, then it has to come from us. In other words, we impart the sense of teleology to the goalless world. We project the sense of goal that we have to the objects, presuming that the objects are like us when we think teleologically. This left us with one last question: where does the sense of goal that human beings have come from?

3. The Discussion of Goals in the Language of Early Modern Philosophy

We feel that many of our actions are driven by goals. People go to work to make a living, patients go to doctors to have their discomfort relieved, and we eat to not feel hungry. Our difference with other objects is that many times, the goals come first than actions; the sequence is not: eat, feel the hunger go away, and then conclude that we have the goal to relieve the hunger with signs of hindsight bias. What really happens is that we first feel hunger, then want to get rid of that feeling, so we forage for food. This leads us back to the question: where does the sense of goals that human beings have come from? One complication to this question is that: we have evolved from such a goalless world. Imagine a world without living creatures at all. It would be without any sense of goals, and that is what gives birth to human beings. Then consider this piece of logical argument from Parmenides: "Nothing comes from nothing" [2], and Descartes's: "there must be at least as much [reality] in the efficient and total cause as there is in the effect of that same cause" [3]. Considering their arguments, it might be

frustrating for us to see that there is not a logical ground for our existing teleological thoughts: our ideas are the result of the outside world that was without goals before our birth. In terms of goals, if the outside world has nothing, then we would logically have nothing as goals. If in Descartes' manner, there is no reality as goals in the total cause, then how come human beings, as the effect, have it? Should we end up endorsing creationism after all?

Not so quick. There is another possibility left, which is that the goal could be the synthetic product of some other natural qualities, like the Conatus Principle: "each thing, as far as it lies in itself, strives to persevere in its being" [4]. This may sound like a teleological claim, but it is not. When we talk about goal-directed actions, we mean that the being is first conscious of such goals and then is directed by them. However, beings strive to persevere in their beings and do not need to be conscious to do that; like oak trees, they are not conscious, and yet, they strive to persevere in their beings, so this might be the actual final goal of all living creatures, which is not a teleological one. Then what is it, and how does it give us those teleological goals that direct our actions?

This conatus goal is an inducted tendency of objects' natural changes. Objects change in different ways through time, and there is a tendency we can observe but we are not sure about; that is why I call it an inducted tendency, because we generalize it through induction. Not all beings strive to persist in their beings, but we have such a conatus observation for a reason, and that reason is that beings that do not follow the conatus principle are rare, and the reason for that is really simple: if they do not strive to persist in their being, they will end up killing themselves before we ever meet them, and this is natural selection. Natural selection is a term that can easily be understood teleologically, while what it actually means is just that those who are better at survival have better survival rates, and those who have better survival rates will produce more and show an increase in population. This process is all-natural and goalless. As far as to this point, both conatus and natural selection are still pseudo-goals. The goals that direct our actions come after that.

4. Goals in Modern Scientific Language

The author will start with a model of the pseudo-goal in the conatus doctrine:

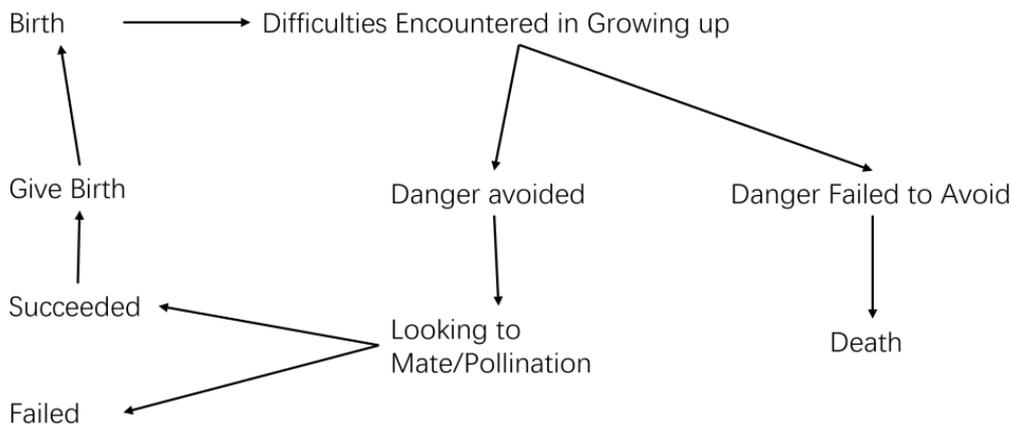


Figure 1: Conatus Goal.

As reproduction is the end of natural selection, without consciousness involved, this is a naturally determined goalless process (birth would be a pseudo-goal here, since when no consciousness is involved, then there is no object deciding to give birth, then birth just comes naturally like the seed of the oak tree).

On the other hand, for human beings, the model is like this:

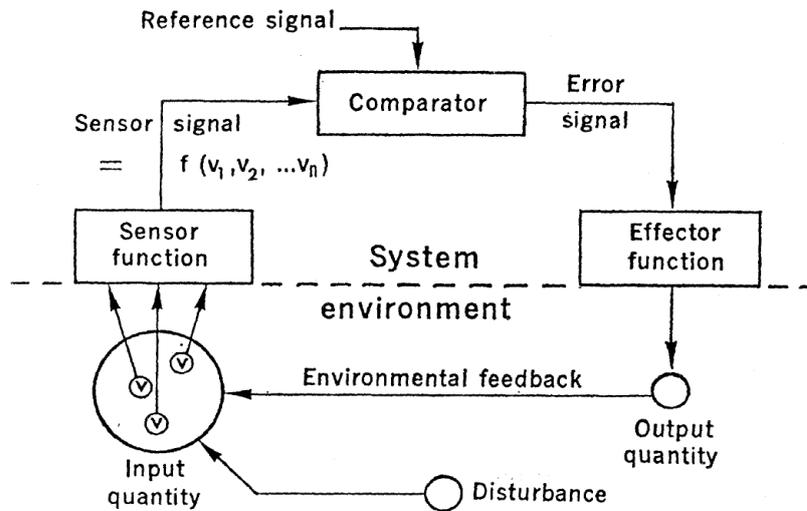


Figure 2: Negative Feedback Loop [6].

