# THE FUNCTIONAL GROUND OF THE ORGANIZATION OF THE LIVING BODY IN ARISTOTLE

GİZEM ATALAY

BOĞAZİÇİ UNIVERSITY

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# THE FUNCTIONAL GROUND OF THE ORGANIZATION OF THE LIVING BODY IN ARISTOTLE

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Gizem Atalay

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Thesis Abstract

Gizem Atalay, “The Functional Ground of the Organization of the Living Body in Aristotle”

The living body is a complex structure consisting of multiple parts, and its structural arrangement shows variations from one species of living beings to another. Yet, despite the differences in their structures, the parts of living beings in general are capable of performing activities which are useful for the maintenance of the life of the possessor. Furthermore, the structural differences of the parts are quite in line with the varying demands of the varying modes of life. In other words, given that different species have different life practices, each species is somehow endowed with exactly those parts which are useful particularly for its own mode of life. According to Aristotle, this fitting and beneficial character of the parts, far from being a lucky outcome, constitutes the ground of the coming to be of the parts. The parts of the living body and the body as a whole are instruments whose coming to be is conditioned by the services they make which constitute their function. This thesis aims to show why and how Aristotle grounds the coming to be of the parts and the specific structures they have on a functional basis.

Tez Özeti

Gizem Atalay, ‘Aristoteles’te Canlı Vücudunun Organizasyonunun İşlevsel Zemini’

Canlı vücudu birçok farklı parçadan mürekkep bir bütündür. Bu bütünün yapısı bir canlı türünden ötekine farklılıklar göstermektedir. Her canlı aynı vücut parçalarına sahip değildir; fakat, yapısal farklılıklarına rağmen, vücut parçalarının genel özelliği, canlının hayatını sürdürmesine yardımcı faaliyetlerde bulunabilmeleridir. Ayrıca, parçalar yapısal farklılıklar gösterse de, farklılıklar, canlıların farklılık gösteren hayat tarzlarıyla mutabakat halindedir. Hayat tarzı ile kastedilmek istenen her bir türün kendine özgü yaşam pratiklerine sahip olmasıdır. Dolayısıyla, mesele, her bir türün, her nasılsa, isabetli bir şekilde, hususi olarak kendi yaşam tarzına faydalı olabilecek yapısal donanıma sahip olmasıdır. Aristoteles’e göre, parçaların uyumlu ve faydalı karakteri, şans eseri ortaya çıkan tatlı bir netice olmaktan çok uzaktır. Tam tersine, bu özellikler parçaların varlık zeminini teşkil eder. Parçalar, hatta ve hatta bütün vücut, sundukları hizmetler tarafından koşullanmış organlardır. Bu hizmetler onların işlevlerdir. Bu tezin amacı, Aristoteles'in, parçaların var-ola-gelmelerini ve muayyen yapısal özelliklerini onların işlevlerine niçin ve nasıl dayandırdığını göstermektir.

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CONTENTS

# CHAPTER 1: INTRODUCTION

The main objective of this thesis is to exhibit how Aristotle grounds the beneficial and fitting characteristics of the bodily arrangement of living beings. As Aristotle puts it, living beings are individuals of complex structures. They possess multiple parts, each of which seemingly is capable of performing an activity which is useful for the maintanence of the life of the possessor. The structural arrangement these parts have is quite convenient for the activities they perform, as if they were generated in this way particularly for the sake of performing these activities; e.g., the front teeth are sharp, thus quite functional for tearing, while the molars are broad, thus useful for grinding down the food. Furthermore, the bodily arrangement of living beings shows considerable differences from one species to another. Yet, as Aristotle puts it, these variations are quite serviceable in fulfilling the varying necessities of living beings. That is, living beings have specific modes of life, e. g. some live in the air, some others on the land; and each mode of life has its own demands such that not every part is useful for every mode of life. What invites Aristotle for thinking is the phenomenon that somehow each living being is equipped specifically with what its specific mode of life requires, that is, the bodily arrangements of living beings are in conformity with the demands of their modes of life. Birds which fly at great heights are endowed with keen eyes, which is useful for detecting their prey at great distances; testeceans which have limited possibility of locomotion are endowed with hard shells, which serve well at protection; fishes have fins as locomotive parts, which allow them to move in the water, while birds are

endowed with wings, which are useful for locomotion in the air, and so on. This seeming match between the structure of the parts of individuals and the specific activities demanded by their specific styles of life makes Aristotle wonder if the parts come to be the way they are in the first place for the sake of the performance of these activities, that is to ask, given that the parts of living beings are outcomes of natural becoming, whether natural becoming is an end-oriented process which is directed by the final cause.

This thesis aims to show that, according to Aristotle, the parts of living beings, for the most part, are instruments which come to be the way they are for the sake of their functions, which means that their being fitting and useful is not an unexpected lucky outcome. Rather it constitutes the very ground of their existence, the 'that for the sake of which' they come to be. The emergence of Aristotle's argument for the final cause as a principle of natural becoming is preceded by a detailed investigation into the conditions of natural becoming. Thus the first chapter of this thesis, departing from Aristotle's definition of nature, will consist in the depiction of that background. I will present what the conditions of natural becoming are, why there is a need for the introduction of the final cause into nature, and what the implications of the final cause for natural bodies are. *Physics*, particularly first two books, will be the main resource upon which I will draw in this chapter.

Having laid out the principles of natural becoming and the place of the final cause within that schema, in the second chapter I will particularly focus on the identification of the final cause of living beings. Differently from the first chapter, in which the conditions of the becoming of natural things is investigated, this chapter will take as its object the "being" of living things. Accordingly, *On the Soul* will be

the reference text of this chapter, in which Aristotle examines the ground of the actuality of living beings.

In the third and final chapter, I will provide some examples of explanations taken from *On the Parts of Animals,* mainly focusing on how Aristotle regards 'mode of life' as a certain determinant of the arrangement of the living body. *On the Parts of Animals* is said to be an arena of explanation where Aristotle applies the theoretical schema, which he has built in *Physics* and *De Anima,* to explain the parts of animals, which implies that besides the theoretical schema provided in *Physics* and *On the Soul,* a comprehensive analysis of *On the Parts of Animals* requires substantial work as regards Aristotle's account of explanation, which is outside the scope of this thesis. Thus this chapter will not aim to provide a detailed analysis of *On the Parts of Animals,* rather it intends to make the theoretical schema provided in the first two chapters more understandable with the help of the concrete examples.

# CHAPTER 2: THE CONDITIONS OF NATURAL BECOMING

## The Four Causes

The central concern of *Physics* is to make sense of the phenomenon of ongoing motion in the universe. Things of the sublunar world are constantly subject to motion (becoming in the widest sense) in many ways whether it be generation, destruction, growth, decay, locomotion, alteration or some other motion. To figure out what the conditions of this ongoing motion are is the pivotal question of Aristotle's philosophy of nature. Besides, what makes the case more compelling for Aristotle is the regular and beautiful character of the outcomes of this motion. One of the most striking effects of this motion is the constant generation of highly complex living unities having multiple beneficial parts each of which, without interfering one another, is capable of performing a particular beneficial activity, as if they were operating in collaboration for the benefit of the individual. Moreover, despite the fact that these complex unities are perishable, there is a stability in species such that living individuals have a tendency for reproducing offspring of their own kinds. All these phenomena, the complexity in structure, the beneficial character of the parts of the structure and more importantly the recurrent generation of complex structures, constitute the basic source of Aristotle's motivation for studying nature. Thus, the task of the philosopher of nature is to reveal the conditions of these facts, digging out the principal causes lying behind the constant outcropping of beauty in the midst of

ongoing motion.[1] The whole spirit of *Physics* can be said to be consisting in the execution of this ground plan.

Things of the sublunar world are subject to constant becoming, which is the very first premise of Aristotle. However, while things whose becoming depends on the existence of an external source of motion are not capable of becoming in virtue of themselves, some others do possess internally “the source of their own production” and an “innate impulse to become” (192b15-30). This inner principle of motion, involving the impulse to be at rest too, is what Aristotle calls nature. Things that possess this principle in virtue of themselves are called natural things, among which are included simple bodies (fire, earth, water, air), plants, animals and the parts of animals (192b10-30). Because these beings are the very subjects in which this principle inheres, each of them is recognized as a substance (192b34-35) and accepted to be the genuine object of study of nature. Being the genuine bearers of the principle of motion, an exploration into the conditions of the becoming of these beings is expected to provide an insight as regards the principal causes operative in nature.

Then, the primary question to be explored is in what the nature of these beings consists; in other words, what the conditions of the becoming of these beings are.

[1] Natural things are bearers of beauty in virtue of the principal causes that effect their existence. They are the subjects through which the principal causes manifest themselves, thus they are worthy of investigation. Accordingly writes Aristotle in *On the Parts of Animals*: 'Every realm of nature is marvellous: and as Heraclitus, when the strangers who came to visit him found him warming himself at the furnace in the kitchen and hesitated to go in, is reported to have bidden them not to be afraid to enter, as even in that kitchen divinities were present, so we should venture on the study of every kind of animal without distaste; for each and all will reveal to us something natural and something beautiful. Absence of haphazard and conduciveness of everything to an end are to be found in Nature's works in the highest degree, and the resultant end of her generations and combinations is a form of the beautiful' (645a15-26).

To begin with, according to Aristotle, the first thing noteworthy about the phenomenon of becoming is that it always obtains between contraries, either between contradicting ends or between contrary intermediate states, e. g., white comes to be from not-white, musical comes to be from not-musical, tuned comes to be from untuned, shape comes to be from shapelessness and so on. This is the first acknowledgment as regards the conditions of becoming: 'Everything...that comes to be by a a natural process is either a contrary or a product of contraries.'(188a30-188b25). The qualities like untuned and not-white, which do not have positive existence, are identified with privation in respect of their positive counterparts which come into existence subsequently to a becoming process.

However, thinks Aristotle, these contraries in their own right cannot act on each other. They need a substratum, a subject, upon which they can act. That is, that which is subject to becoming cannot be a non-existing quality alone, a privation per se. Privation per se would equal unqualified not-being; therefore, a possible acknowledgment of privation per se, without any qualification, as a condition of becoming would jeopardize the reality of becoming, rendering becoming vulnerable to the charge of having an involvement with unqualified not-being (191b12-17). However, considered as that of which an already existing subject is deprived, the status of privation is vindicated, thinks Aristotle:

> There is, on the one hand, (a) something which comes into existence, and again (b) something which becomes that—the latter (b) in two senses, either the subject or the opposite. By the opposite I mean the 'unmusical', by the subject 'man', and similarly I call the absence of shape or form or order the 'opposite', and the bronze or stone or gold the 'subject' (190b10-16).

As the quote proposes, when a house has been built from bricks, that which did not exist before the process but has come into existence after is the shape of the house. That which has become (that which has been subject to becoming), on the other hand, can be stated in two ways: one can say either the bricks have become, that is to say bricks have come to be a house, or the shapelessness has become, that is, the absence of shape has come to be a shape. However, the latter is the subject of becoming insofar as it is considered as the privation *of* a substrate (in this case, of bricks) which is the genuine subject of becoming that persists during the process of becoming.

