Plato, Excerpt from *The Timaeus*
Monologue, Part 3: The Creation Story of Man (69a–92c)
Summary adapted from the *Internet Encyclopedia of Philosophy*
(https://iep.utm.edu/timaeus/#SH6e) and excerpts from *The Internet Classics Archive*
(https://classics.mit.edu/Plato/timaeus.html)

[Plato's *Timaeus* is a dialogue between philosophers who discuss the origins of the cosmos. Timaeus, speaking below, is particularly interested in natural phenomena and astronomy. The 'demiurge' is the divine craftsman responsible for creating the originary forms that govern the world; he is assisted in the process of creation by a series of lesser beings who execute his design. *The Timaeus* was written in Greek in roughly 360 BCE.]

Excerpt from the *Timaeus* on the creation of the universe:

> "Now the creation took up the whole of each of the four elements; for the Creator compounded the world out of all the fire and all the water and all the air and all the earth, leaving no part of any of them nor any power of them outside. His intention was, in the first place, that the animal should be as far as possible a perfect whole and of perfect parts: secondly, that it should be one, leaving no remnants out of which another such world might be created: and also that it should be free from old age and unaffected by disease. Considering that if heat and cold and other powerful forces which unite bodies surround and attack them from without when they are unprepared, they decompose them, and by bringing diseases and old age upon them, make them waste away-for this cause and on these grounds he made the world one whole, having every part entire, and being therefore perfect and not liable to old age and disease. And he gave to the world the figure which was suitable and also natural. Now to the animal which was to comprehend all animals, that figure was suitable which comprehends within itself all other figures. Wherefore he made the world in the form of a globe, round as from a lathe, having its extremes in every direction equidistant from the centre, the most perfect and the most like itself of all figures; for he considered that the like is infinitely fairer than the unlike. This he finished off, making the surface smooth all around for many reasons; in the first place, because the living being had no need of eyes when there was nothing remaining outside him to be seen; nor of ears when there was nothing to be heard; and there was no surrounding atmosphere to be breathed; nor would there have been any use of organs by the help of which he might receive his food or get rid of what he had already digested, since there was nothing which went from him or came into him: for there was nothing beside him. Of design he was created thus, his own waste providing his own food, and all that he did or suffered taking place in and by himself. For the Creator conceived that a being which was self-sufficient would be far more excellent than one which lacked anything; and, as he had no need to take anything or defend himself against any one, the Creator did not think it necessary to bestow upon him hands: nor had he any need of feet, nor of the whole apparatus of walking; but the movement suited to his spherical form was assigned to him, being of all the seven that which is most appropriate to mind and intelligence; and he was made to move in the same manner and on the same spot, within his own limits revolving in a circle. All the other six motions were taken away from him, and he was made not to partake of their deviations. And as this circular movement required no feet, the universe was created without legs and without feet."

Summary of the creation section of the *Timaeus*:
With the cosmos in place, Timaeus draws his story to a close by rhapsodizing on the creation of man. Earlier in his speech, he indicated that the demiurge fashioned the cosmos only up to a point; the creation of other life forms he left to other, lesser gods. Speaking to these gods, the demiurge explains that were he to create animals and plants, they would turn out as perfect as the gods themselves (41c). In that case, he would not be able to achieve his goal of realizing all levels and kinds of perfection. At first glance, this seems strange. How can a being capable of making something as enormous as the cosmos be unable to populate it with meager animals and plants? The problem, however, is not as it seems. It is not that the demiurge lacks power. On the contrary, being perfect, the demiurge always performs optimally; his actions yield only what is best. It would therefore be contrary to his nature—and, one may say, offensive to his impeccable aesthetic tastes—to make something that did not in the closest possible way resemble him in greatness and beauty. It would be tantamount to a masterful artist lowering himself to produce an amateurish painting. Creating a masterpiece is within his power; not doing so would be a shameful underachievement, unbefitting of his greatness. For this reason, the demiurge, exercising sovereignty over all things, delegates to lesser gods, who were themselves created (41b), the responsibility of creating animals and plants. Given their relative imperfection, they could do what the demiurge could not—namely, create less perfect life forms—and not disgrace themselves by doing so. By allowing them to complete what he started, the demiurge could fully realize his plan to ensure that the all (*to pan*) is genuinely all (*hapan*), full and complete, a plenitude lacking nothing (41c).

How, then, does man come to be? What is his origin and nature? Timaeus gives not one, but two accounts. The accounts do not conflict, but they do differ in length, detail, and artistry. The first appears at the end of the Story of Intellect (40d–47e). It begins with the demiurge creating the human soul from a mixture—not the same mixture from which the cosmic soul came to be, but a different one using the same ingredients blended less purely. Having combined these ingredients, the demiurge distributes bits of the mixture to the various stars (for example, lesser gods) like a farmer sowing seeds (42d). At this point, the lesser gods take over and begin fashioning the human body. Borrowing portions of the elements, the gods "went about gluing them together … with close-packed rivets invisible for their smallness" (42e–43a). It is worth noting here the difference in approach. Whereas the demiurge sows seeds, the lesser gods insert rivets. Whereas the demiurge creates with an eye to balance and beauty, the lesser gods simply get the job done by pasting things together. The demiurge uses art and agriculture to create; the gods appear to be workers on an assembly line. The creation of man, as related in the Story of Intellect, is much akin to the work of the lesser gods: it is practical, but not particularly meaningful. It relates the origin of man, but not his nature. In fact, it seems to serve as little more than a bridge between the Story of Intellect and the Story of Necessity. A far more robust account of man's creation follows the Story of Necessity.

