

## CHAPTER 9

### THE KINDS OF MOTION & THEIR CONTRARIETY

#### *Per se & per accidens motion* (Book 5, Lesson 1)

On the side of the **mobile**, *per accidens* motion is that ascribed to something wider than the proper subject of the motion. For example, (1) “A musician is walking”: The person is the proper subject, who happens to be a musician (an accidental). Or (2) “I have been healed”, when my injured finger (a part) is healed. (3) *Per se* motion is that ascribed to a subject properly and as a whole.

On the side of the **mover**, the same distinctions can be made, such as: (1) “The musician is building” (accidental); (2) “I am pounding” (because of a part); (3) “The healer heals” *per se*.

As for the **terminals** of motion, we must first remark that for motion five things are required: (1) a mover or efficient cause, (2) the mobile or subject of the motion, (3) a time in which the motion occurs, (4) a starting point/ terminal of the motion, and (5) the end point/ terminal of the motion, since every motion is from something into something.

Whatever is being moved *per se*, i.e. the mobile, is distinct from both terminals of motion: e.g. the food (not the cold) is being heated; while in motion it is neither cold nor hot, but somewhere in between, tending towards heat. But *per accidens* the cold (the privative starting point) becomes hot.

The **final terminal** (*terminus ad quem*) **specifies a motion**; thus any change is named after its destination; e.g. heating is an alteration terminating in heat.

#### **The species of *per se* change** (Book 5, Lesson 2)

With regard to the starting and ending terminals of change, any change is from a non-subject to a subject, or from a subject to a non-subject, or from a subject to subject. Change from a non-subject to a subject takes place between contradictories and is called *generation*. The subject of this change is not an actual being, but a merely potential one, namely, prime matter; so in the case of a substance being generated, it is said that something comes to be in an unqualified sense. The term “generation” applies in a wide sense to change between accidental contradictories, such as from non-white to white, where the subject remains the same.

Change from subject to non-subject is also between contradictory terminals and is called *corruption*. Similarly in only a broad sense does “corruption” apply to change between accidental contradictories, such as from white to non-white.

Generation is not motion, because what does not exist cannot be moved, and if it exists it is already generated. Of the types of non-being, a logical negation in a judgement of the mind indicates the falsity of a statement, and is not subject to motion.

In another way non-being does not exclude unqualified actual existence, but only actually being such-and-such, for example when non-white is called non-being and non-good. Such non-being is subject to motion *per accidens*, in as much as it is attached to an actually existing thing subject to motion, as when a man is said to be non-white.

Thirdly, what is in potency is called non-being in so far as being in potency is the opposite of unqualified being in act; in this sense no motion is possible. Although something comes to be *per accidens* from non-being and *per se* from a being in potency, yet it is true to say of what is absolutely coming to be that, strictly speaking, it is non-being and is in no place. Such a thing cannot be moved; hence generation is neither motion nor rest.

For the same reason corruption is not motion. Both generation and corruption are instantaneous, whereas motion is continuous.

Change from subject to subject, however, is motion. By two subjects is meant two affirmative contraries or intermediates (e.g. white, grey, black).

### **Categories that do not admit of motion** (Book 5, Lesson 3)

Since motion is defined by its final terminal, and these terminals are distinguished according to the genera of the predicaments or categories, the kinds of motion must fall within these ten categories. Only three of them admit of motion: **quantity, quality and location**. Because it is an imperfect act, motion does not belong by full right to these categories, but it is placed in them by reduction.

There is no motion in the category of **substance**, because motion is between contraries, but nothing is contrary to substance; there is only the contradictory “non-substance” (or “man” and “non-man”). If substances are contrary to one another (like fire and water), that is not as substance, but with respect to active and passive qualities. Even though the definitions of substances include specific differences which are based on a contrariety of excellence and defect, the resultant species are discrete, like different numbers, and there is no continuity between them so as to allow for motion or gradual passage of an individual of from one species into another.

Nor is there motion in the category of **when**, which expresses existence in time, which is the measure of motion. **Position** is the order of parts, which is a relation resulting from their motion. **Habit** also is a relationship between a body and what is adjacent to it.