The positive contrary which comes into existence is identified with form. Because the opposite contrary stands for privation, it is degraded to an incidental status. The substratum, on the other hand, the 'this' which persists in the process not in form but in number is identified with the underlying nature (190b23-27). Thus becoming is recognized as a process through which a persisting material substratum, the subject, gains a new form of which it was deprived previously. As a result, the persisting subject and the positive form are acknowledged to be the two conditions of becoming:

> Plainly then, if there are conditions and principles which constitute natural objects and from which they primarily are or have come to be—have come to be, I mean, what each is said to be in its essential nature, not what each is in respect of a concomitant attribute—plainly, I say, everything comes to be from both subject and form (190b16-20).

Because the concept of underlying nature abstracted from form is rather vague, Aristotle suggests that what kind of thing this persisting underlying nature is can be captured by analogy. The underlying nature is what 'the bronze is to the statue, the

wood to the bed, or the matter and the formless before receiving form to anything which has form, so is the underlying nature to substance, i.e. the 'this' or existent' (191a8-12), meaning that underlying nature is 'that from which' the statue or the bed comes. What this analogy points out is that something is reckoned as matter always in relation to a substance, which is a composite of form and matter. Accordingly, while in its relation to clay brick is not reckoned as matter because brick is rather the substance and clay is the substratum from which brick comes, in a different context, e. g. in respect of house, brick is counted as the matter from which the substance house comes. Thus, brick is not a matter per se, it just serves as matter in some contexts. And this is the case for all kind of material stuff. They are matter insofar as they serve as the material means for the constitution of a substance. Apart from that, there is no such thing as absolute matter (for the purposes of this thesis, whenever I call something matter this should be remembered).

Introducing 'substratum' as a principal condition of becoming, as 'that from which' comes that which becomes, Aristotle believes that he has shown that becoming is not from absolute not-being. Rather it is from being which is deprived in one aspect or more but not completely. If 'that from which' had been completely in privation, it would have been rendered absolute not-being; and because no being can come to be from absolute not-being, 'becoming' would have been rendered impossible. If, on the other hand, 'that from which' had been complete in every aspect and deprived of nothing, then it would not have admitted of any becoming either (191b12-27). Such a being would have been complete in actuality and not have admitted of any process. That which is complete in every sense cannot undergo a process because process demands some sort of potentiality, dynamism, instability

which is expressed by the privative nature of matter. Thus, by means of a conception of defective matter as such, Aristotle believes that he vindicates the reality of becoming.

So far, it has been established that natural things have a nature and by means of it they have their own source of becoming, and this nature they have is of a double character, one being material, the other formal. The next thing to do is to explore which one has priority over the other, which is not clear yet (191a19-20).

According to Aristotle form is nature rather than matter because a thing is said properly to have its nature only if it actually has its form. To go over with a concrete example, think of a useful artificial product, an axe. What is the primary nature (though an axe as an artificial entity is not literally said to be having a nature) of an axe?[2] An axe is first of all a bodily thing, and thus some matter, e.g. steel, must be used in order to produce an axe. Serving as the matter to be acted upon, steel is no doubt included among the essentials of the coming to be of an axe. However, unprocessed steel, without attaining the form of axe yet, cannot be said to be an actual axe. Nor can it be called an artistic work. Art implies a production process through which some form is given to some matter by an artist. Thus, in order for unformed steel to be called an actual axe and an artistic product, an artistic process through which steel can come to attain the form of axe is required, which is the

[2] In exploring into the nature of natural things , Aristotle makes use of an analogy that he draws between natural beings and artificial beings in terms of the courses of their generation (199a9-19). According to Aristotle, both works of nature and of art are outcomes of a production process carried out stage by stage, unless prevented, up until to a certain end point, where production is called complete. And this end is acknowledged by Aristotle as 'that for the sake of which' of production, for 'where a series has a completion, all the preceding steps are for the sake of that (199a9-10). That both processes have definite end points, which are the that for the sake of which*es* of the production processes, is that in terms of which the analogy between art and nature is drawn. By this way, making use of the becoming of artificial things as analogous examples is allowed. How these ends direct the courses of production will be investigated later in the thesis.

process of definition of steel by the form of axe. This definition of the material during the artistic production by lending a certain form to it is that which creates a work of art, namely an axe. And because words ‘natural’ and ‘artistic’ are used in the same way such that both imply a process of formation during which a certain form is given to a certain matter, and because in the case of artificial things unformed (relatively) matter, which has not undergone a process of formation yet, cannot be called artistic, natural things, previously to the attainment of form, cannot be called natural either (193a31-193b). Consequently, because a thing is said properly to be having its nature when it has attained its form, Aristotle derives that form must be nature rather than matter.

That form is the primary nature is supported also by the fact that human comes from human, horse comes from horse, i. e. what kind of thing is going to issue from the process of natural generation is determined by the form of parents. Furthermore, because in the process of growth, by which a thing is said to be attaining its nature, what is attained is form, that is, because what grows does not grow into that from which it arose but into that which it tends (which is determined by the form of parents), form must be nature rather than matter (193b14-19).

However, natural things are composites of form and matter, and that which is natural is neither form nor matter but the composite thing. Thus, that form is primary nature does not imply that form alone, separately in its own right, is the nature (separation is possible only in thought not in actuality (193b4)). Each form requires for its realization a proper matter which is potentially that form. Accordingly, the

study of nature should take as its object the composite thing[3] that is 'neither independent of matter nor can be defined in terms of matter only' (194a14-15).

Let us stay with the axe example. So far, it has been established that in order to produce an axe steel must be given a certain form, and that formal cause is the primary nature. Yet, according to Aristotle, these are not the sufficient conditions for coming to be of an axe. Because an axe is not a natural being, it does not possess its own source of production. Thus, it needs an efficient cause external to itself, that is, an artist, serving as the engine of the production process, to effect the axe's coming to be. However, despite the fact that matter and producers are there all along, there is no connection between them. They need a cause to endow them with a directionality towards each other and thus to effect their coming together -a first mover which is to effect the process of production. What is it that provides the meeting of the matter and the producer?

According to Aristotle, the meeting comes by the designation of a form as the final cause of production. In order for a particular matter and a producer to come together, first of all, a producer must specify an end for herself. She must single out what she is going to produce before starting the process of production, that is to identify the form of what is going to be produced.

[3] The matter of natural things is worthy of investigation, but not for the sake of itself, rather for the sake of its being a potentiality for the actualization of a form. Thus, in studying nature, matter is considered always with regard to its role in the actualization of a certain form, that is, it is considered always in respect of a composite. Accordingly writes Aristotle in *On the Parts of Animals*: 'If any person thinks the examination of the rest of the animal kingdom an unworthy task, he must hold in like disesteem the study of man. For no one can look at the primordia of the human frame-blood, flesh, bones, vessels, and the like-without much repugnance. Moreover, when any one of the parts or structures, be it which it may, is under discussion, it must not be supposed that it is its material composition to which attention is being directed or which is the object of the discussion, but the relation of such part to the total form. Similarly, the true object of architecture is not bricks, mortar, or timber, but the house; and so the principal object of natural philosophy is not the material elements, but their composition, and the totality of the form, independently of which they have no existence' (645a26-645b).

With the designation of a form as an end to be arrived at, a course is specified for the production. Thus, the producer gains a direction and takes action. She picks out a proper matter which has the right potential for the actualization of that form, and processes it accordingly so as to actualize the assigned form in that matter. Thus, once a form has been assigned as an end to be accomplished, all the rest, the material means to be used as well as the course to be followed by the efficient cause, is conditioned for the sake of realizing that form: if 'this' is going to be produced, then 'such and such' matter must be subjected to 'such and such' process. The end of the process, conditioning the operations of the material and efficient causes by specifying a certain frame to them, determines the course of the process. As a result, the formal cause operating as the final cause is acknowledged as the cause of top priority.[4]

Form operating as the final cause of the process is not simply a shape which assigns a certain definition to matter. Rather, Aristotle regards form as a real principle of activity that endows material stuff with a certain capacity for a certain activity. When steel is processed in a manner so as to attain the form of axe, what comes up is an entity which is capable of a certain activity, chopping wood, of which steel, prior to the artistic production, was not capable. Thus the form of axe in a way plants a new power into steel so that from steel comes to be a body which is capable of doing what steel qua steel is not capable of.

In fact, this particular power of axe is the furthest end of the production, that for the sake of which the production of axe is effected (an artistic activity occurs with a

[4] Accordingly writes Aristotle in *On the Parts of Animals* (639b15-16): "The causes concerned in the generation of the works of nature are, as we see, more than one. There is the final cause and there is the motor cause. Now we must decide which of these two causes comes first, which second. Plainly, however, that cause is the first which we call the final one. For this is the Reason, and the Reason forms the starting-point, alike in the works of art and in works of nature. "

view to function (194b7-8)). An axe comes into existence for the sake of generating a body which is capable of functioning well at chopping wood. Hence the body axe is an instrument, i. e. it is an intermediary for the actualization of the genuine end of the production that is the activity of chopping wood. As 'chopping wood' (or some other sort of cutting) is the proper activity which is expected of a body to be capable of performing if it is to count as an axe, the function of axe constitutes the definition of axe: an axe is a body that functions well at chopping woods. Thus the function of axe is not only the ground of the axe's coming to be but also the ground of its being, its actuality( its being a real axe). And because the actuality of an axe consists in its proper power, and because activity, the employment of power, is the highest form of actuality, to *be* an axe to the furthest degree of actuality requires to be an 'axe in activity'. [5]

Furthermore, the proper power of axe is the cause of the particular material arrangement that an axe has. In order to create something capable of chopping wood, a particular kind of matter, which is of hard and malleable character, must be used. Because only in this way can a strong yet sharp product, a proper instrument which will function well at chopping, be effected. That the proper activity of a bodily thing conditions the material constitution of the thing so as to effect a proper instrument which is capable of performing this activity is what Aristotle calls conditional necessity (199b35-200b10).

[5] 'For the action is the end, and the actuality is the action. And so even the *word* 'actuality' is derived from 'action', and points to the complete reality' (1050a22-23). This point will rather be the subject matter of the next chapter, in which the degrees of actuality as Aristotle discusses in *De Anima* will be investigated.

## Conditional Necessity vs. Material Necessity

That the function specified by the form of a bodily thing conditions the coming to be of the bodily thing and the material constitution of it is what Aristotle calls conditional/hypothetical necessity.[6] The 'necessity' part in the term refers to that which follows necessarily from the nature of matter (200a14). Each and every material, whatever it be, has its own specific nature, and when it participates in the production of something else, it persists in its nature, which Aristotle calls material necessity; e. g. steel is by its nature hard and malleable, and when it participates in a production process, it persists in this nature. The 'conditional' part, on the other hand, refers to matter's being conditioned towards a certain end. The difference is that while in blind necessity the motion of matter (through the efficient cause) is not directed to the actualization of a form, in conditional necessity the motion of matter, conditioned by a certain form, occurs for the sake of accomplishing a certain end (which is the actualization of that form).