As with the account of man's creation in the Story of Intellect, the Story of Man begins with the soul. From the start, however, the account is decidedly more lively and detailed. Timaeus opens by telling how the gods, still entrusted with the task of making man, sculpted a body around the immortal soul and housed within that body another kind of soul governed by "terrible and necessary affections" (*deina kai anagkaia pathēmata*): pleasure and pain, rashness and fear,

anger and hope (69d). Notice that they do not rivet or glue the soul to the body, but sculpt the body around the soul. Already these lesser gods approach their job with more grace and flair than they did before. Moreover, they have enough sense to separate the two souls so that the mortal soul will not contaminate the immortal soul. They do this by placing the mortal soul within the chest and separating the chest from the head with an isthmus (namely, the neck) within which the spirited part of the soul resides. Next to be made is the heart, which communicates to other organs when an unjust deed has been committed, and after that the lungs, which cool the heart, enabling it to be more subservient to reason. The lungs, however, are not merely placed within man; they are implanted (*enephuteusan*, 70c). It is remarkable how the image of the gods from one story to another has changed. The Story of Intellect underplays their artistry, emphasizing instead their efficacy. The Story of Man, by contrast, draws them closer in nature and purpose to the demiurge: they are not only sculptor-like in how they shape the body around the soul, but also farmer-like in how they plant organs within the body. Also worth noting is the image of man himself. He is no longer an inert machine assembled with glue and rivets, but a dynamic organism animated by passions and emotions.

Continuing his story, Timaeus shifts his attention to the liver—one of his seemingly favorite organs. Reason and emotion have been physically separated—reason being located in the head and the appetites in the abdomen. Because the appetites cannot understand reason—evidently because they speak different languages—there was a need for a mediator to convey messages from the higher faculties to the lower (71a). This becomes the purpose of the liver. From the intellect, the liver receives images, which it projects onto its surface to frighten and restrain the appetites (72b). This is reminiscent of the *Republic*'s cave allegory, where prisoners passively watch as images flicker across a cave wall. Just as those images keep the prisoners pacified, the images projected by the liver keep the appetites at bay. Apart from helping the intellect control emotion, the liver also serves as the source of divination (71e, 72b). No one in his right mind, Timaeus says, has access to divine reason; yet when asleep or overcome by some inspiration, man receives divine messages, which must be reflected upon and interpreted. At no point does Timaeus condemn divination as a form of superstition or subterfuge, treating it instead with respect and sincerity—at least for those who think deeply and reason slowly about their divinations. But why does Timaeus treat divination with respect at all? Perhaps the reason is that for Timaeus—and by extension Plato—man is not simply a patchwork of physical parts: cells, tissues, organs, and systems. Man is not a god, but he does have divine origins, a divine element within himself, and the ability to be divinely inspired. Whereas the Saisian priest ridiculed the idea of myth shedding light on the nature, Timaeus wants to preserve the link between the natural and supernatural. Far from setting man and the gods apart, Timaeus's cosmo-muthos brings them closer together.

Much care and skill is brought to bear on the gods' creative efforts. Consider how they make bone and flesh. It begins with marrow, which "gave the mortal kind its roots" (*katerrixoun*, 73b). Marrow, Timaeus tells his companions, comes from a universal seed-stuff (*epephēmisen*) comprised of smooth and unwarped triangles. Planted within the marrow are various kinds of souls (73c). The gods then take some of this marrow and form it into a spherical shape. This spherical field (*aroura*) receives the divine seed (*to theion sperma*) and becomes the brain (73d). Bone likewise comes to be through an intricate, creative process (73e). First, earth is sifted by the gods to be pure and smooth. Next, it is kneaded and soaked with marrow, baked in fire,

dipped in water, placed back into the fire, and dipped once again in water. This is an utterly fantastic account—one that emphasizes the intelligence and imagination behind the creation of man and of his seemingly most mundane parts. Bone is created as if by a potter and flesh as if by a wax-modeler (74c). Man is not the product of necessity or blind chance; he arises from a series of deliberate actions. The gods—whether the demiurge or lesser gods—emerge as agents who care not only to complete their work, but to introduce into their products a sense of style and value. They care about what they make. Their artistic fingerprints can be found on everything from the cosmic soul to human skin, hair, and nails. But they also know how best to manipulate materials. Owing to their different shapes, the elements behave differently. Thus, by combining an artistic sensibility with a knowledge of how to engineer things given the materials at their disposal, the gods are able to imbue the cosmos and man with beauty, structural stability, and purposefulness.

To be sure, man is well-formed and beautiful, but he is also able to grow and flourish. In fact, he appears in Timaeus's story as plant-like. In several passages, the gods act as farmers, planting organs within the human body. Marrow literally allows man, like a tree, to take root (73b). In addition, the gods equip man with an irrigation system: "[the gods] channelled through our body itself, just as they were cutting channels in gardens, so that the body might be refreshed as though from an inflowing stream" (77c–d). These channels help the "stream of nourishment" flow so that the "irrigation may be made uniform." The gods use their agricultural knowledge frequently when creating man, who, Timaeus says, is "not an earthly but a heavenly plant" (*phuton ouk eggeion alla ouranion*, 90a). This naturally prompts the question: Why is so close a connection drawn between man and plants? One may think it is a joke. Anyone can tell the difference between humans and plants. Maybe Timaeus wanted to get a rise from his companions. But if it is a joke, it is not a very good one; for as most would agree, there are few things less amusing than an oft-repeated joke. A possible clue may be found just before the discussion of man's irrigation system, where Timaeus tells a brief story about the origins of plants (70e–77c). After making man, the gods decide to create plants, unlike animals in appearance, yet having sensations and "a nature akin to man." Plants are indeed animals, he notes, because "everything that partakes of living may justly and most correctly called an animal" (77a–b). Since plants are intended to be eaten (77c), this cannot be a solemn plea for vegetarianism. Even so, it is certainly possible that Timaeus's message is ecological. Sometimes, because of our egocentric and homocentric concerns, we lose track of our place in the world. It would be an overstatement to suggest that Timaeus is advancing an environmentalist ethics; but his holistic view of creation, if taken seriously, does raise important questions (1) about the relationship between creator and created, that is, between planter and planted (87b), (2) about the kinship between man and nature, and (3) about how the good for man relates to the good for other living things. Rarely has Plato been considered a philosopher with ecological concerns, but perhaps a careful study of the *Timaeus* would help to change this opinion.