There is no motion in **relation**, because a relationship can change without any movement in the subject, as when someone grows to be equal with you in height. Also there are some relations which are not real but only of the mind in one or both terms. For instance, the sameness of a thing to itself is a relation of reason only, while “to be known” is a real relation in the knowing human intellect, but not in the thing known.

The relationship of motion to the agent and the mobile is called **action** and **passion**. Although used often to include motion, there is no motion in these two as distinct categories.

### **Categories which do admit of motion** (Book 5, Lesson 4)

Only in **sensible qualities, quantity and location** is there to be found continuity and contrary extremes of possible motion. The contrary extremes of sensible qualities are evident. In the case of quantity, there is a minimum quantity at which the motion of growing begins, and a maximum at which it is terminated. Likewise in place there are two terms which are most distant in respect to any particular motion.

Motion according to sensible qualities is called **alteration**; motion according to quantity is called **growth** or **decrease**, while motion with regard to location in place is called **locomotion**, or simply motion.

In order for there to be alteration, it makes no difference whether the change is unqualifiedly from contrary to contrary, or from more to less or less to more. In the former case the terminals of the alteration are two actual contraries, like white and black, whereas in the latter case the subject has a greater or lesser degree one or another of the contraries.

The term **immobile** has various meanings: (1) what is absolutely incapable of being moved, as God, (2) what is moved with difficulty, either because it is difficult to start moving (like a big rock) or once it gets going it moves slowly (like a lame person), (3) what is capable of being easily moved, but is not in motion; this is called **rest**, which is the privation of motion in what is capable of motion.

### **Alteration is not found in other species of quality** (Book 7, Lesson 7)

In Book 7 Aristotle branches into a discussion that is better been raised in discussing the species of motion. He had shown that alteration is possible with sensible qualities (the third species of quality). Here he shows that the fourth species of quality (form and figure) and the first (habit and disposition) are not matter for alteration. Although these qualities can be newly acquired, they are not acquired directly, but subsequent to alterations of the primary (sensible) qualities. Thus a different shape arises from compression (density) or local motion of parts, and a change in health (a disposition) results from temperature change or corruption of cells by sensible alteration.

It can also be said that there is no alteration in the second species of quality (natural potency and impotency), because these are not received or lost without a change in the nature, which takes place through alteration.

An indication that there is no alteration in form and figure (or shape) is that the shape of a thing is the closest accident to the substance and the most representative of it, since we distinguish things by their shapes. Therefore, just as we do not say “Man is earth” but “Man is **of** earth”, so we do not say “This triangle is wood”, but “This triangle is wooden”. Thus the shape is a perfection like the form of a thing, which is a part, not the whole, and cannot be predicated of the whole. On the contrary, sensible qualities can be convertibly predicated of the whole, e.g. “This wood is wet” and “This wet thing is wood”.

The reason that there is no alteration in bodily habits and dispositions is that these consist of harmony or due proportion of the composing elements of the body. This is true of health, beauty and agility. All such harmonies are of their very nature relations, and in relation there is no motion or generation or alteration, but relations begin to exist as a consequence of certain motions or changes.

#### **Alteration is not found in habits of the soul** (Book 7, Lesson 6)

After showing that alteration does not occur in the first species of quality in respect of dispositions of the body, the Philosopher shows the same about the habits of the soul. First he says that there is no primary and *per se* alteration in changes that affect virtues and vices in the sensitive part of the soul. That is because virtue is a perfection and a form, like shape, discussed above. Nevertheless they come about as a result of alteration of the sense appetite, which requires moderation in what it delights or is sad about.

Similarly alteration is not found in the intellectual part of the soul. That is because knowledge is a relationship, since truth is the correspondence of the mind to reality; and there is no motion in relationship. Nevertheless knowledge comes about as a result of alteration, in two ways: First, our knowledge comes through the senses; thus the senses must be altered for an image to be presented to the intellect. Secondly, unregulated passions can be an obstacle to knowledge; thus their regulation, which involves alteration, is a *per accidens* requirement for knowledge.