Although blind and latent, stemming from its own form, unconditioned matter reserves a certain potentiality. Steel unconditioned, steel qua steel, has the form of steel, but does not have the form of axe, so it is not capable of the proper activity that an axe is capable of, but, being hard and malleable by its nature, steel has a potentiality to become an axe, that is, it has a potency of admitting of the form of

[6] Aristotle specifies conditional/hypothetical necessity in *On the Parts of Animals* as follows: 'For there is absolute necessity, manifested in eternal phenomena; and there is hypothetical necessity, manifested in everything that is generated by nature as in everything that is produced by art, be it a house or what it may. For if a house or other such final object is to be realized, it is necessary that such and such material shall exist; and it is necessary that first this then that shall be produced, and first this and then that set in motion, and so on in continuous succession, until the end and final result is reached, for the sake of which each prior thing is produced and exists. As with these productions of art, so also is it with the productions of nature' (639b24-640a).

axe. Because of this, it is the right material for the production of an axe. Yet, in order for an axe to come to be from steel, steel must be conditioned by the form of axe and be subjected to a certain process of becoming. Only if it is conditioned by the form of axe, steel come to be an axe.

In other words, the end of producing an axe is to generate an instrument which is capable of chopping wood. The need for the fulfillment of this function is that which effects the process of production. The performance of this activity requires a particular kind of instrument which is sharp and strong. In order to effect a sharp and strong product, a matter which is hard and malleable is necessary. Given that steel meets these requirements, steel (or some other material which is strong and malleable) is necessary for the sake of producing a strong and sharp instrument which is capable of chopping wood. Thus, it is not that an axe is capable of chopping wood for the sake of its being sharp and strong. On the contrary, the body of axe is sharp and strong for the sake of being capable of chopping wood. That is, the body axe must be made up of 'such and such' matter in 'such and such' structure so that it can function well at chopping wood. Thus, an axe owes its specific material structure to its function. In the following Aristotle explains the coming to be of house in the same manner.

> Whereas, though the wall does not come to be *without* these it is not *due* to these, except as its material cause: it comes to be for the sake of sheltering and guarding certain things. Similarly in all other things which involve production for an end; the product cannot come to be without things which have a necessary nature, but it is not due to these (except as its material); it comes to be for an end (200a5-10).

A particular kind of matter is a requisite for the generation of a house. Yet, matter in its own right is not sufficient to effect a house. Rather, it need to be conditioned by an end. Some efficient cause must show up for the sake of producing something

which will be good at sheltering. Only after the designation of ‘sheltering’ as the logos of the production, can a proper matter (proper to the end) be singled out and be processed accordingly.

## Art imitates Nature

In the preceding, it has been shown that artistic production is carried out by the involvement of four causes, namely the material, formal, efficient and final causes. Among these, the final cause, specifying the task to be accomplished, has been acknowledged as the primary cause of artistic production, and that for which the final cause stands has been shown to be the new form to be attained by the end of the process. In addition, form has been recognized as a principle of activity that endows its corresponding matter with a capacity for a certain activity. The activity specified by form has been acknowledged as the function of the final product. Thus, the value of the final product (the bodily thing), which comes to be and is for the sake of its function, has been proved to be instrumental.

Along those lines, Aristotle claims that because art imitates nature (199a16-17), the practices of art and of nature must be in parallel, that is, what has been shown to be the case in artistic production (in terms of its course of movement) must be in line with that in natural production. Both artistic production and natural production consist of the processing of some matter stage by stage until a certain end, where the production is called complete. That is, both motions, unless prevented, have definite end points to be arrived at, in art the complete realization of the form of the artificial product, in nature the complete realization of the form of the natural thing which is

conveyed by the form of parents.[7] And because it has been shown that end in artistic production is that for the sake of which artistic production happens, and because art imitates nature, Aristotle derives that nature acts for the sake of an end too.

> Further, where a series has a completion, all the preceding steps are for the sake of that. Now surely as in intelligent action, so in nature; and as in nature, so it is in each action, if nothing interferes. Now intelligent action is for the sake of an end; therefore the nature of things also is so. Thus if a house, e.g. had been a thing made by nature, it would have been made in the same way as it is now by art; and if things made by nature were made also by art, they would come to be in the same way as by nature. Each step then in the series is for the sake of the next; and generally art partly completes what nature cannot bring to a finish, and partly imitates her. If, therefore, artificial products are for the sake of an end, so clearly also are natural products. The relation of the later to the earlier terms of the series is the same in both (199a15-20 ).

Where there is an end to a motion, that end conditions each and every stage of the process, and each stage is said to be for the sake of the next. In artificial production there is an end, and that end conditions the stages of the process in advance. No doubt nature must be more competent than the artist (which is what Aristotle implies as far as I understand). Thus if an artist does what she does for the sake of an end, nature must be doing all the more. Hence it is proclaimed that nature natures for the sake of an end. What the artist does, on the other hand, is to imitate, or at most to complement nature.

Aside from the art/nature analogy, there are other reasons to introduce the final cause into nature. Firstly, there is a seeming conduciveness between the structure of the parts of animals and the services they provide. That is, the differentiations in the parts of the body are quite functional in meeting the varying demands of the animal,

[7] See *On the Parts of Animals:* '...generation is a process from a something to a something; that which is generated having a cause in which it originates and a cause in which it ends. The originating cause is the primary efficient cause, which is something already endowed with tangible existence, while the final cause is some definite form or similar end; for man generates man, and plant generates plant, in each case out of the underlying material' (646a30-646b).

as if they were generated in the first place for the sake of fulfilling those demands, e. g. the front teeth are sharp, thus quite functional for tearing, while the molars are broad, thus useful for grinding down the food (198b24-25*)*. Furthermore, there is a large amount of diversity among the groups of animals in respect of their bodily organization such that each kind possesses a particular bodily structure of its own. Each kind is somehow endowed with those bodily parts which are specifically beneficial for the members of that kind, as if they came to be the way they are specifically for the sake of that kind: while fishes have fins as the locomotive parts, useful for moving in the water, land animals instead have feet, useful for moving on the land[8]; the variations in the structure of teeth are in conformity with the demands of the nutritive habits of the group[9]; those which have limited locomotive possibilities are endowed with hard shells that serve well for protection[10] and so on.

More importantly, the formation of individuals with beneficial parts does not occur only once. On the contrary, there is an ongoing regularity expressed in the works of nature such that each animal (or plant) normally reproduces offspring of its

[8] 'Now inasmuch as fishes are made for swimming they have fins, and as they are not made for walking they are without feet; for feet are attached to the body that they may be of use in progression on land' (695b22-25).

[9] 'In fishes the teeth are all sharp; so that these animals can divide their food, though imperfectly. For it is impossible for a fish to linger or spend time in the act of mastication, and therefore they have no teeth that are flat or suitable for grinding' (675a6-9).
'What has just been said applies to fishes as well as to other animals; and thus in such of them as are carnivorous, and made for biting, the mouth has a wide gape; whereas in the rest it is small, being placed at the extremity of a tapering snout' (662a30-33).
'In birds the mouth consists of what is called the beak, which in them is a substitute for lips and teeth. This beak presents variations in harmony with the functions and protective purposes which it serves. Thus in those birds that are called Crooked-clawed it is invariably hooked, inasmuch as these birds are carnivorous, and eat no kind of vegetable food whatsoever. (662a34-b4)

[10] 'Some species of Testacea are absolutely motionless, and others not quite but nearly so. Nature, however, has provided them with a protection in the hardness of the shell with which she has invested their body' (683b8-11).

own kind: man comes from man while horse comes from horse. That is, the bodily arrangement of child is the same as that of its parents. This regular character of the works of nature is that which primarily leads Aristotle to introduce the final cause into nature for he thinks that regularities cannot be explained by coincidence or chance which are the attributes of rarities.

> ...teeth and all other natural things either invariably or normally come about in a given way; but of not one of the results of chance or spontaneity is this true. We do not ascribe to chance or mere coincidence the frequency of rain in winter, but frequent rain in summer we do (198b35-199a2).

Because chance and coincidence are the attributes of rarely happening facts they cannot explain the regular production of animals with useful capacities, that is, they cannot be attributed to that which occurs always or for the most part (199a1-2). (Moreover the concepts like chance, luck, and coincidence are defined as the indefinite derivatives of the cause ‘that for the sake of which’ (195b30-198a13)). And because 'things are either the result of coincidence or for an end, and because these cannot be the result of coincidence or spontaneity...it follows that they must be for an end...Therefore, action for an end is present in things which come to be and are by nature' (199a3-9).

In artistic production, the efficient cause deliberately intends an end. Hence the final cause in artistic production is of deliberative character. However, Aristotle discusses that it is not the only kind of relation that holds between the efficient cause and the final cause. The final cause does not have to imply a deliberating efficient cause. As an example of the kind of final cause which is operative in nature, Aristotle offers the end oriented movements of animals such as ants, swallows and spiders. He

claims that the way these animals move involves no deliberation yet is obviously conducive to an end:

> This is most obvious in the animals other than man: they make things neither by art nor after inquiry or deliberation. Wherefore people discuss whether it is by intelligence or by some other faculty that these creatures work,-spiders, ants and the like....in plants too that is produced which is conducive to the end-leaves, e.g., grow to provide shade for the fruit. If then it is both by nature and for an end that the swallow makes its nest and the spider its web, and plants grow leaves for the sake of the fruit and send their roots down (not up) for the sake of nourishment, it is plain that this kind of cause is operative in things which come to be and are by nature (199a20-30).

When the swallow makes its nest and the spider its web, the movements of these beings are not blind. Rather the courses they follow, that is, the stages of their motions have a unity and meaning with respect to the ends they are oriented to. In the case of the swallow, the target is a nest complete, while in that of the spider it is a web complete. Thus neither the coming to be of a well-arranged nest nor of web is a surprise. Yet one does attribute deliberation neither to a swallow nor a spider. Thus the end oriented motion does not have to imply deliberation.

Because in natural motion the end is the complete realization of the form of the thing, and because form is primary nature, the end point in natural motion is in a way nature itself, the full realization of nature. That is to say, nature acts for the sake of itself. To quote in Aristotle's own words: '...the nature is the end or 'that for the sake of which'. For if a thing undergoes a continuous change and there is a stage which is last, this stage is the end or 'that for the sake of which' (194a27-30).

Given that nature works for the sake of form (nature), the coming to be of an animal in 'such and such' process and of 'such and such' structure is said to be

conditionally necessary for the sake of the realization of the form of the animal.[11] That is, if an animal is to come to exist, nature (as the efficient cause) must operate on its material means so as to meet the conditions of being an animal (including the conditions of being this or that kind of animal specified by the form of the animal because an animal is always of a particular kind), just as in the coming to be of an axe the artist operates on the material means for the sake of fulfilling the requirements of being an axe (e.g., being sharp and strong). Thus, given that the course of the generation is for the sake of fulfilling the conditions of being, becoming is acknowledged as for the sake of being.

Furthermore, because 'being' in the fullest sense is activity, being an animal means primarily being capable of performing the proper activities specified by the form of the animal. Just as the form of axe specifies the proper activity of axe (that is, to be an axe is by definition to be capable of chopping), the form of an animal specifies the proper activities of the animal. And just as the proper activity of axe necessitates axe's being of a specific bodily structure (the structure that has the right material potential for the actualization of chopping), the proper activities of an animal specified by the form of the animal necessitates the animal's being of a specific bodily structure.

[11] The route to be followed in the explanation of the parts of animals is determined along these lines, as Aristotle writes in *On the Parts of Animals:* "The fittest mode, then, of treatment is to say, a man has such and such parts, because the conception of a man includes their presence, and because they are necessary conditions of his existence, or, if we cannot quite say this, which would be best of all, then the next thing to it, namely, that it is either quite impossible for him to exist without them, or, at any rate, that it is better for him that they should be there; and their existence involves the existence of other antecedents. Thus we should say, because man is an animal with such and such characters, therefore is the process of his development necessarily such as it is; and therefore is it accomplished in such and such an order, this part being formed first, that next, and so on in succession; and after a like fashion should we explain the evolution of all other works of nature (640a34-640b4).