Although man is capable of flourishing, he is also subject to collapse and decay. For this reason, Timaeus pivots to the origin and nature of diseases. He uses a strange word to describe their origin, saying that they are "constructed" or "contrived" (*sunistēmi*, 81e). Is the implication that the gods have a hand in creating diseases? Was this to ensure the imperfection of man? Timaeus, unfortunately, leaves these questions unanswered. Instead, he launches into a discussion of diseases that specifically afflict the body. These arise from an excess, deficiency, or

misplacement of elements (82a–b). In other words, there is a physical imbalance, causing a body to become unmusical (*plēmmelēsēi*) and out of harmony with the cosmos (82b). After bodily diseases, Timaeus turns to diseases of the soul, giving special attention to folly, which comes in two varities: stupidity and madness. Stupidity, he says, is the greatest disease, arising when a body becomes too large and the intellect too weak (88a–b). When this happens, bodily motions gain mastery, causing the soul to become dull, slow, and forgetful. But does this mean that only large people are stupid? Are small folk immune to this disease? It seems an obvious question to ask, but Timaeus does not consider it. Moving along, Timaeus traces madness to overly seeded marrow (86c–d), not to wickedness, as some do: "people hold the opinion that he's not diseased but willingly bad. But the truth is…" (86d). Timaeus's claim here is both Socratic and un-Socratic. It is Socratic in that it affirms that no one performs wrongful acts willingly; however, it is un-Socratic in that rather than attributing wrongdoing to ignorance, as Socrates does, Timaeus roots it in bodily disease. In fact, physical causes are responsible for madness and stupidity. As for treating disease, Timaeus prescribes physical exercise and an avoidance of medicinal drugs (89a–c). Idleness and inactivity will only make matters worse; the body must mimic the cosmos and stay in motion. In addition, a person should tune the motions in his soul by applying himself to the liberal arts and all philosophy (88c). Striking the right balance and keeping one's mind on higher things—these, according to Timaeus, are the ingredients to a good life and healthy soul. At this point, one might wonder: Would the silent Socrates be nodding in agreement or shaking in disagreement? Perhaps he would be doing both.

This would seem like a good place for Timaeus to stop. Critias promised Socrates that Timaeus's story would explain the origins and nature of mankind. Timaeus has clearly gone above and beyond. Not only has he explained the origins and nature of man, but he has also given his companions lessons in human anatomy and physiology and human pathology. But Timaeus is not finished yet. There is one topic left to cover: the invention of sex. One might assume that man and woman have the same origin, but that is not so. The gods created man beautiful and well-ordered, but man is prone to physical and moral decay. He is also destined to die and, as it turns out, be reincarnated. Timaeus does not say what happens to courageous and just men, but as for the cowardly and unjust, they return not as men, but as women (90e). Women are therefore derivative, being born from morally deficient men. It is hard to know what to make of this, especially in light of the fact that in Socrates' *polis*—the one that Timaeus is helping to animate—men and women are social equals. The subsequent account of intercourse is likewise peculiar. The channel for releasing urine, Timaeus says, also releases marrow (that is, seed) from the brain (91b). This marrow, being imbued with soul, gives the male reproductive organ a desire for emission. As a result, male genitals have become unpersuadable and autocratic, like an irrational animal (91b–c). In other words, the love to procreate is a form of madness in which a man loses his mind—or more literally, his brain. But is this the extent of man's erotic feelings? Eros compels physical love, but can it compel philosophy? Can it compel movement within a *polis*? Timaeus rounds out his speech by explaining the origins of other animals (91d–92c). Like women, they derive from deficient men: birds from light-minded men who rely overabundantly on sight in their scientific demonstrations, land animals from unphilosophical men, and fish from the stupidest men. With the cosmos now made and fully populated, Timaeus delivers his closing line, which dispenses with the puns, jokes, and tomfoolery: "having been filled up, this cosmos has come to be—a visible animal embracing visible animals, a likeness of

the intelligible, a sensed god; greatest and best, most beautiful and most perfect—this one heaven being alone of its kind" (92c).

Excerpt from the ending of the *Timaeus*:

> "And we should consider that God gave the sovereign part of the human soul to be the divinity of each one, being that part which, as we say, dwells at the top of the body, inasmuch as we are a plant not of an earthly but of a heavenly growth, raises us from earth to our kindred who are in heaven. And in this we say truly ; for the divine power suspended the head and root of us from that place where the generation of the soul first began, and thus made the whole body upright. When a man is always occupied with the cravings of desire and ambition, and is eagerly striving to satisfy them, all his thoughts must be mortal, and, as far as it is possible altogether to become such, he must be mortal every whit, because he has cherished his mortal part. But he who has been earnest in the love of knowledge and of true wisdom, and has exercised his intellect more than any other part of him, must have thoughts immortal and divine, if he attain truth, and in so far as human nature is capable of sharing in immortality, he must altogether be immortal ; and since he is ever cherishing the divine power, and has the divinity within him in perfect order, he will be perfectly happy. Now there is only one way of taking care of things, and this is to give to each the food and motion which are natural to it. And the motions which are naturally akin to the divine principle within us are the thoughts and revolutions of the universe. These each man should follow, and correct the courses of the head which were corrupted at our birth, and by learning the harmonies and revolutions of the universe, should assimilate the thinking being to the thought, renewing his original nature, and having assimilated them should attain to that perfect life which the gods have set before mankind, both for the present and the future.
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> Thus our original design of discoursing about the universe down to the creation of man is nearly completed. A brief mention may be made of the generation of other animals, so far as the subject admits of brevity ; in this manner our argument will best attain a due proportion. On the subject of animals, then, the following remarks may be offered. Of the men who came into the world, those who were cowards or led unrighteous lives may with reason be supposed to have changed into the nature of women in the second generation. And this was the reason why at that time the gods created in us the desire of sexual intercourse, contriving in man one animated substance, and in woman another, which they formed respectively in the following manner. The outlet for drink by which liquids pass through the lung under the kidneys and into the bladder, which receives then by the pressure of the air emits them, was so fashioned by them as to penetrate also into the body of the marrow, which passes from the head along the neck and through the back, and which in the preceding discourse we have named the seed. And the seed having life, and becoming endowed with respiration, produces in that part in which it respires a lively desire of emission, and thus creates in us the love of procreation. Wherefore also in men the organ of generation becoming rebellious and masterful, like an animal disobedient to reason, and maddened with the sting of lust, seeks to gain absolute sway ; and the same is the case with the so-called womb or matrix of women ; the animal within them is desirous of procreating children, and when remaining unfruitful long beyond its proper time, gets discontented and angry, and wandering in every direction through the body,

closes up the passages of the breath, and, by obstructing respiration, drives them to extremity, causing all varieties of disease, until at length the desire and love of the man and the woman, bringing them together and as it were plucking the fruit from the tree, sow in the womb, as in a field, animals unseen by reason of their smallness and without form ; these again are separated and matured within ; they are then finally brought out into the light, and thus the generation of animals is completed.