#### **The definitions of *in contact*, *consecutive*, *continuous*** (Book 5, Lesson 5)

After dividing change and motion into its species, the Philosopher now begins to discuss the senses in which motion is said to be one and the senses in which motions are said to be contrary. Therefore he now establishes some preliminary notions that need to be understood.

1. Things are **together** which are in one first place, as opposed to a common place, such as “in Africa”. Things which are not in the same first place are said to be **separate** or **apart**. Things are **in contact** whose terminals are together. The terminals of bodies are surfaces, those of surfaces are lines, and those of lines points. So things which touch at one or more points are in contact.
2. The **between** is what a changing thing arrives at before it reaches the ultimate terminus of the motion. There can be a number of **betweens** to be traversed from one extreme to another, but there must at least be two extremes and something between. For motion between two extremes to be one

and continuous, there must be no interruption in time, because even the slightest interruption of the motion in time prevents the motion from being continuous. There is something between contraries, but not between contradictories.

Nevertheless on the side of the magnitude over which the motion passes there can be variations that do not break the continuity of the motion: e.g. bumps and go-slow; so long as there is no complete stop, the motion is continuous.

3. For something to be **consecutive** it must come after the first and be in a certain order: either according to position, as things that are in order in place, or according to species, as 2 comes after 1, or in order of virtue, dignity, knowledge etc. For something to be consecutive it is also required that there be nothing intervening between it and what it is consecutive to, as for one number to be consecutive to another or one house to another. But something of another genus may intervene, e.g. an animal between two houses.

The **contiguous** is a species of the consecutive. Something consecutive is also contiguous when it is in contact, with nothing at all between of the same or any other genus. When the end points of two segments are one they are continuous; when they are two actual points, the segments are contiguous.

Thus consecutiveness is the broadest term; contiguity is narrower and presupposes consecutiveness; continuity is still narrower and presupposes contiguity. Another observation is that points differ from units in that points are present in things that can have mutual contact, but units can only be consecutive; thus there is nothing intermediate between 2 and 1.

#### **Generic, specific and numeric unity of motion** (Book 5, Lesson 6)

Motions are said to be **generically** one which are assigned to one and the same category. Thus every local motion is one generic motion, because each is in the category of **where**, and differs generically from alteration, which is in the category of **quality**.

Motions are **specifically** one which take place in a species incapable of subdivision. For some species can be sub-divided into other species: Colour, which is itself a species of quality, has sub-species making different species of motion, such as whitening and blackening; but all cases of whitening are specifically the same.

Some motions may be one on the level of intermediate species, but different in sub-species. Thus knowledge is a species of quality, and so all learning, which is a movement towards knowledge, is in this way one, but learning grammar is absolutely different in species from learning geometry.

If the goals of a movement are identical and the paths specifically the same (i.e. in a straight or determined curved line), then the motions are specifically the same; and much more so if the goals and the path are numerically the same, repeated motions will be specifically the same.

A motion is **numerically** one and the same if (1) the mobile subject is numerically the same, (2) if it is in a single species of motion, and (3) if the time in which the motion takes place is continuous without any break. To recover twice from the same disease is to recover numerically the same health, since the original health was never totally destroyed, but the recoveries are numerically different because they are not continuous, but in separate times.

#### **More on numerical unity of motion** (Book 5, Lesson 7)

Motion is numerically one not the way an indivisible is one, but the way in which a continuum is one. For motion to be continuous it must have extremities of the same species; thus one cannot move from whiteness to knowledge. Nevertheless, separate motions of different species or genera can be going on in the same subject at the same or time or consecutively.

If the same subject is moved according to the same species in one continuous time, the motion is numerically one, but it is more perfectly one if it is regular or uniform, both as to speed and as to path, i.e. uniformly straight or circular; a motion is regular if any part of the motion (a segment of straight or curved line) taken randomly should fit over any other part.