Conditioned by the proper activities specified by the form of the animal, the body of the animal is attributed an instrumental value, that is, the body is said to be coming to be the way it is for the sake of its proper activies that are its functions. As a result, the beneficial capabilities of the body parts figure as the ground of the coming to be of the parts, which will be discussed in more detail in the next chapter.

To sum up, natural motion is grounded on the operation of four principles: the material principle, the efficient principle, the formal principle and the final principle. Among these, the material and the efficient come secondary in the order because they are the instruments of the formal nature that operates as the final cause of the process. In art, the form of the product which is to be produced is the logos of the production process, thus it operates as the final cause of the production. On the grounds that art imitates nature, nature is said to be naturing for the sake of the realization of the formal nature. Besides, more importantly, the regular realization of form of parents in their children demands the operation of the formal cause as the final cause (thus the primary cause) in natural motion.

Before progressing to the next chapter, Montgomery Furth writes that the introduction of form as the final cause of natural production should not be interpreted on the basis of the art/nature analogy alone.[12] Rather, Aristotle's particular way of conceiving matter should be taken into consideration in the interpretation. The introduction of forms into nature, Furth maintains, to be a real principle of definiteness was an unavoidable move for Aristotle, on the ground that according to Aristotle animals are substances not only because they possess their own source of motion but also because they are individual units, "thises". Because Aristotle

[12] M. Furth (1987, 24-25).

conceives matter as some sort of stuff, bulk, which has a certain potency in it but, apart from a formal principle, is devoid of structural unity in its own right, he cannot accept that from material mass alone can issue countable units, individuals. Therefore, he needs a formal principle which is to define material mass and endow it with some sort of unity. In other words, because he denies the existence of "infrastructural" entities like atoms, each possessing a unity in their own right, Aristotle has to posit a formal principle to secure the constant generation of complex individual units. Thus, he introduces forms into nature as the principle of unity: Individual units owe their unities to the particular forms they possess. In this way, Furth adds, Aristotle advances from the "mass logic" to the "countable logic" that he needs, and secures the phenomenon of individuality in nature. As a result, any kind of unity which can be attributed to a material entity is possible insofar as a form, a genuine principle, inheres in it.

Being incomplete in actuality by its privative nature, thus unstable, and thus open to admitting of new actualities, matter in Aristotle rather comes into prominence as a principle of potentiality. It is acknowledged as a necessary condition for the coming to be of things. However, because the processes to which it is subjected are conditioned in advance by the formal principle, the value of matter is rather instrumental.

# CHAPTER 3: SOUL AS THE FORMAL CAUSE OF LIVING NATURAL THINGS

## Soul as the Ground of Actuality

In the first chapter, it has been established that the nature of natural things is coupled: one being material, the other formal. Because of the regular and beneficial character of what follows from the cooperation of these two principles, the indefinite forms of causation like coincidence and chance have been discarded as insufficient, and another principle which will direct the course of coming to be and thus ground the regularity in the outcomes of nature has been put forward, that is the final cause. Form which is conveyed by parents has been acknowledged as the final cause of natural thing. Thus the formal nature has figured as a sort of project determined to be completed. Furthermore, the formal principle endowing its corresponding matter with a certain power for a certain activity has been shown to be a principle of activity. And this particular activity, because it pertains to the form of the thing, has been acknowledged to be the proper (or essential) activity of the thing. Yet more, because the bodily thing come to be the way it is for the sake of meeting the demands of the proper activity of its, the proper activity has been acknowledged as the function of the bodily thing. As a result, the body of the finished product, whose coming to be the way it is is conditioned by the proper activity specified by the form of the thing, has been attached an instrumental value.

The chief issue of this chapter will be the formal nature of living beings, centering on its role in the arrangement of the living body. In line with the first chapter, the function of the bodily parts and of the body as a whole will emerg as the very causes

of their existence. The course of examination will depart from the identification of the ground of the actuality of living beings, that is to identify the form of living beings, and it will continue with the investigation of the relation of this formal principle to living body. Eventually, the parts of the living body and the body as a whole will emerge as the organs of the formal nature.

To begin with, living beings are natural things, thus they consist of formal (actual) and material (potential) principles. And because the formal principle is the principle of activity in which the actuality of a natural thing consists, in order to find out the formal principle of living beings what should be done is to identify the ground of the possibility of the activities of these beings.

As Aristotle fixes in *On the Parts of Animals*, being an animal, that is, the actuality of an animal first and foremost consists in animal's capability of performing certain functions. Because of this, a "fresh" corpse which still preserves its bodily arrangement, or a statue of an animal is not reckoned as real. They are not acknowledged as real because they cannot perform the activities that the real ones are capable of.

> Now a corpse has the same shape and fashion as a living body; and yet it is not a man. Again, a hand constituted in any and every manner, e.g., a bronze or wooden one, is not a hand except in name...None of these can perform the functions appropriate to the things that bear those names. Likewise, the eye or the hand (or any other part) of a corpse is not really an eye or a hand (640b34-641a3).

Nor is a wooden hand, which cannot perform the proper activities that a living one can, acknowledged as real hand. And because the capability of performing these functions is what draws the line between an actual man (or hand) and that which is

not, and because a man is capable of performing these functions insofar as he is alive, and because that which a living thing has, but a corpse has not, is soul, Aristotle infers that soul must be the formal principle of these things as the ground of the actuality of these things.

Aristotle asserts that his predecessors too in one way or another identified ‘soul in body’ as the ground of motion and perception (403b24-28). Yet, they did not put any effort into the particular relationship between soul and its body (407b15-16).They missed the essential point that soul is not found in every body, but only in a particular kind of body, a living body which has a particular organization. What they did was absurd because 'each body seems to have a form of its own. It is as absurd as to say that the art of carpentry could embody itself in flutes; each art must use its tools, each soul its body' (407b23-25). In a similar vein, no one can expect of ears to host the actuality of seeing either because ears do not have a capability of, potentiality for, seeing. Rather, it is eyes that have the proper material organization, thus that have a potentiality for seeing. So, just as sight is the particular capacity of eyes *whereby* seeing occurs, soul is judged by Aristotle to be the particular capacity of the living body whereby it lives.

However, Aristotle notes that that soul is ‘that whereby we live’ is ambiguous, just like the statement ‘that whereby we know’ is (414a4-5). That is, ‘that whereby we know’ may mean either knowledge or the instrument of knowing. By that statement, one may be referring either to knowledge *by* which she knows, or to her capacity (power) of knowing *with* which she knows. Of the two, the former refers to form, the actuality of knowledge, while the latter to that which is potentially knowledge, ie., the proper material recipient which is proper by its capability of

admitting of the actualization of knowledge. Actual knowledge is the actualization of the capability of this material recipient. So, because living beings are composites of form and matter, and because body is the matter of living beings (and the principle of potentiality), Aristotle declares that body must be the recipient while soul must be the actuality of this recipient. Thus, soul is acknowledged as the actuality of a body which is capable of admitting of soul. That is, just as knowledge can actualize only in that which is capable of knowing, soul can actualize only that which is capable of admitting of soul. And the kind of body which is capable of actualizing soul is of a specific character. It is complex and organized in a certain manner so that it has the proper potential to be ensouled; it is proper and necessarry at the same time because 'the actuality of any given thing can only be realized in what is already potentially that thing, i. e. in a matter of its own appropriate to it'(414a25-26). That is, just as sight can actualize only in eyes, soul can actualize only in a particular kind of body which has a potentiality for admitting of soul. As a result, soul is defined as 'an actuality or formulable essence of something that possess a potentiality of being ensouled.'(414a26-28).

The way Aristotle talks as regards the proper kind of body which is eligible for being ensouled seems to suppose body's being already ensouled because how can a body be organized in such a manner if it is not already ensouled?[13] Does that it is organized not entail that it is already ensouled? Early in the second book of *De Anima* Aristotle provides a more specific definition of soul by introducing a distinction between the different degrees of actuality which he names first and

[13] In a similar vein, C. A. Freeland (1987, 392) mentions the complaint of J. L. Ackrill (1972/3: 132) regarding the issue: 'Unless there is a living thing...there is no 'body potentially alive'; and once there is, its body is necessarily actually alive'.
The article of C. A. Freeland has contributed a lot to my efforts in trying to make sense of what 'organized body having potentially life in it' does mean.

second, and he defines soul as the ’first actuality of a body having potentially life in it’(412a21). So, in order to understand in what sense body has potentiality for being ensouled (or potentially has life), this distinction concerning the different degrees of actuality must be investigated. [14]

Also, Aristotle (1048a25-1048b35) expresses that the terms actuality and potentiality have different coverings according to whether they are employed in the sphere of becoming or being.[15] That is to say, there is a distinction between having a potential to *become* actual and having a potential to *be* actual.[16] Soul’s being the first actualization of body which has potentially life in it (or its potentiality for being ensouled) will be falling in the sphere of being actual rather than becoming actual.

Concerning the potentiality of organized body to live, Aristotle recommends us that we think of the difference between the possession of knowledge and the employment of knowledge (412a11). What is the difference between a woman who does not know how to build and the one who knows how to build but is not actually building? According to Aristotle, although neither of them is an actual builder at the moment, the one who does not know how to build is said to be far-removed from the actuality of building. The one who knows how to build, even if she is not actually building at the moment, is still called a builder, because she has the knowledge of the art of building in the form of a power. She is a builder because she *can* actually build unless prevented, which means that she has potentiality to *be* an actual builder. Because she possess the actuality of building in the form of a capacity, a power, even

[14] In the first chapter, I had already assumed the distinction between the first and second actualities while mentioning about that being a fully actual axe means ‘being an axe in activity.’

[15] See Kosman (1987, 361-2), where he warns his reader as to the importance of this distinction in order to understand Aristotle’s account of subsance properly, thus to understand the nature of living beings each of which is a substance.

[16] Freeland (1987, 397): potentiality to be a hatchet vs. potentiality to become a hatchet.

when she is not actually building she does not cease to be called builder, that is, her power does not vanish when it is not employed. Thus, when she decides to build, she does not come to have a power which she did not have previously, which would imply a process of becoming. Rather, when she decides to build that which is already there turns actual in one more degree, that is, a potential builder turns actual. Thus, to have a potential to *be* actual means the active employment of a power which already *is* potentially.

On the other hand, the one who does not know how to build is neither actually nor potentially a builder because she does not have the power, that is, she *cannot* build anyway. She first has to *become* a builder, she has to be subjected to a *process* of becoming, learning, which the former already achieved. Only after the process of learning, can she be called having a potential to *be* an actual builder. (As a remark, although the one who does not know how to build is more distant from the actuality of building in comparison to the one who knows how to build, she is still said to be having a potential to *become* a builder, that is a certain form of potentiality of which a horse or a plant is completely deprived.)