Thus were created women and the female sex in general. But the race of birds was created out of innocent light-minded men, who, although their minds were directed toward heaven, imagined, in their simplicity, that the clearest demonstration of the things above was to be obtained by sight ; these were remodelled and transformed into birds, and they grew feathers instead of hair. The race of wild pedestrian animals, again, came from those who had no philosophy in any of their thoughts, and never considered at all about the nature of the heavens, because they had ceased to use the courses of the head, but followed the guidance of those parts of the soul which are in the breast. In consequence of these habits of theirs they had their front-legs and their heads resting upon the earth to which they were drawn by natural affinity ; and the crowns of their heads were elongated and of all sorts of shapes, into which the courses of the soul were crushed by reason of disuse. And this was the reason why they were created quadrupeds and polypods : God gave the more senseless of them the more support that they might be more attracted to the earth. And the most foolish of them, who trail their bodies entirely upon the ground and have no longer any need of feet, he made without feet to crawl upon the earth. The fourth class were the inhabitants of the water : these were made out of the most entirely senseless and ignorant of all, whom the transformers did not think any longer worthy of pure respiration, because they possessed a soul which was made impure by all sorts of transgression ; and instead of the subtle and pure medium of air, they gave them the deep and muddy sea to be their element of respiration ; and hence arose the race of fishes and oysters, and other aquatic animals, which have received the most remote habitations as a punishment of their outlandish ignorance. These are the laws by which animals pass into one another, now, as ever, changing as they lose or gain wisdom and folly.

We may now say that our discourse about the nature of the universe has an end. The world has received animals, mortal and immortal, and is fulfilled with them, and has become a visible animal containing the visible ‘the sensible God who is the image of the intellectual, the greatest, best, fairest, most perfect’ the one only begotten heaven.”

Aristotle on Nature, the Unmoved Mover, and Natural Causation

Aristotle (384-322 BCE) accepted that the cosmos was spherical as Plato had suggested but he thought that nature worked in a different manner. Whereas Plato had imagined visible earthly nature being composed of less perfect "copies" of a perfect divine plan located elsewhere, Aristotle imagined earthly nature as the result of causes located within earthly things themselves.

Aristotle defines nature (*physis*) as the principle of both motion and rest within a substance (*Physics* 2.1). The inherent characteristics of an object determine its natural tendency to move in a certain way or to remain at rest, without the need for external forces; essentially, a thing's nature explains why it moves or stays still based on its own inherent properties. So a natural thing—for example, a dog—moves itself according to principles of "doginess"—i.e. the desire to eat bones (or shoes) and to bark at neighbors taking out the trash. Or the element of fire, following its natural motion, moves upward, while the element of earth moves downward—not on account of gravity but because it seeks its natural home in the center of the earth, following its innate properties.

By contrast with natural motion and natural things, an artificial thing does not contain within it its own principles of motion; for example, a bed is an artificial thing because it is made by an artisan from another substance and does not make itself. The difference between a human and a bed lies in the fact that a human is generated by another human, whereas a bed is not generated by a bed.

This definition of nature as an inherent principle of rest and motion sets the stage for Aristotle's definition of divinity defined as the "unmoved mover." Aristotle had argued in the *Physics* Book 8 that everything in motion is moved by something else ("omne quod movetur ab alio movetur"). The cause of movement in natural things is their nature—i.e. that set of inherent instructions implanted in them at creation that tells them how to grow, move, and act. There is, however, a class of entities that is not moved by others including what Aristotle defines as the "first cause." In the *Metaphysics* Book 12, he describes the unmoved mover as the primary cause of all motion in the universe. The unmoved mover is a first uncaused cause, or "mover" that moves other things without being moved by anything else. Aristotle's view of divinity is that this unmoved mover sets in motion the rest of the motions of the cosmos by acting as an object of love and striving for all of creation.

From Aristotle, *Metaphysics* 12.7:

> "Since that which is moved and moves is intermediate, there is a mover24 which moves without being moved, being eternal, substance, and actuality. And the object of desire and the object of thought move in this way; they move without being moved. The primary objects of desire and of thought are the same. For the apparent good is the object of appetite, and the real good is the primary object of wish. But desire is consequent on opinion rather than opinion on desire; for the thinking is the starting-point. And thought is moved by the object of thought, and one side of the list of opposites is in itself the object of thought; and in this, substance is first, and in substance, that which is simple and exists actually. (The one and the simple are not the same; for 'one' means a measure, but

'simple' means that the thing itself has a certain nature.) But the good, also, and that which is in itself desirable are on this same side of the list; and the first in any class is always best, or analogous to the best. That that for the sake of which is found among the unmovables is shown by making a distinction; for that for the sake of which is both that for which and that towards which, and of these the one is unmovable and the other is not. Thus it produces motion by being loved, and it moves the other moving things."

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Aristotle on Natural Causation:

Summary adapted from John Protevi
http://www.protevi.com/john/FH/PDF/AristotleFourCauses.pdf

One of the most famous of Aristotelian doctrines is that of the "four causes." In their most common terminology, they are: material, formal, final, and efficient. Aristotle introduced the concept of four causes to explain why things exist. At their most basic they are:

- Material Cause: What something is made of.
- Formal Cause: The form or essence of a thing.
- Efficient Cause: The agent or process that brings something into being.
- Final Cause: The purpose or end for which a thing exists.

For the Greeks, "cause" meant that which is responsible for something. Thus the four causes are four ways of talking about what is responsible for something, or more precisely, four ways of explaining the changes by which something came to be the way it is.

The most developed discussion of the four causes is in Physics 2.3, but before we consider the details, let's first consider what Aristotle says about change in general (Physics 5.1-2; Categories 14; Metaphysics 12.2). Change (*metabolé*) is the genus for three specific types of change: generation, destruction, and motion (*kinésis*). Generation and destruction are change with regard to substance; in them, a thing either comes to be or ceases to be. Motion has four kinds: alteration (quality); increase and decrease (quantity); locomotion (place).