### **Contrariety of motions** (Book 5, Lesson 8)

There are five possible ways in which contrariety of motions might be considered:

1. By approaching or departing from the same terminus: e.g. a motion to health or from health.
2. By a contrariety of the terminals from which the motion begins: e.g. a motion from health and a motion from sickness.
3. By a contrariety of the ends at which they terminate: e.g. a motion to health and a motion to sickness.
4. By contrariety of the start of one and the end of the other: e.g. one from health and one to sickness.
5. By contrariety on the part of both terminals of each motion: e.g. a motion from health to sickness and a motion from sickness to health.

Of these, motions of the fourth type are not contrary, since a motion from health is the same as a motion to sickness.

Likewise motions of the second type are not contrary, because motions to the same goal are not contrary, regardless the starting point; thus two motions that start from contraries could terminate at the same intermediate point. Also, contrariety of goals is a greater cause of contrariety of motions than contrariety of starting points, since the goal specifies a motion.

The third and the fifth ways are basically the same, and only these are truly contrary. Contrariety is based on the specific nature of motion, which is from one positive contrary to another. Therefore contrary motions are those which have contrary terminals; for example, one from health to sickness is contrary to one from sickness to health; the same for an upward and a downward motion, or a motion to the right and one to the left.

If contrariety is taken as merely approaching or departing from the same goal (the first possibility above) there can be contrary **change** which is not motion; e.g. generation and corruption are contrary because they are changes to being and non-being respectively.

As for goals that are intermediate between contraries, the intermediate can serve as a contrary, no matter in which direction the change may be. For example, grey in a motion from grey to white takes the place of black as a starting point, but in a motion from white to grey it takes the place of black as a goal. For the middle is in a sense opposed to either of the extremes.

### **Contrariety between rest and motion** (Book 5, Lesson 9)

Since not only motion can be contrary to motion, but also rest can be contrary to motion, we have to see how the latter is possible. Strictly speaking, only motion is perfectly contrary to motion. But, since rest is a privation of motion, it is somehow a contrary to motion.

Not any state of rest is indiscriminately opposed to just any state of motion, but a definite type of rest to a definite type of motion. For example, rest in place is opposed to motion in regard to place. But we must ask whether that rest which is whiteness is opposed to whitening or to blackening.

Since motion is between two positive terminals, the motion from whiteness to blackness is rest in whiteness, while the contrary of a motion from black to white is rest in black. That is because rest in the goal of motion is the consummation and perfection of that motion; since motion is the cause of that rest it cannot be its opposite.

Two states of rest can also be contrary. These are those which correspond to contrary motions: e.g. rest in health is opposite to rest in sickness.

In the case of changes that do not involve contrary terminals, such as generation and corruption, opposition is based on approach and departure from the same terminal. Neither of these changes is motion and therefore neither have an opposing state of rest. Rather the opposite of such change is non-change; that is, non-change in a non-being (= potential being) is opposed to change towards being, while non-change in a being is opposed to change towards non-being (potential being); this opposition corresponds to that between contrary motions. The opposition corresponding to that between rest and rest is non-change towards being (in a potential being) as opposed to non-change toward non-being in an actual being.

### **Opposition between natural and unnatural motion (Book 5, Lesson 10)**

How are motions according to nature or contrary to nature, and how does this difference set up a contrariety of motions? Motion according to gravity is natural, coming from an intrinsic principle, while that contrary to it is violent, because it comes from an extrinsic principle. The same can be said for growth to maturity and qualitative change, such as motion to health (although the generic nature of contrary elements in an organism are intrinsic principles of corruption).

Thus motions have a contrariety not only because they have opposite starting and ending points, such as up and down, but also a contrariety on the basis of where they tend to go by natural principles; thus gravity brings bodies down. The same multiple opposition can be said to exist between motion and rest and between rest and rest. Thus for a heavy body to rest on the ground is contrary to its being lifted up in the air, and is also contrary to its being suspended in the air. Similarly, avarice is opposed to prodigality on the basis of contrariety of habit, since the avaricious person gives nothing while the prodigal person gives everything. The two, however are both opposed to generosity as vice to virtue, since avariciousness and prodigality are contrary to nature, while the virtue of generosity is according to nature.