This model is the negative feedback loop, illustrating a possible way the brain processes information and delivers action. Its difference with the conatus one is that the conatus loop is an uncontrollable goalless loop, while this negative feedback loop is controllable through setting a goal, which, in the model, is graphed as the reference signal. This is the goal we either automatically or deliberately aim for. The whole system works in the way that the input signal from the environment is compared with the reference signal and generates a difference through the comparison. Therefore, if we want to reach the reference value, then the difference needs to be minimized. Therefore, the output needs to change to account for that difference. Some automatic goals for human beings are like body temperature: we may be able to control it by wearing more or less or taking a cold or hot bath, but for the most part, it is controlled automatically by the "hypothalamic control of brainstem and spinal autonomic nuclei related to longer-term autonomic reflexes" [5]. Nevertheless, for the automatic control system, it is still out of control; we might not even know about the existence of such goals before a careful scientific study of ourselves. Therefore, these goals are still not the real goals depicted by the model since, as we have discussed, the real goals are the ones we consciously know about and are going to direct action. So how do we get there? The author proposes a possibility: through trial (automatic action) to the association than to reflection.

To explain how this happens, we need to put things in a scientific setting. By 2005, Berridge proposed a two-way model of like and want in the food reward system, in which wanting is the more basic dopamine-driven pathway of desire that pushes rats to forage for food, and liking is the more complex pathway that serves hedonic behavior that monitors the happiness caused by the consumption of certain foods [7]. The latter one is complex because, as Berridge proposed, the hedonic hotspots are dispersed in the brain, and he found two of them: one is in "the posterior half of the ventral pallidum", and the other one is in "the nucleus accumbens within the rostradorsal quadrant of its medial shell" [8]. However, according to other researchers, there are more possible regions that are outside of the reptilian brain that is in the limbic system or even in the nonmammalian area, like in the limbic prefrontal cortex, orbitofrontal or insula regions [9] [10] [11]. The hotspots found by Berridge were innate that people were born with, like the licking response toward sweet taste against the gaping response towards bitter [8] from newborn babies. Nevertheless, with only the taste preference, it is still not able to specifically let us know what exact food to like. Then what is going to happen is that the little human, pushed by the desire, would grab anything that seems edible and

try it in their mouth to see if the thing tastes good or not. When they found something edible and tasted good, the hedonic hotspot would be activated and make the little human feel happy. The child would then automatically associate the food with the hedonic feeling; as indicated by Berridge, this level of liking is still unconscious [7]. Food only becomes a goal after the child reflects on it. This could happen by pulling up the memory of the customary conjunction [12] of the specific sequence of events: eating the specific food followed by feeling happy; then a causal route could be inducted: eating that thing causes me happy; one wants happiness, so one's goal is to eat that food. Now the conscious, action-driving goal appears, and its scientific definition would be: the inducted cause of the hedonic feeling.

5. Back to Early Modern

This trial to reflection route is actually not a new theory; about two centuries ago, David Hume and Thomas Brown proposed a theory just like this: Children start as explorers and get impressions of the world, and impressions come in two forms: one is sensory, and the other is reflective [13]. The process of sensation is still pure automatic; it is only after reflection of the sensed information and its association with one's feelings that people can understand them causally. Through this, passion is derived since now we know how we are going to feel when we act in a certain way. Passion comes in two forms; one is direct passion, which is the first order passion that directly moves us even without thinking, like hunger, or consumption leads to dopamine secretion, which leads to satisfaction, and this pathway directly leads to further consumption [13] [14].

New goals just appear along the route of satisfying other existing goals; say, a child encounters difficulty eating a hot marshmallow; with the bigger goal to eat it, the child develops a new goal, which is not to be burnt by the marshmallow. Following this route, we can see that there need not be a creator to complete the transition from goalless to human goal-directed behavior; everything could just come from the determined conatus nature.

6. Conclusion

As the route from determined nature to human goal-directed thinking is demonstrated, one may still object that not all goals come this way, and it is true. Nevertheless, it is still safe to say that all goals come from experience. Some of the other sources of goals that are beyond trials and associations are like learning from others. IF a child loves chips, and someone tells the child that popcorn tastes like chips, then the child may have a new goal to try some popcorns. Note that even though the impression of popcorn did not come from trial and association, it still came from experience, meaning there is still a source of that, and when we trace it to the source, we may still find that it came from some trial and association since, as in the previous example, if the advice from the one did not turn out to deliver happiness before, then there would be no reason for the child to trust that person. Therefore, though this goal was not the result of other food reward goals, it came from interpersonal benefit (with the goal of getting a reward and taking the trial of following someone's advice), so in this way, the principle of the reward route is still intact. Still, this model may encounter some complexities accounting for the urges of trying new things. Models built on empiricism have to base themselves on past experience. Maybe the associational goal model can be twisted to account for curiosity (by claiming that past curious urges led to rewards), but it would not be as straightforward as the claim that curiosity is an intrinsic motive. This would be a fruitful direction for future research. Just claiming that curiosity is intrinsic is too simple, which fails to account for those people that are reluctant to try new things. Yet, the empirical model misses the fact that all babies are ready to learn after they are born. Decoding the neural basis of curiosity in infant development would yield important results for modeling human motivation and rewards.

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