Teleology. Natural change is that in which the principle of change is internal to the changing thing: the natural thing changes as a development to its fulfillment or perfection (*telos*). This is later described as "teleological change"—i.e. how an acorn becomes an oak tree. Teleology designates Aristotle's view that everything in nature has a purpose or end goal. This purpose drives the development and existence of entities in the natural world. Artificial change is that in which the principle of change is outside the changing thing: it is directed by *techné* (= art or skill). Now the important thing to remember about Aristotle's doctrine of the four causes, the four ways of explaining the changes by which something came to be the way it is, is that although he applies them to natural changes, the model of change he uses is drawn from the common Greek way of understanding artificial change.

Hylomorphism. For Aristotle, all physical objects are made up of matter and form. The word comes from the Greek words *hyle* (matter) and *morphē* (form). Aristotle believed that matter and form are distinct causes that make up every object. All material objects in the sublunar realm are

made of a combination of earth, air, fire, and water. Aristotle used hylomorphism to explain the nature of visible objects, their characteristic features, and how they persist through change. In the realm of metaphysics, he also used hylomorphism to explain the human soul, which he believed was the form or structure of the human body.

For Aristotle, the relation of causes in a hylomorphic model is drawn from the architect's experience in directing craft production, NOT from the experience of the hand workers. As we will see, the efficient cause for Aristotle is the idea in the mind of the architect, not the actual impact of chisel on stone, which is how a modern person would understand "cause." The architect dreams up an idea of what the temple is to look like, then commands the masons to realize this idea by imposing its form on the matter of the marble. Now what's fascinating is that the masons (or any other craftworker: carpenter, brickmaker, leatherworker, or even horsetrainer or educator for that matter) don't impose a form on matter, but coax forth potentials inherent in the marble by tracking the grain of the stone, the way minerals were deposited in the geological production of the stone. Briefly, the four causes are:

1. Material cause = "that out of which" = marble, wood, etc. For instance, the wood of the table was naturally formed as a tree, then artificially formed by the succession of workers who worked on it, under the direction of the "architect" who made the blueprint of the table.

2. Formal cause = the "look" (= *eidos*) of the thing as it is meant to be. When realized in matter, this form will be the same as the idea in the mind of the architect.

3. Efficient cause = "that from which" = the mental vision of the architect prior to any actual work.

4. Final cause = "that for the sake of which" (= *telos*), the final, finished product in its complete and perfect state. Only because it is the completed state is this the "goal" of the process in any sense of subjective aim.

Bible: The Creation and the Fall in Genesis 1-3
Text from New American Standard Bible:
https://www.bible.com/bible/100/GEN.1.NASB1995

Genesis, Book 1: The Creation
1In the beginning God created the heavens and the earth. 2And the earth was a formless and desolate emptiness, and darkness was over the surface of the deep, and the Spirit of God was hovering over the surface of the waters. 3Then God said, "Let there be light"; and there was light. 4God saw that the light was good; and God separated the light from the darkness. 5God called the light "day," and the darkness He called "night." And there was evening and there was morning, one day.

6Then God said, "Let there be an expanse in the midst of the waters, and let it separate the waters from the waters." 7God made the expanse, and separated the waters that were below the expanse from the waters that were above the expanse; and it was so. 8God called the expanse "heaven." And there was evening and there was morning, a second day.

9Then God said, "Let the waters below the heavens be gathered into one place, and let the dry land appear"; and it was so. 10And God called the dry land "earth," and the gathering of the waters He called "seas"; and God saw that it was good. 11Then God said, "Let the earth sprout vegetation, plants yielding seed, and fruit trees on the earth bearing fruit according to their kind with seed in them"; and it was so. 12The earth produced vegetation, plants yielding seed according to their kind, and trees bearing fruit with seed in them, according to their kind; and God saw that it was good. 13And there was evening and there was morning, a third day.

14Then God said, "Let there be lights in the expanse of the heavens to separate the day from the night, and they shall serve as signs and for seasons, and for days and years; 15and they shall serve as lights in the expanse of the heavens to give light on the earth"; and it was so. 16God made the two great lights, the greater light to govern the day, and the lesser light to govern the night; He made the stars also. 17God placed them in the expanse of the heavens to give light on the earth, 18and to govern the day and the night, and to separate the light from the darkness; and God saw that it was good. 19And there was evening and there was morning, a fourth day.

20Then God said, "Let the waters teem with swarms of living creatures, and let birds fly above the earth in the open expanse of the heavens." 21And God created the great sea creatures and every living creature that moves, with which the waters swarmed, according to their kind, and every winged bird according to its kind; and God saw that it was good. 22God blessed them, saying, "Be fruitful and multiply, and fill the waters in the seas, and let birds multiply on the earth." 23And there was evening and there was morning, a fifth day.

24Then God said, "Let the earth produce living creatures according to their kind: livestock and crawling things and animals of the earth according to their kind"; and it was so. 25God made the animals of the earth according to their kind, and the livestock according to their kind, and everything that crawls on the ground according to its kind; and God saw that it was good.

26Then God said, “Let Us make mankind in Our image, according to Our likeness; and let them rule over the fish of the sea and over the birds of the sky and over the livestock and over all the earth, and over every crawling thing that crawls on the earth.” 27So God created man in His own image, in the image of God He created him; male and female He created them. 28God blessed them; and God said to them, “Be fruitful and multiply, and fill the earth, and subdue it; and rule over the fish of the sea and over the birds of the sky and over every living thing that moves on the earth.” 29Then God said, “Behold, I have given you every plant yielding seed that is on the surface of all the earth, and every tree which has fruit yielding seed; it shall be food for you; 30and to every animal of the earth and to every bird of the sky and to everything that moves on the earth which has life, I have given every green plant for food”; and it was so. 31And God saw all that He had made, and behold, it was very good. And there was evening and there was morning, the sixth day.

Genesis, Book 2: The Creation of Man and Woman

1Thus the heavens and the earth were completed, and all their hosts. 2By the seventh day God completed His work which He had done, and He rested on the seventh day from all His work which He had done. 3Then God blessed the seventh day and sanctified it, because in it He rested from all His work which God had created and made.