From the perspective of actuality, Aristotle acknowledges the former woman as having accomplished the first actuality in terms of the art of building because she possesses the actuality of building in the form of a power, a capacity. The first actuality means an actuality in the form of a power, which can be called potentiality as well in comparison to the second actuality. That is, because the first actuality is not activity but power for activity, it reserves a potential for a second actualization, which is the active employment of power. In this sense, power is potentiality. Thus, a potential builder who has the capacity of building but is not employing that actually

is not said to be an actual builder to the fullest extent. The potential builder has more to accomplish in order to be an actual builder. She has to employ that power, that is, she has to build actually if she is to be an actual builder in the fullest sense. This further actualization of an already existing power by its active employment is what Aristotle calls the second actuality. The second actuality is the actuality to the furthest extent that is activity. On the other hand, the woman who does not know how to build does not have the glimpse of the actuality of building yet.

What is extremely important is that according to Aristotle the accomplishment of the first actuality (the attainment of a power) is ontologically and logically posterior to the accomplishment of the second actuality (actuality as activity, the employment of the power) because a capability (power) for an activity is gained through an active exercise of that of which the capability is a capability, which is an actuality of second degree.[17] Thus, a person who has the capability of building has that capability

[17] This point is made clear in *Metaphysics* (1049b5-12) where Aristotle writes that actuality is prior in definition, time and substance. However, he thinks that priority 'in time' requires some qualification because priority in time involves reference to becoming, a mode of being which Aristotle judges to be partially potential and partially actual. Because learning is a process of becoming through which a new power is gained, the involvement of potentality in the process of learning raises a doubt as to whether the capability(power) to be gained precedes the activity of which it is the capability. Yet, Aristotle figures out this quandary by the partial involvement of actuality in the becoming process. Accordingly, one who is learning a science at least partially must be already possessing the actuality of science. That is, learning process through which a new power is to be gained must involve to some extent the actual exercise of the power to be gained. "This is why it is thought impossible to be a builder if one has built nothing or a harper if one has never played the harp; for he who learns to play the harp learns to play it by playing it, and all other learners do similarly. And thence arose the sophistical quibble, that one who does not possess a science will be doing that which is the object of science; for he who is learning it does not possess it. But since, of that which is coming to be, some part must have come to be, and, of that which, in general, is changing, some part must have changed (that is shown in the treatise on movement), he who is learning must, it would seem, possess some part of the science. But here too, then, it is clear that actuality is in this sense also, viz. in order of generation and of time, prior to potency."(1049b29-1050a2)

In *De Anima,* where he writes 'It is obvious that the soul is actuality in the first sense, vis. knowledge as possessed, for both sleeping and waking presuppose the existence of soul, and of these waking corresponds to actual knowing, sleeping to knowledge possesed, and, *in the history of the individual, knowledge comes before its employment or exercise*' (412a23-27) (italic is mine), Aristotle seems to be talking against what he writes in *Metaphysics.* I have taken what he writes in *Metaphysics* as the ground for what I am writing.

because in the first place she exercised that activity(the second actuality). That is to say, one does not first gain a power and then become able to employ it. One comes to have a power because in the first place she was capable of employing it. That is why a horse or a plant cannot come to have a capacity for building, they are incapable of actively exercising the activity of building. They cannot learn how to build because learning occurs through the active exercise of building, of which they have no potency( the cause of their impotency can be attributed to their being deprived of certain other powers). Hence, nothing can come to have a capacity which it cannot employ.

Aristotle writes in *Metaphysics* that capacities are either innate or gained by exercise (1047b30-31). Acquired ones have been shown to be posterior to the activities of which they are the capacities. Innate ones(capabilities of the parts and of the body as a whole) are also posterior to their second actualities, which will be shown later in the proceeding when elucidating the operation of soul as the final cause in furnishing the parts according to their functions. For the time being, it should be noted that, whether innate or acquired, capacities are by definition always posterior to the actualities of which they are the capacities (1049b12-17). Because one is said to have a capacity (the first actuality) for an activity inasmuch as she can perform that activity it would be meaningless to say that one has a capacity but cannot employ it (1047b4-5). A capacity always presupposes its employability, which is its actuality. In other words, nothing can have a capacity which it cannot (not may not) employ. Activity precedes capacity, actuality precedes potentiality.

In the light of these comments, let us elaborate on the definition of soul as the first actuality of a body potentially having life in it. Departing from what has been said as

to the knowledge of the art of building, potentially having life coincides with the case of the woman who knows how to build but is not actually building. That is, a body which has potentially life in it *is already* alive, it has soul actually, it is not a corpse. Yet in comparison to the second actuality, which is the active employment of soul powers, it is called living potentially.

This distinction Aristotle makes in order to secure the actuality of body even when it does not fully realize its potentials. If soul had not been received as a power but equated with sheer activity, the living individual would have had to be called dead when it is not actually thinking, moving or perceiving (which are the specific powers of soul which will be investigated in the next section). However, because the body possesses its soul in the form of a power, it does not turn dead when its powers are not employed actually (e.g. when the living individual is asleep). Just as sight is the power of eyes that constitutes the actuality of eyes, and when actual seeing is not occurring eyes still retain this power, the body of living beings too, when soul powers are not being employed actively, retains its powers. Hence, the acknowledgment of soul as a power allows Aristotle to vindicate the actuality of body even if body does not realize all of its life potentials. In this regard, a man who does not use his power of intellect actually, or a woman asleep who is not moving actually is still called alive, though not fully, not completely. Because these people, according to Aristotle, are not employing their soul powers completely, they are not reckoned as completely actual living beings. They are said to be keeping their life powers back. However, even though they are not employing their life potentials to the furthest degree of actuality, they are still counted as alive because they are still endowed with their soul in the form of a power.

To conclude this section, it had been settled in the first chapter that in the coming to be of things the formal nature is always accompanied by the material one which serves as the substratum to be acted upon, and the relationship between them is one of actuality and potentiality. Likewise, soul is always accompanied by a body which serves as the proper recipient of actuality. However, while in the first chapter the discussion was focusing on the nature of things in terms of their becoming in this chapter the sphere of discussion has been the being of natural things, which is their accrued actuality. That is, in the first chapter the relation of form and matter was investigated in terms of the "process" of generation which is an incomplete actualization so long as the process continues. Thus, the subject matter was there the process of "enformation" of the material recipient.[18] In this chapter, on the other hand, the central concern has been the enformed matter, the organized body, and its relation to its accrued actuality. Yet, because body has been said to be having its soul in the form of power which assumes a second actualization for itself, soul has been identified with the first actuality of organized body. And the body of living beings with regard to that further actualization has been called potentially alive. Thus, 'the

[18] For a detailed investigation of 'matter' in Aristotle's philosophy, see Kosman (1987, 360-391), where he discusses that according to Aristotle 'matter' is a conceptual means, a notion. It is used in order to refer to that which is relatively indeterminate and potential to that which is determinate and actual. That is, because matter is always relative to an actual entity, there is no such thing which is absolutely matter. Rather, there are things which *serve* as matter in certain contexts. And because the terms potentiality and actuality have different applications depending on whether becoming or being is the context, Kosman suggests that the concept of matter has two different applications corresponding to these two different contexts. Thus writes he: 'Matter is on the one hand be thought of as the *ex quo,* the separated from-which of change and generation, and on the other, as the proximate underlying substratum of constitutive being' (362). And in the same page he adds that this distinction is not much important for non-living things as it is for living things, because for the most part the constitutive and proximate matter of non-living things are the same (e.g. bronze is the matter from which a bronze statue comes, as well as the matter in the sense of that which endures. And the actuality of bronze is not dependent on the actuality of the statue, for even if the statue gets deformed bronze retains its existence). The distinction aims at emphasizing the essential unity of the proximate matter of a living being(organized body which is capable of living) to its respective form (soul) (376-391). That is, because soul is the actuality (first actuality) of organized body, body cannot retain its actuality when severed from its soul. Thus, when a living being loses its soul, the body of it disintegrates and loses its actuality.

recipient body that possess a potentiality for being ensouled' has not meant that the body has to come to possess a form which it does not have. Rather, having a potentiality for being ensouled has turned out to be a potentiality for a further actualization of that which *is* in the form of a power. Thus, the active employment of soul powers has been acknowledged as a turn in the mode of being, that is, the turning actual of that which *is* potentially.

## Soul as the Final cause

In the first chapter, the particular activity specified by the formal nature, conditioning the generation of the final bodily product, has been acknowledged as the final cause of that product, as that for the sake of which the product comes into existence. As a result, the generated product coming into existence for the sake of performing that particular activity has been recognized as the instrument of that activity. Along those lines, living activities specified by soul(the formal cause) are acknowledged as the final cause of the body of living being, furnishing the constitutive matter with a proper arrangement so as to effect a proper subject, a proper instrument, which is capable of performing living activities. Thus, living activities specified by soul come to be called 'life functions', and body and the parts of it, whose existence is conditioned by them, come to be called organs with regard to these functions. Accordingly writes Aristotle:

> It is manifest that the soul is the final cause of its body. For Nature, like mind, always does whatever it does for the sake of something, which something is its end. To that something corresponds in the case of animals the soul and in this it follows the order of nature; all natural bodies are organs of the soul (415b15-17).

Soul is the end of the living body, for the sake of whose actualization the organized body exists. However, soul does not manifest itself in one simple activity. Rather, its manifestation involves the fulfillment of multiple life functions each of which is categorized as a specific power of soul. That is, living is not one simple activity, rather it comprises thinking, perception, local movement and rest, or movement in the sense of nutrition, decay and growth (413a23-25). And things are spoken of alive if they are capable of performing some of these activities in one way or another. Thus, living involves the fulfillment of multiple life functions. And the multiplicity of life functions necessitate the existence of a complex organization consisting of multiple parts each of which fulfills its own function for the sake of keeping the individual alive. Furthermore, these functions per se are of complex character such that their fulfillment demands the fulfillment of certain sub-functions, e.g. nutritive activity consists of the fulfillment of sub-functions such as intake of food, processing of food and discharging of what remains. Thus, the organization of the living body is a multi-faceted work that demands the handling of a plurality of subordinate functions (subordinate to the major objective which is to keep individual alive) at once.

That is, because the functions of the parts of body are specified within the whole, the parts which are responsible for fulfilling them are said to be existing for the sake of the whole body. In other words, because what is more complete is closer to the end for the sake of which the whole furnishing process happens, the parts of the body, coming earlier in the process of becoming and thus being farther from the end, exist for the sake of the complete body, as well as for that for the sake of which complete body exists. Thus, as the complete body exists for the sake of fulfilling life

functions specified for it by the soul, the parts of the body, sub-serving to the body in fulfilling its functions, exist for the sake of functioning as the organs of the body complete. Along these lines, the organization of the body occurs from top-down so as to create a well functioning complex instrument through which the soul can actualize.