4This is the account of the heavens and the earth when they were created, in the day that the Lord God made earth and heaven. 5Now no shrub of the field was yet in the earth, and no plant of the field had yet sprouted, for the Lord God had not sent rain upon the earth, and there was no man to cultivate the ground. 6But a mist used to rise from the earth and water the whole surface of the ground. 7Then the Lord God formed man of dust from the ground, and breathed into his nostrils the breath of life; and man became a living being. 8The Lord God planted a garden toward the east, in Eden; and there He placed the man whom He had formed. 9Out of the ground the Lord God caused to grow every tree that is pleasing to the sight and good for food; the tree of life also in the midst of the garden, and the tree of the knowledge of good and evil.

10Now a river flowed out of Eden to water the garden; and from there it divided and became four rivers. 11The name of the first is Pishon; it flows around the whole land of Havilah, where there is gold. 12The gold of that land is good; the bdellium and the onyx stone are there. 13The name of the second river is Gihon; it flows around the whole land of Cush. 14The name of the third river is Tigris; it flows east of Assyria. And the fourth river is the Euphrates.

15Then the Lord God took the man and put him into the garden of Eden to cultivate it and keep it. 16The Lord God commanded the man, saying, “From any tree of the garden you may eat freely; 17but from the tree of the knowledge of good and evil you shall not eat, for in the day that you eat from it you will surely die.”
18Then the Lord God said, “It is not good for the man to be alone; I will make him a helper suitable for him.” 19Out of the ground the Lord God formed every beast of the field and every bird of the sky, and brought *them* to the man to see what he would call them; and whatever the man called a living creature, that was its name. 20The man gave names to all the cattle, and to the birds of the sky, and to every beast of the field, but for Adam there was not found a helper suitable for him. 21So the Lord God caused a deep sleep to fall upon the man, and he slept; then

He took one of his ribs and closed up the flesh at that place. 22The Lord God fashioned into a woman the rib which He had taken from the man, and brought her to the man. 23The man said,

"This is now bone of my bones,
And flesh of my flesh;
She shall be called Woman,
Because she was taken out of Man."

24For this reason a man shall leave his father and his mother, and be joined to his wife; and they shall become one flesh. 25And the man and his wife were both naked and were not ashamed.

Genesis, Book 3: The Fall of Man

1Now the serpent was more crafty than any beast of the field which the Lord God had made. And he said to the woman, "Indeed, has God said, 'You shall not eat from any tree of the garden'?" 2The woman said to the serpent, "From the fruit of the trees of the garden we may eat; 3but from the fruit of the tree which is in the middle of the garden, God has said, 'You shall not eat from it or touch it, or you will die.' " 4The serpent said to the woman, "You surely will not die! 5For God knows that in the day you eat from it your eyes will be opened, and you will be like God, knowing good and evil." 6When the woman saw that the tree was good for food, and that it was a delight to the eyes, and that the tree was desirable to make *one* wise, she took from its fruit and ate; and she gave also to her husband with her, and he ate. 7Then the eyes of both of them were opened, and they knew that they were naked; and they sewed fig leaves together and made themselves loin coverings.

8They heard the sound of the Lord God walking in the garden in the cool of the day, and the man and his wife hid themselves from the presence of the Lord God among the trees of the garden. 9Then the Lord God called to the man, and said to him, "Where are you?" 10He said, "I heard the sound of You in the garden, and I was afraid because I was naked; so I hid myself." 11And He said, "Who told you that you were naked? Have you eaten from the tree of which I commanded you not to eat?" 12The man said, "The woman whom You gave *to be* with me, she gave me from the tree, and I ate." 13Then the Lord God said to the woman, "What is this you have done?" And the woman said, "The serpent deceived me, and I ate." 14The Lord God said to the serpent,

"Because you have done this,
Cursed are you more than all cattle,
And more than every beast of the field;
On your belly you will go,
And dust you will eat
All the days of your life;
15And I will put enmity
Between you and the woman,
And between your seed and her seed;
He shall bruise you on the head,
And you shall bruise him on the heel."
16To the woman He said,

"I will greatly multiply
Your pain in childbirth,
In pain you will bring forth children;
Yet your desire will be for your husband,
And he will rule over you."

17Then to Adam He said, "Because you have listened to the voice of your wife, and have eaten from the tree about which I commanded you, saying, 'You shall not eat from it';
Cursed is the ground because of you;
In toil you will eat of it
All the days of your life.
18Both thorns and thistles it shall grow for you;
And you will eat the plants of the field;
19By the sweat of your face
You will eat bread,
Till you return to the ground,
Because from it you were taken;
For you are dust,
And to dust you shall return."

20Now the man called his wife's name Eve, because she was the mother of all *the* living. 21The Lord God made garments of skin for Adam and his wife, and clothed them.

22Then the Lord God said, "Behold, the man has become like one of Us, knowing good and evil; and now, he might stretch out his hand, and take also from the tree of life, and eat, and live forever"— 23therefore the Lord God sent him out from the garden of Eden, to cultivate the ground from which he was taken. 24So He drove the man out; and at the east of the garden of Eden He stationed the cherubim and the flaming sword which turned every direction to guard the way to the tree of life.

Alan of Lille, *The Complaint of Nature* (ca. 1170)

> Alain of Lille [Alanus de lnsulis], d. 1202., *The complaint of nature*, Yale studies in English, v. 36 (1908), Translation of *De planctu natura.* Trans. by Douglas M. Moffat. From Medieval Sourcebook:
> http://www.fordham.edu/halsall/basis/alain-deplanctu.asp
>
> *The Complaint of Nature* is a medieval allegorical work, written in alternating verse and prose, that explains how the goddess Natura created earthly nature according to the diving plan but then how it has been corrupted by humankind's sinful ways. It outlines Nature's relationship to God as well as to humankind. This vision was extremely influential in the Western Middle Ages and influenced many writers including Jean de Meun and Geoffrey Chaucer.