Organization certainly involves the participation of the material principle because living beings are in the end bodily things. However, because the body exists for the sake of fulfilling its function, the material principle participates in the organization of parts under the authority of the formal principle which operates as the final cause of the material principle.[19] That is, the material means involved in the constitution of

[19] M. Leunissen (2010, 4) argues that in the explanation of natural phenomena Aristotle introduces two sorts of final causality. One, which she judges to be the primary kind of teleology, refers to the formal nature's conditioning the arrangement of matter by furnishing it with a view to a certain function, while the other refers to the employment of unconditionally formed material structures, (generated not with a view to a function, but by blind material necessity) to a good use by the formal nature. Thus, not all the parts of body owe their existence to a function specified by the formal nature. Rather, as Aristotle explains in *On the Parts of Animals,* some parts such as spleen, bile and horns are concomitants that came along by the accumulation of extra material which is left over from the conditional organization of the essential parts, or by the accumulation of residues.
In the following passage, Aristotle, providing support to the claim of M. Leunissen, overtly assumes that there is a distinction as such: 'We must now describe the character of that "necessary nature," owing to which certain things are present of *necessity*, things which have been used by "rational nature" to subserve a purpose' (663b23-25). A passage in a similar vein is as follows: 'Bile around the liver is a residue and serves no purpose—like the sediment produced in the stomach and the intestines. I agree that occasionally Nature turns even residues to use and advantage**,** but that is no reason for trying to discover a purpose in all of them. The truth is that some constituents are present for a definite purpose, and then many others are present of necessity in consequences of these' (677a15-19). The amount of excess material which may be used by formal nature for good purposes is determined by the overall size and bulk of the animal. The existence of horns and the protective function they serve are explained along these lines: 'Now this earthy matter is used in the animal body to form bone. But in the larger animals there is an excess of it, and this **excess** is turned by nature to useful account, being converted into weapons of defence' (663b32-34).
Also, a couple of pages after these passages, the part spleen arises as an example to concomitant parts: 'But the spleen, where present, is present of necessity in the sense of being a concomitant, as are the residues in the stomach and in the bladder' (670a23-32). Another example to nature' making a good use of what follows from blind material necessity is the employment of ink of Cephalapods for the purposes of protection: 'While in some other animals fear causes a disturbance of the stomach, and in some the discharge of residue from the bladder, in these creatures (Cephalapods) its effect is to make them discharge their ink; and though this is an effect due to necessity like the discharge of urine in the others, yet Nature makes good use of this residue at the same time for the animal's defence and preservation' (679a25-30).

bodily parts is conditioned so as to effect proper bodily instruments which are capable of performing the functions specified by the formal principle, e. g., because the function of eyes is seeing, the matter of eyes must be something capable of letting light in, hence air is the proper material for the constitution of eyes. Besides, the complexity of the function of an organ and the powers of the individual as a whole determine the combination of material means:

> But inasmuch as there is a great variety in the functions and motions not only of aggregate animals but also of the individual organs, it is necessary that the substances out of which these are composed shall present a diversity of properties. For some purposes softness is advantageous, for others hardness; some parts must be capable of extension, others of flexion...For the hand, to take an example, requires one property to enable it to effect pressure, and another and different property for simple prehension (646b15-646b26).

Thus, the range of functions of which an organ is capable of performing determines the material nature of the organ.

The capability of a natural organ to perform its function is the ground of its actuality, that is, that for the sake of which it exists. Thus, if a natural organ loses its capability of performing its function, it loses its actuality. Because the body of a living being is an instrument that exists for the sake of its special capability, soul, if it loses this capability, loses its actuality. Furthermore, because the parts of the living body are natural organs that exist for the sake of performing their functions, and because their functions are determined within the whole, the parts of body, when severed from the whole with respect to which their functions are specified, cannot retain their actuality. That is why body parts such as blood, flesh, hands etc. can exist so long as they belong to a superior whole. Their capabilities to perform their

functions are dependent on the actuality of the whole body. Because the actuality of the whole body consists in body's possessing its soul, both the whole body and the parts of it, as natural organs, retain their actuality so long as in body resides soul which is that for the sake of which they exist. Accordingly writes Aristotle:

> Suppose that what is literally an organ, like an axe, were a *natural* body, its 'essential whatness,' would have been its essence and so its soul; if this disappeared from it, it would have ceased to be an axe, except in name...Next, apply this doctrine in the case of the 'parts' of the body. Suppose that the eye were an animal-sight would have been its soul, for sight is the substance or essence of the eye which corresponds to a formula, the eye being merely the matter of seeing; when seeing is removed the eye is no longer an eye, except in name—it is no more a real eye than the eye of a statue or of a painted figure. We must now extend our consideration from the parts to the whole living body; for what the departmental sense is to the bodily part which is its organ, that the whole faculty of sense is to the whole sensitive body as such.(412b13-25)

As natural organs are functional entities whose essence consist in their capability of performing their functions, the parts of the body and the body as a whole have no actuality independently of their capabilities. On the contrary, their actuality derives from their capability of performing the functions specified for them by the formal nature. Hence, if the body of a living being is severed from its capability, it, as well as the parts of it, loses its formal nature which is the ground of its actuality, the integrity it has, and goes out of existence.

Early in this chapter, I have mentioned that according to Aristotle the existence of a power by definition assumes its employability because it would be absurd to say that a body is capable of doing something but cannot do it. Now, the employability of a power is guaranteed by the final cause operative in nature. Functioning is a form of activity, the active employment of a power of a body. Thus, when a natural body is said to be existing for the sake of its function, it means that it exists for the sake of employing what it has as a capability, power. Hence, bodies are said to be having the

powers they have in the first place for the sake of the employment of them. As a result, the employability of a power ontologically precedes the existence of the power.

And because the existence of the parts of the body is conditioned by their functions they perform within the whole, and because the range of functions to which organs are to be assigned are determined by the specific soul of the individual, the existence of the parts is conditioned by the specific soul of the individual. Thus, the complexity of organization and the capabilities of organs vary according to the specific souls of the living beings, which specify the limits of the capabilities of the individual. Along these lines, an organ like hands, which is highly complex in its use, is not found in every living being because its employment presupposes the existence of a higher form of power, the power of intellect. Along these lines, in *On the Parts of Animals* Aristotle writes the following concerning the existence of hands:

> Now it is the opinion of Anaxagoras that the possession of these hands is the cause of man being of all animals the most intelligent. But it is more rational to suppose that his endowment with hands is the consequence rather than the cause of his superior intelligence. For the hands are instruments or organs, and the invariable plan of nature in distributing the organs is to give each to such animal as can make use of it; nature acting in this matter as any prudent man would do. For it is a better plan to take a person who is already a flute-player and give him a flute, than to take one who possesses a flute and teach him the art of flute-playing. For nature adds that which is less to that which is greater and more important, and not that which is more valuable and greater to that which is less. Seeing then that such is the better course, and seeing also that of what is possible nature invariably brings about the best, we must conclude that man does not owe his superior intelligence to his hands, but his hands to his superior intelligence. For the most intelligent of animals is the one who would put the most organs to use; and the hand is not to be looked on as one organ but as many; for it is, as it were, an instrument for further instruments. This instrument, therefore,-the hand-of all instruments the most variously serviceable, has been given by nature to man, the animal of all animals the most capable of acquiring the most varied handicrafts (687a7-24).

The existence of hands is not an unexpected yet lucky outcome which endows the individual with advantageous capabilities. On the contrary, their existence is conditioned by a higher capability of the individual. Because organs exist for the sake of their powers, and because the range of the powers of organs is determined by the soul powers of the individual, the existence of hands is said to be for the sake of the soul powers of the individual, particularly in this case for the sake of the power of intellect. Also, as the complexity of the employment of hands suggests as well, if the individual did not have the power of intellect, she would not be capable of putting her hands into use. And because any beneficial outcome which would follow from the existence of hands requires the active employment of hands, and because the employment of hands requires beforehand the existence of a higher soul power, the power of intellect, hands cannot be the ground of the power of intellect. Rather, hands, as well as the other parts of the body, owe their existence to the soul powers of the individual, as well as to their own subservient powers.

## Soul Powers and the Specific Soul

The term 'specific soul' addresses to the specific manifestations of life due to variations in the combination of soul powers.[20] All living beings are one in having soul and thus one in being living things (soul in the generic sense), yet they are not one in what they manifest (they are different kinds of living things) because there is no such thing as the unqualified manifestation of life or soul. Soul manifests itself through its specific powers. And living beings have these soul powers in different

[20] The term 'combination of soul powers' I borrowed from M. Leunissen (2010, 51).

combinations, owing to their specific souls. Thus, while for plants life means merely nutrition, for some others it may mean not only nutrition but also sensation, locomotion, and thinking. Although the individuals of both kinds are called living beings because both have soul, they manifest life differently because of the specific souls they possess. In this regard, Aristotle likens soul to a genus that is manifested through its species. That is, just as there is no figure apart from its specific instances, such as triangular, rectangular etc., there is no generic soul apart from its specific instances (414b20-25). And because of the variations in the specific souls, each living being must be investigated in reference to its own specific soul (414b20-415a).

The parallel Aristotle draws between soul and figure holds in his description of the hierarchy among soul powers. That is, among the powers of soul there exists a certain hierarchy such that some powers are fundamental to the existence of some others. For instance, there is no possibility for a living being to be capable of sensation without being already capable of nutrition. Just as the figure square potentially contains the figure triangular, which is its predecessor, the sensory power presupposes the existence of the self-nutritive (414b28-33). Thus, a power which is necessary for the existence of the other comes before in the hierarchical order. Along these lines, the power of nutrition is acknowledged as the basic power, which is followed in order by the powers of sensation, locomotion and intellect.

The fundamental power shared by all living beings, allowing one in the first place to demarcate that which is alive from that which is not and thus figuring as the threshold of life, is the power of self-nutrition. Living means at the bottom one's having its own source of motion, one's capability of growing up and down in virtue of itself. And it is is possible inasmuch as the living being absorbs nutriment,

meaning that the possession of the power of self-nutrition precedes the possibility of growth. Thus, all living beings must have the power of self-nutrition because they 'must grow, reach maturity, and decay,' which is impossible without having the power of nutrition from birth on to death (434a23-25).

Besides, the power of reproduction is included in the power of nutrition because it is a concomitant to the power of nutrition (415a25-26) such that 'for any living thing that has reached its normal development and which is unmutilated, and whose mode of generation is not spontaneous, the most natural act is the production of another like itself'(415a26-29). Thus, the power of self-nutrition, including the power of reproduction, is recognized as the fundamental life power, the possession of which is what enables one to speak of things as *living* at all (413b1-2).

By such a specification of life, plants are embraced to be living beings as well because they too possess their own source of motion so that they are subject to grow up and down in virtue of themselves (413a25-30). However, according to Aristotle, the possession of the power of sensation, particularly the sense of touch, is that which elevates things to the level of animality, distinguishing them from plants which are merely living things (413b2-4). The line of reasoning of Aristotle is as follows: because most of the animals are not stationary[21], they need a sense of touch to detect food. That is, because non-stationary living beings do not have their source of nutriment at present as the stationary ones, such as plants, have, they must be

[21] The existence of the power of locomotion is grounded on the mutual existence of appetite and imagination (433a9-10). The power of imagination is either calculative or sensitive. Only humans are capable of calculative imagination, while sensitive imagination is the common power of all animals which are capable of locomotion (433b30-31). Thus, sensation is a requirement for the power of locomotion. Because the capability of sensation allows the animal to sense what is pleasant and what is harmful. Thus, appetite, effecting an orientation towards an end (which is either pleasant or seemingly pleasant) stimulates imagination, subsequently the individual takes action towards that end.

endowed with a sense of touch which will allow them to recognize food and thus to take it in as nutriment (434a30-434b4). Besides, because animals are tangible beings, and because for the most part they are not stationary and constantly subject to an immediate contact with other tangible beings, they necessarily need a sense of touch, through which, in the cases of contact, they can distinguish what is pleasant from what is painful so that they can avoid what is harmful and stay alive (434b16-17). Also, taste is a certain form of touch that is necessary to apprehend food, a necessary function that must be fulfilled if the animal is to stay alive, as Aristotle notes in *On Sense and the Sensible:*

> But coming now to the special senses severally, we may say that touch and taste necessarily appertain to all animals, touch, for the reason given in On the Soul, and taste, because of nutrition. It is by taste that one distinguishes in food the pleasant from the unpleasant, so as to flee from the latter and pursue the former: and savour in general is an affection of nutrient matter (436b13-17).

The sense of taste, being essential for the nutrition of the animal, is a necessary power. Hence, the destruction of the organ of it brings the death of the animal (435b5-20).

On the other hand, the senses other than touch (seeing, hearing and smelling) serving for the perception of objects 'not only by immediate contact but also at a distance'(434b25-27), and whose employment require the involvement of certain media, are not found in every animal (434b24) but only in those which are capable of locomotion. They serve for the well-being of the animal that the destruction of the organs of these senses reduces the quality of life, yet without destroying the life of animal altogether (435b7-10). Yet more, if the animal has, in addition to these

powers, the power of intellect, they collectively endow the animal with a capability of living a higher form of life , as Aristotle writes in *On Sense and the Sensible:*

> The senses which operate through external media, viz. smelling, hearing, seeing, are found in all animals which possess the faculty of locomotion. To all that possess them they are a means of preservation; their final cause being that such creatures may, guided by antecedent perception, both pursue their food, and shun things that are bad or destructive. But in animals which have also intelligence they serve for the attainment of a higher perfection. They bring in tidings of many distinctive qualities of things, from which the knowledge of truth, speculative and practical, is generated in the soul (436b18-437a).

These "luxury"[22] senses, when they come along in companion with the power of intellect, provide the individual with a capability of receiving a keener sensation and a capability of comprehending what is received, thereby endowing the individual with a capability of engaging in theoretical pursuits. As a result, the individual, being capable of not only living but also living well, is distinguished from those which are merely capable of living.

In the order of living things there is a sort of hierarchy that some living beings are more perfect than others by the specific souls they have, and thus they possess more sophisticated bodily organizations. That is, while all living beings are capable of nutrition, and while all animals are capable of touch in addition to the power of nutrition, there are some animals which possess more sophisticated powers, thus they are capable of living a more sophisticated life. To quote in Aristotle's own words:

> For in all animals, at least in all the *perfect* kinds, there are two parts more essential than the rest, namely the part which serves for the ingestion of food, and the part which serves for the discharge of its residue. For without food growth and even existence is impossible. Intervening again between these two parts there is invariably a third, in which is lodged the vital principle. As for plants, though they also are included by us among things that have life, yet are they without any part for the discharge of waste residue. For the food which they absorb from the ground is already concocted, and they give off as its equivalent their seeds and

[22] I borrowed this term from M. Leunissen (2010, 92).

> fruits. Plants, again, inasmuch as they are without locomotion, present no great variety in their heterogeneous parts. For, where the functions are but few, few also are the organs required to effect them. The configuration of plants is a matter then for separate consideration. Animals, however, that not only live but feel, present a greater multiformity of parts, and this diversity is greater in some animals than in others, being most varied in those to whose share has fallen not mere life but life of high degree. Now such an animal is man. For of all living beings with which we are acquainted man alone partakes of the divine, or at any rate partakes of it in a fuller measure than the rest (655b30-656a8).

Because the capability of growing is the threshold of life and the power of nutrition is the indispensable condition of growth, all living beings must have the organs which are capable of functioning in the actualization of these powers. However, some living beings by their souls are more perfect than others, thus they are endowed with more powers. And the more powers an individual has, the more organs it should have for the sake of actualizing them. Thus, the complexity of organization is determined by what the specific soul specifies. And because plants by their soul have less powers, they have to fulfill less functions in comparison to animals, thus they have rather a simple configuration. Animals, on the other hand, being capable of both sensation and locomotion, rank higher on the scale of life, and consequently have a more sophisticated bodily organization. However, over and above all other living beings, lies humans, being capable of leading a good life and thus participating in the divine.

Then, the parts of living beings are either conditionally necessary or serve for the well-being of living beings, and they owe their existence to the specific powers specified by the specific soul that determines the necessities and the luxuries of the individual. Also, the variations in the structure of the parts are either necessary or for the sake of well-being because the function of an organ not only conditions the

existence of it but also the structure it possess.[23] Furthermore, the mode of life of a living being (for instance if an animal is by its formal nature flier or swimmer) is acknowledged to be an essential determinant of the specific soul over the organization of the individual, determining the character of living activities of the individual and thus the specific necessities that must be fulfilled, which will be the subject matter of the next chapter.

To conclude this section, soul is the primary nature of living beings in three ways. Firstly, it is the essence, the form, the inseparable power of living things that constitutes their actuality and makes them what they are so that when soul departs bodies of living beings disintegrate and cease to exist (415b7-15). Secondly, it is the final cause, that for the sake of whose actualization potentially living bodies are conditioned to exist (416a15). And because nature always operate for the sake of an end, and because soul is the end of living beings, nature organizes body in the best possible way to effect the actualization of soul, for the sake of generating the best instrument possible to be employed in the service of life. Hence, natural bodies are instruments of life. And the beneficial capabilities of the parts are the ground of the existence of the parts, which serve for the actualization of soul. Moreover, soul manifest itself through its specific powers. And the varying combinations of these powers constitute the specific souls of living beings. Among soul powers there exists a certain hierarchy such that the power of nutrition is the most fundamental power of living beings without which no other power can exist. In addition, all animals

[23] See *On the Parts of Animals:* 'As with the blood so also with the other parts, homogeneous and heterogeneous alike. For here also such variations as occur must be held either to be related to the essential constitution and mode of life of the several animals, or, in other cases, to be merely matters of slightly better or slightly worse. Two animals, for instance, may have eyes. But in one these eyes may be of fluid consistency,while in the other they are hard; and in one there may be eyelids, in the other no such appendages. In such a case, the fluid consistency and the presence of eyelids, which are intended to add to the accuracy of vision, are differences of degree' (648a14-19).

without exception are endowed with the power of sensation, particularly the power of touch. However, the senses other than touch and the power of intellect are quite refined powers which serve for the well-being of the possessor. The organization of living beings varies according to the sophistication of their specific souls. More sophisticated souls effect individuals with more sophisticated capabilities, thereby necessitating the existence of more sophisticated organizations. In sum, the parts of the body exist either necessarily by the functions they perform or they serve for the well-being of living beings. Besides, that soul is the ultimate end for the sake of whose actualization living beings exist is explicit, maintains Aristotle, also by the fact that most of the living beings have a natural tendency to reproduce offspring of their own kind. Because living beings are mortal and thus have an interrupted actuality, their natural tendency to reproduce offspring of their own kind in a way allows them to bypass the interrupted actuality they have. That is, although living individuals are not numerically capable of being eternally actual, by reproducing offspring of their own kind they can partake in eternity through the species they belong to (415a22-415b8). Finally, soul is the ground of the internal impulse to move (widest sense) that living beings have, though it is not found in every living beings (it assumes appetite and imagination). As a result, soul is the primary nature of living things.

# CHAPTER 4: MODE OF LIFE

In the preceding chapter, the soul has emerged as the form of living beings, and living activities specified by this formal principle have been recognized as the final cause of the living body, to which body owes its coming to be and the particular structure it has. Thus, the living body, whose existence is conditioned for the actualization of life, which constitutes its function, has been acknowledged as the instrument of life. Besides, the soul has been said to be manifesting itself through its specific powers, which are the powers of nutrition, sensation, locomotion and intellect. Among those, the power of nutrition has emerged as the fundamental one which is possessed without exception by all living beings. However, it has been added that besides the power of nutrition, the possesion of the power of sensation, particularly the power of touch, is a must for being an animal. The powers other than touch have been identified as for the sake of well being. In addition, most of the animals have been said to be possessing the power of locomotion necessarily. The specific soul of a living being has been accepted as determining which soul powers the living being is to have, and thereby what bodily arrangement it is to have. This chapter, on the other hand, will be elaborating on how the specific soul of a living being determines not only which soul powers the living being is to have but also in what specific mode these powers of it are to be realized (thereby determining the structure of the organs in charge of the performance of these powers), which constitutes the specific mode of life of the living being. The discussion will be based on the examples of explanations taken from *On the Parts of Animals,* where mode of

life is frequently referred to as a certain determinant of the body arrangement of animals.

As has been stated in the previous chapter, there is no generic manifestation of soul. Rather, its realization occurs through the realization of its specific powers. Thus, living is acknowledged to be the combined realization of these powers. Yet, the actualization of these powers does not occur in an absolute manner either.[24] Although all animals are capable of nutrition and sensation, and most of them locomotion, the realization of these powers occurs in different ways in different animals. Different groups of animals have different modes of nutrition and locomotion in accordance with their forms. As a result they have different bodily organizations; e. g., flying is the essential/natural mode of locomotion of birds specified by their form, thus they possess wings as locomotive organs which are functional for flying (693b12-13), while swimming is the natural mode of locomotion of fishes, so they have fins, which are functional for swimming (695b19-24). That is, given that locomotion (as well as nutrition) is always in one mode or other, the form of an animal determines not only whether or not the animal is to have the power of locomotion but also specifies a distinct mode of locomotion to the animal, which constitutes the proper mode of locomotion of the animal.

As living consists in the communal actualization of a plurality of soul powers, the mode of the realization of a soul power is connected with those of the other powers. The mode of locomotion of an animal qualifies the mode of nutrition of the animal, determining the conditions of access to food and the character of the food which is

[24] As it is quite an exceptional power, from now on I will be excluding 'thinking' from the discussion in order to be able to carry out the discussion in general terms. Yet, as it is mentioned in the previous chapter, this power endows the possessor with a capablity of living a good life. In this sense, the power of intellect can be identified with the grandest mode of living.

fed on, and thus the processing of food and the organs of food processing. Besides, the conditions of access to food determine the quality of sensation; if access to food is demanding then a keener sensation to obtain food is required. In addition, the mode of nutrition of an animal, whether the animal is a flesh eater or herbivore, determines whether the animal is to be a fighter or not, which thereby determines the necessity for offensive means. Given that life consists in the collective realization of a plurality of soul powers, the mode of life refers to the total character of the living activities of an individual. And the organization of the body is carried out so as to meet the qualifications of this total character which is determined by the specific form of the living individual.

To provide a concrete picture of how different modes of life condition the coming to be of different bodies, I will continue with some examples taken from *On the Parts of Animals,* in which the differentiations in the structure of the parts are primarily related to the differences in the modes of life. Let me begin with a passage which primarily discusses on how the variations in modes of nutrition condition the variations in the organs of food intake of birds, which are beaks.