METRE 1. [the Narrator explains why he undertakes his poem]

1. I change laughter to tears, joy to sorrow, applause to lament, mirth to grief, when I behold the decrees of Nature in abeyance; when society is ruined and destroyed by the monster of sensual love; when Venus, fighting against Venus, makes men women; when with s her magic art she unmans men. It is not pretense that travails with sorrow, O adulterer! nor the tears of pretense, nor dissimulation; rather is it grief, and birth itself is given to sorrow. The Muse requests, this very grief commands, Nature implores that, as, I weep, I give them a mournful song.

2. Alas! Whither has the loveliness of Nature, the beauty of character, the standard of chastity, the love of virtue departed? Nature weeps, character passes away, chastity is wholly banished from its former high station, and become an orphan. The sex of active nature trembles shamefully at the way in which it declines into passive nature. Man is made woman, he blackens the honor of his sex, the craft of magic Venus makes him of double gender. He is both predicate and subject, he becomes likewise of two declensions, he pushes the laws of grammar too far.

3. He, though made by Nature's skill, barbarously denies that he is a man. Art does not please him, but rather artifice; even that artificiality cannot be called metaphor; rather it sinks into viciousness. He is too fond of logic, with whom a simple conversion causes the rights of Nature to perish. He strikes on an anvil which emits no sparks. The very hammer deforms its own anvil. The spirit of the womb imprints no seal on matter, but rather the plowshare plows along a sterile beach. Thus the iambic measure goes badly with the dactylic foot of earthly love, in which always the long syllable does not permit a short.

4. Though all the beauty of man humbles itself before the fairness of woman, being always inferior to her glory; though the face of the daughter of Tyndaris [i.e. Helen of Troy] is brought into being and the comeliness of Adonis and Narcissus, conquered, adores her; for all this she is scorned, although she speaks as beauty itself, though her godlike grace affirms her to be a goddess, though for her the thunderbolt would fail in the hand of Jove, and every sinew of Apollo would pause and lie inactive, though for her the free man would become a slave, and Hippolytus, to enjoy her love, would sell his very chastity. Why do so many kisses lie untouched

on maiden lips, and no one wish to gain a profit from them? These once pressed on me would sweeten my lips with flavor, and, honeyed, would offer a honeycomb to the mouth; the spirit would go out in kisses, all given over to the mouth, and play on lips with itself. So that until I should in this way die, my course finished, I, as another self, would in these kisses enjoy a happy life to the utmost.

5. Not only does the adulterous Phrygian [.e. Paris, responsible for the fall of Troy] pursue the daughter of Tyndaris [i.e., Helen], but Paris with Paris devises unspeakable and monstrous acts. Not only does Pyramus seek the kisses of Thisbe through the chink, but no small opening of Venus pleases him. Not only does the son of Peleus [i.e. Achilles] counterfeit the bearing of a maiden, that so to maidens he may prove himself dear, but he wickedly gives away the gift of Nature for a gift, in selling for the love of money his sex.[1] Such deserve anathema in the temple of Genius [i.e. Nature's subdeputy in charge of procreation], for they deny the tithes of Genius and their own duties.

* * *

[Nature arrives to help the dreamer. There follows a long allegorical description of Nature's appearance. On Nature's dress are images of all the created world including plants, animals and mankind. Her dress is torn in the section depicting man, symbolizing that he alone disobeys her rules, misusing his reason to counteract the laws of natural instinct.]

* * *

From Prose 4 [Nature describes her relation to God and the process of earthly creation; appoints Venus as her subdeputy]

6. After the universal Maker had clothed all things with the forms for their natures, and had wedded them in marriage with portions suitable to them individually, then, wishing that by the round of mutual relation of birth and death there should to perishable things be given stability through instability, infinity through impermanence, eternity through transientness, and that a series of things should be continually woven together in unbroken reciprocation of birth, He decreed that similar things, stamped with the seal of clear confirmity, be brought from their like along the lawful path of sure descent.

7. Me, then, He appointed a sort of deputy, a coiner for stamping the orders of things, for the purpose that I should form their figures on the proper anvils, and should not let the shape vary from the shape of the anvil, and that through my activity and skill the face of the copy should not be changed by additions of any other elements from the face of the original. Accordingly, obeying the command of the Ruler, in my work I stamp, so to speak, the various coins of things in the image of the original, exemplifying the figure of the example, harmoniously forming like from like, and have produced the distinctive appearances of

[1] Paris's abduction of Helen started the Trojan War. Pyramis and Thisbe were star-crossed lovers, like Romeo and Juliet, who died for the love of one another. Trying to avoid having her son sent to war in Troy, Achilles' mother dressed him as a girl and sent him among the women. There he had an affair and impregnated one of them. He was ultimately discovered there by Ulysses.

individual things. Yet beneath the mysterious, divine majesty, I have so performed this work and service that the right hand of spiritual power should direct my hand in its application, since the pen of my composition would stray in sudden error, should it not be guided by the supreme Supporter. Without the help, however, of an assisting worker, I could not perfect so many classes of things. Therefore, since it pleased me to sojourn in the grateful palace of the eternal region, where no blast of wind destroys the peace of pure serenity, where no dropping night of clouds buries the untired day of open heaven, where no violence of tempest rages, where no rioter's madness impends in thunder, in the outskirt world I stationed Venus who is skilled in the knowledge of making, as under-deputy of my work, in order that she, under my judgment and guidance, and with the assisting activity of her husband Hymen [i.e. Marriage] and her son Cupid, by laboring at the various formation of the living things of earth, and regularly applying their productive hammers to their anvils, might weave together the line of the human race in unwearied continuation, to the end that it should not suffer violent sundering at the hands of the Fates.

* * *

From Metre 5 [the definition of Love]

8. Love is peace joined with hatred, faith with fraud, hope with fear, and fury mixed with reason, pleasant shipwreck, light heaviness, welcome Charybdis, healthy sickness, satisfied hunger, famished satiety, drunken thirst, deceptive delight, glad sorrow, joy full of pains, sweet evil, evil sweetness, pleasure bitter to itself, whose scent is savory, whose savor is tasteless, grateful tempest, clear night, shadowy day, living death, dying life, agreeable misfortune, sinful forgiveness, pardonable sin, laughable punishment, holy iniquity, nay, even delightful crime, unstable play, fixed delusion, weak vigor, changeable firmness, mover of things established, undiscerning reason, mad prudence, sad prosperity, tearful laughter, sick repose, soothing hell, sorrowful paradise, pleasant prison, vernal winter, wintry spring, calamity, bold moth of the mind, which the purple of the king feels, and which does not pass by the toga of a beggar. Does not Cupid, working many miracles by changing things into their opposites, transform the whole race of men?

* * *

From Prose 5 [Nature continues her narration of her charge to Venus]

9. I appointed Venus to build up a progeny from the living creatures of earth, that in her work of producing things she might shape in the rough various materials, and lay them before me. But I, in the manifold formation of their natures, was to add the execution of the final and polishing hand. And in order that faithful tools might exclude the confusion of poor work, I have assigned to her two lawful hammers, by which she may bring the stratagems of the Fates to naught, and present to view the multiform subjects of existence. Also I appointed for her work anvils, noble instruments, with a command that she should apply these same hammers to them, and faithfully give herself up to the forming of things, not permitting the hammers to leave their proper work, and become strangers to the anvils. For the office of writing I provided her with an especially potent reed-pen, in order that, on suitable leaves desiring the writing of this pen (in the

benefit of my gift of which leaves she had been made a sharer), she might, according to the rule of my orthography, trace the natures of things, and might not suffer the pen to stray in the least measure possible from the path of proper description into the by-track of false writing. But since for the production of progeny the rule of marital coition, with its lawful embraces was to connect things unlike in their opposition of sexes, I, to the end that in her connections she should observe the orthodox constructions of grammatical art, and that the nobility of her work should not mar its glory by ignorance of any branch of knowledge, taught her, as a pupil worthy to be taught, by friendly precepts under my guiding discipline, what rules of the grammatical art she should admit in her skillful connections and constructions, and what she should exclude as irregular and not redeemed b any justifying figure. For although natural reason recognizes, as grammar corroborates, two genders specially, namely masculine and feminine-albeit some men, deprived of the sign of sex, can be thought of in my opinion by the designation of neuter-yet I enjoined Cypris [i.e. Venus], with the most friendly admonitions, and under the most powerful thunder of threats, to solemnize in her connections as reason demands, only the natural union of the masculine with the feminine gender. For, since according to the demand of nuptial custom the masculine gender takes to itself its feminine gender, if the joining of these genders should be celebrated irregularly, so that members of the same sex should be connected with each other, that construction would not earn pardon from me, either by the help of evocation or by the aid of conception. For if the masculine gender by some violent and reasonless reasoning should demand a like gender, the relation of that connection could not justify its vice by any beauty of figure, but would be disgraced as an inexcusable and monstrous solecism.

* * *

[Nature next tells how Venus abandoned the pattern set for her and thus introduced illicit desire into the world. Nature calls The goddess then calls on Genius to excommunicate any who would trespass against the norms of married love.]

Jean de Meun, *The Romance of the Rose* (ca. 1270)

(Translated from the French; Nature's role in continuing the species, ll. 16553-16850)

Nature, that doth all things compose
Which the wide heavens do enclose,
Made entry to her forge where she
Attends, individually,
To the forming of those pieces
Which serve to prolong the species.
Those pieces give the species life,
Such that Death, with victims rife,
Cannot slay all, for all her speed;
Though Nature is run close indeed,
For though Death who wields a mace,
Strikes individuals in place,
Those whose time it seems is due,
(Some things are corruptible too,
And they possess no fear of Death,
And yet may perish in a breath,
Consume themselves, or decay
And nourish others on the way)
Yet when Death thinks to work their fall
Entire, Death cannot grasp them all,
For, as one is seized, another
Yet escapes.
. . .
Then Nature, all compassionate,
Seeing envious Death, and Fate,
In company with corruption,
Seeking to work the destruction
Of those creatures she has made,
Hammers at her forge, dismayed,
And ever seeks there to refashion
Others, through fresh generation.
When she finds no other counsel,
She makes copies of such metal
That she gives them all true birth,
In coins, though, of differing worth.
From these Art takes her models too,
Though her forms prove not so true;
Yet she doth kneel before Nature,
And, seeking aid like a beggar,
Through close care and attention
Yet no force or skill to mention,
Strives to follow her, so Nature
May indulge her thus, and teach her
How, with her scant ability,
She might find, eventually,
Some way to enfold all creatures
Within her letters and her figures.
She observes Nature's workings,
Desiring to create such things,
And like a monkey imitates her;
But her sense is so much weaker,
She cannot make a living thing,
Whatever freshness she may bring
To the task, since, for all her pains,
All the knowledge that she gains,
When she makes anything whatever,
Regardless of its form or figure,
Paints and dyes, and forges and shapes,
Knights in armour, perchance, or apes
Their fine warhorses covered o'er
With arms in green, blue, yellow, or
Other colours, variegated,
That show them brightly decorated;
Some pretty bird among green leaves,
The fish that through the water weaves,
With each of the savage creatures,
Feeding among wooded features,
And all the herbs, and all the flowers,
That girls and boy collect for hours,
In the spring, beneath the trees,
Finding they bloom as if to please;
Or tame birds and domestic beasts,
Or dances, farandoles and feasts,
Whose well-dressed ladies, elegant
Art would portray, and represent,
In wood perchance, wax or metal,
Or some fine, rare material,
In picture form, or on some wall,
Holding hands at some fair ball,
With fine young men; despite her skill,
Art never has, and never will,
Make them live and, living, walk,
Love, and feel, and hear and talk.
. . .

Though to describe [Nature] I'd consent,
My wit and sense are insufficient.
My wit and sense? What can I say?
No human wit could her [i.e. Nature] portray,
Neither in speech nor writing, no,
Not Aristotle, nor Plato,
Nor Euclid, nor wise Ptolemy,
No, not even al-Khwarizmi,
Though their works brought them fame;
Their skill would all have proved in vain,
If they'd dared undertake the task;
They'd still have failed at the last,
Nor could Pygmalion shape her,
In vain Parrhasius would labour,
Indeed Apelles, whom I deem
A mighty artist, could not dream
Such beauty as hers is, ever,
Though he were to live forever.
Not Myron, nor Polycletus,
Could e'er reveal Nature to us.