> In birds the mouth consists of what is called the beak, which in them is a substitute for lips and teeth. This beak presents variations in harmony with the functions and protective purposes which it serves. Thus in those birds that are called Crooked-clawed it is invariably hooked, inasmuch as these birds are carnivorous, and eat no kind of vegetable food whatsoever. For this form renders it serviceable to them in obtaining the mastery over their prey, and is better suited for deeds of violence than any other. Moreover, as their weapons of offence consist of this beak and of their claws, these latter also are more crooked in them than in the generality of birds. Similarly in each other kind of bird the beak is suited to the mode of life. Thus, in woodpeckers it is hard and strong, as also in crows and birds of crowlike habit, while in the smaller birds it is delicate, so as to be of use in collecting seeds and picking up minute animals. In such birds, again, as eat herbage, and such as live about marshes-those, for example, that swim and have webbed feet-the bill is broad, or adapted in some other way to the mode of

> life. For a broad bill enables a bird to dig into the ground with ease, just as, among quadrupeds, does the broad snout of the pig, an animal which, like the birds in question, lives on roots. Moreover, in these root-eating birds and in some others of like habits of life, the tips of the bill end in hard points, which gives them additional facility in dealing with herbaceous food. (662a34-662b17)

This passage is quite long and fruitful at the same time. It opens up with an analogy drawn between mouth and beak in terms of their functions. Accordingly, despite the considerable structural difference between mouth and beak, mouth and beak as organs of food intake are one in their functions. That is, although as living beings both birds and humans are one in form generically, they are different specifically. As a result, their organs of food intake are of different structures in accordance with their specific forms. Besides, birds are subject to specifications within the group. Different species of birds differ in the shape of their organs, though not radically.[25] As referred to above in the explanation, these differentiations are related to the particular modes of life of the species, that is, defined by their functions as the organs of food intake of birds, the shapes of beaks are conditioned by the qualifications of their functions which show differences in accordance with nutritive habits. Accordingly, birds which are flesh eaters by their specific nature must hunt in order to obtain nutriment, which means that they have to fight for their food. Having a violent nature as such, the structure of the beaks of these birds must be convenient

[25] The kind of difference between birds and humans is different from the one between the different species of birds. In the first book of *On the Parts of Animals* Aristotle makes, though not firmly but for methodological reasons, a classification of animals (644a15-20). Accordingly, if one species differs in structure from another not radically but in the degree of "more or less" they are acknowledged as belonging to the same wider group; e.g., different species of birds are more akin to each other in structure than they are to fishes which is a different wider group. In his explanations, Aristotle regards mode of life in some cases as a determination of species while in others as a determination of wider group; e.g., mode of locomotion of fishes is generically determined as swimming (695b19), while flying is not the generic mode of locomotion of birds as certain species of birds are incapable of flying (694a6-8).
For contemporary discussions, the relationship between genus and species is significant, which aim at finding out whether the species of Aristotle can go together with the theory of evolution. For a detailed discussion of the subject see Balme (1980); Lennox (1985c), (1987b).

for offensive functions, otherwise these birds would not be able to obtain nutriment. Thus nature allots them hooked beaks which allow them to dominate their prey. In addition, that the claws of flesh eater birds are more crooked in comparison to the claws of those which are herbivorous is grounded on the same basis. Accordingly, crooked claws are crooked because their violent mode of life conditions them to be so.

Going back to beaks, the kinds of beaks are in conformity with the modes of life because the mode of life of each species is specifically the final cause of the body of the individuals of that species. Accordingly, woodpeckers possess hard and strong beaks to be able to make holes in trees for the sake of hunting insects, because making holes and hunting instects is the natural activity of them, which is determined specifically by their form. Birds which are smaller in size naturally feed on seeds and tiny animals, thus the beaks of these birds must be of fine structure. Birds whose mode of locomotion is swimming and whose biotope is marshes feed on deep roots. Given that this is the mode of life of them specified by their particular nature, it is a necessity of their nature that they have broad beaks, so that they can dig out deep roots. In addition, these birds are necessarily web-footed for the sake of their mode of locomotion (swimming) and biotope (marshes).

The variations in the structure of insects are explained on a similar basis:

> Of such flying insects some live a wandering life, and are forced to make long expeditions in search of food. These have a body of light weight, and four feathers, two on either side, to support it. (682b6-10).

As all living beings, insects must necessarily obtain nutriment in one way or another. However, some insects by their specific nature have to live a quite mobile life and

have to travel great distances in search of food. Given that these insects are wanderers by their particular nature, the body of these creatures must be furnished so as to effect a good instrument which functions well in a mode of life as such. A light body with abundant wings is quite functional for mobile life. Thus nature endows these creatures with a light body and large amount of wings.

Because the mode of locomotion of birds for the most part is by flying, the average size of the body of a bird is explained in the same manner: ‘Speaking generally, a bird has to be very small in size, because it is difficult for a body of large bulk to move off the ground’ (697b24-26). That is to say, birds are in general small creatures for the sake of the performance of their essential activity, flying, which requires a small and light body in general.

The next passage dwells on how mode of nutrition and mode of locomotion collectively condition the quality of sensation, particularly the sense of sight, thereby qualifying the structure of eyes:

> Oviparous quadrupeds do not blink in like manner as the birds; for, living as they do on the ground, they are free from the necessity of having eyes of fluid consistency and of keen sight, whereas these are essential requisites for birds, inasmuch as they have to use their eyes at long distances. This too explains why birds with talons, that have to search for prey by eye from aloft, and therefore soar to greater heights than other birds, are sharpsighted; while common fowls and the like, that live on the ground and are not made for flight, have no such keenness of vision. For there is nothing in their mode of life which imperatively requires it (657b23-30).

The function for the sake of which eyes exist is to actualize sight. In order for an organ to be capable of actualizing sight, it must be constituted by some sort of fluid material in a delicate manner. The more fluid the constitution of eyes is, the more keener sight is. However, the delicate constitution of eyes renders them vulnerable to injury. The safety of them is secured by an additional organ, eyelids, whose function

is to make blinking possible, by which things are prevented from getting into the eyes. Accordingly, because the more fluid the constitutuion of eyes is, the more liable to injury they are, living beings which have keener sight do blink more rapidly. Thus keener sight necessiates rapid blinking. However, whether an animal is to be endowed with keener sight is a determination of mode of life. Birds with talons by their specific nature are flesh eaters, that is why they are endowed with talons in the first place, and their natural mode of locomotion is by flying. Thus they have to fly at great heights in search of food. In order for these birds to be able to detect their prey from above, sharp sight is a necessity; otherwise they would not be able to obtain nutriement. On the other hand, birds whose natural habitat is land,[26] thus whose mode of locomotion is not by flying, are not subject to such an obligation. Hence they do not have as keen sight as birds with talons have, entailing that they do not blink as rapidly as birds with claws do.

To conclude, the examples as regards to how mode of life conditions the structure of the parts can be proliferated. Yet the general idea is the same: because living is the final cause of a living body, the body must be fashioned in the best possible way to actualize life. Because different modes of lives have different requirements, living beings that have different modes of lives must have different bodily structures so as to meet those differing demands.

[26] Because wings are primarily defined as organs of flying (which means that flying is that for the sake of which they exist), the existence of wings in land birds does have no functional basis. Aristotle seemingly regards the existence of wings in birds as a part of birds' essential constitution*:* 'It is inevitable that a bird should have two feet, for (a) it belongs essentially to the blooded creatures and (b) it is winged and (c) four is the greatest number of motion points which a blooded creature can have' (693b6-8). In this passage, seemingly the existence of wings in birds is acknowledged as a structure-oriented determination of form, regardless of the possibility of a bird's being incapable of flying. Along these lines, even though some of them cannot fly, birds by their nature must have wings.
I have come to notice this quotation first in M. Leunissen 2010, 162.

# CHAPTER 5: CONCLUSION

In this thesis I have tried to show that in Aristotle the parts of living beings owe their coming to be and the particular material arrangements they have to the functions they perform, thus that the structural suitability of the parts for the activities they perform and their beneficial contributions to the maintenance of the life of the possessor is no coincidence.

Because living beings and the parts of them are natural things, their coming to be is ruled by the principles of natural becoming. Thus I began my thesis with the discussion of the conditions of natural becoming.

The first chapter started with the definition of nature. Based on the discussions made in *Physics* I-II, nature has been defined as an internal principle of becoming natural things possess in virtue of themselves. Departing from that becoming is always a becoming of a material substratum in one aspect or another (but not in all aspects), matter has been acknowledged as a principle of natural becoming. And departing from that that which becomes comes to be something new always by gaining a new form, form has been recognized as an accompanying principle to matter. The relationship between these principles has been recognized as one of between potentiality and actuality. Matter, by its privative nature, being open to admitting of new actualities has been identified with the principle of potentiality while form introducing matter with new actualities of which matter is capable of admitting has been identified with the principle of actuality. Thus 'becoming' has been acknowledged as a process from potentiality (though not from pure potentiality) to actuality. Next, the priority order between these principles has been discussed. In

the light of the analogy between art and nature, in terms of the courses of their movement, the formal principle operating as the logos of natural motion (as well as of artistic motion) has been acknowledged as the final cause of natural motion, that for the sake of which motion is effected. More importantly, besides the analogy between art and nature, the regular conveyance of form from parents to offspring has served as the ground of the priority of the formal principle. That is, because man comes from man while wheat comes from wheat, form has been endorsed as the final cause of natural motion, whose actualization constitutes the end of motion. That form is the final cause for the sake of which the becoming process happens has entailed that becoming occurs for the sake of being. Thus, the course of becoming has been expressed as 'given the form of what is going to come to be, 'such and such' matter must be processed in 'such and such' manner for the sake of achieving this form', which means that the material principle is conditioned by the formal principle.

The proper activity specified by the form of the thing-to-be-produced has been acknowledged as the genuine end of natural motion (as well as of artistic motion). Conditioning the coming to be and the particular material structure of the thing, it has been recognized as the function of the thing. Thus, to the body, owing its coming to be and the particular structure it has to the function it fulfills, has been attached an instrumental value.

The second chapter particularly focused on the form of living beings. Soul has emerged as the form of the living body, in which the actuality of body consists and on which the integrity of body depends. The discussion in that chapter was at the level of being because soul is an actualized form as the first actuality (power) of the living body which has potentially life in it. That body has potentially life in it meant

not that body is not alive, but that soul is a power, the power of life, which does not vanish when the specific powers of it are not actualized to the second degree of actuality. The specific powers of soul have been enumerated as the power of nutrition, the power of sensation, the power of locomotion and the power of intellect. Life has been demarcated at the bottom by the power of nutrition which is shared by all living beings without exception. Besides the possession of the power of nutrition, the power of touch has emerged as the necessary condition of being an animal. Also, the senses other than touch and the power of intellect have been acknowledged as not necessary but for the sake of the well-being of the possessor.

On the grounds of the first chapter, that soul is the form of living beings meant that life functions specified by soul are the final cause of the living body, to which the living body owes its coming to be and the particular structure it has. Thus, the parts of the living body as well as the body as a whole have emerged as the instruments of life. As a result, the benefical capabilities of the parts have turned out to be the ground of the existence of the parts, and variations in the sophistication of the body have been related to the variations in the combination of the soul powers. The more sophisticated the soul of a living being meant the more sophisticated bodily organization it has.

In the third and last chapter, how the mode of life of a living being conditions the bodily arrangement of the living being has been the subject matter, based on the presentation of certain examples of explanation from *On the Parts of Animals*, where Aristotle frequetly refers to mode of life as a certain determinant of the arrangement of living body. The mode of life is defined as the total character of the living activities,  which is specified by the specific form of the living being. In it have been

included mode of locomotion, nutritive habits and biotope. Differing in their requirements, different modes of life have been said to be conditioning the coming to be of the organs of different structure.

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