The difference of sex and the difference it makes: A contemporary Aristotelian approach to sexual difference

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Contents

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Abstract

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Despite the public conversation and the voluminous discussion of sex and gender in academia, there is little systematic analysis of precisely what those terms mean, or how we should understand what it is to be male or female, or men or women per se. The discussion is somewhat divided between those who would point to our chromosomes or gametes to settle the matter, and others who focus on culture and discourse which they claim are the proper starting point for understanding gender. Outside of studies in the history of philosophy and contemporary Thomistic circles, Aristotle very rarely comes up in this debate, except as a kind of whipping boy for anti-essentialists in their rejection of a neo-essentialism which Aristotle does not even represent. The reasons for this are clear enough: his outdated biology and misapplied metaphysics lead to a disastrous account of sexual difference with women viewed as a kind of natural failure. In spite of this, I propose that his developed conception of nature with its form-matter composition continues to provide a fruitful way to understand sexual difference and can, in fact, be integrated with a contemporary biological understanding of sexual development and the mechanisms that differentiate men and women. While a small number of Thomists have partially rehabilitated Aristotle through Aquinas in regard to the metaphysical classification of sexual difference, this thesis will expand upon the limited defence of a contemporary Aristotelian account of sexual differentiation, and, in particular, will highlight his hierarchical conception of living things as a means to understand sexual difference. This hierarchical conception of living things is an important aspect of Aristotle's philosophy of nature which remains almost entirely unexplored in its application to sexual difference. I contend that it permits us to recognise our animality and humanity in their fullness. Viewing sexual difference through this lens provides a firm grounding for gender difference in our sexually differentiated bodies without reducing us to animals but instead elevating that which we share with other living things. While this theoretical study does not aim to settle current disagreements over claims about sexual difference and still less does it provide any policy suggestions, a sound anthropology which recognises our dual nature as men and women can provide a more secure basis for further reflection and argument.

Abbreviations

An. Post.	*Posterior Analytics*
Cat.	*Categories*
DA	*De Anima*
GA	*Generation of Animals*
HA	*History of Animals*
Met.	*Metaphysics*
NE	*Nicomachean Ethics*
PA	*Parts of Animals*
Phys.	*Physics*
PN	*On the Principles of Nature*
Q. D. de Anima	*Quaestiones Disputatae de Anima*
Q. D. de Potentia Dei	*Questiones Disputatae de Potentia Dei*
SCG	*Summa Contra Gentiles*
Sent.	*Commentary on the Sentences*
ST	*Summa Theologiae*
Top.	*Topics*

Introduction

We share certain pre-reflective assumptions about what it means to be male and female in the human species: that they are two different things; that each plays a different role in reproduction; that women can become pregnant, gestate and give birth to the next generation; and that men do the impregnating. Further, we suppose that 'men' and 'women' are very closely related to 'male' and 'female'; that there is a kind of analogue between sexual differentiation in our species and sexual differentiation in other species; and that there are two and only two sexes. Such pre-reflective notions, however, have come under sustained attack since the last century, particularly by those who argue that these notions are a contingent product of culture and discourse or our way of speaking about these things. There have also been significant changes in the material conditions that make challenges to such notions more plausible than they might otherwise have been.[1]

Furthermore, the basic terms of this discussion i.e. 'sex' and 'gender', have become wrought in controversy and it is no longer clear if they have a shared meaning among participants in the discussion. As I will show, the terms are frequently conflated, or when they are differentiated, the relation between the two, if any, is not clearly specified. Still, in a fairly widely accepted discourse which I explore in Chapter II, 'sex' is more closely associated with the body and reproduction, and 'gender' with culture. With this in mind, it is possible to delineate three broad positions one might adopt in regard to the reality and relation of sex and gender, even while there may be additional disagreements among proponents of each position.

First, it is possible to be a realist about the division between male and female as well as a realist about the division between men and women. That is, sexual difference between male and female across many species is thought to be a mind-independent division, discovered

[1] The changes in the material conditions including the role of technology (most especially, the development and use of relatively effective contraception) and economics circumstances, has helped to alter our self-understanding and especially our ideas about that which is given. This thesis will focus on the conceptual and theoretical challenges though the influence of material conditions will be touched on in Chapters II and VIII. For a more detailed exploration see Hanby (2014), Harrington (2023) and Illich (1982).

through experience, based upon and necessary for sexual reproduction. Furthermore, in the human case, this division between men and women is closely related to the division between male and female. In virtue of being a man, one is male, and in virtue of being a woman, one is female. Sex and gender, in other words, are closely intertwined (if not the same thing) with gender grounded in sex in some way. Gender just is the cultural expression of real sexual difference. To the extent that gender is constructed, it is constructed within the confines of the bodily reality of sexual difference. I take this position to be more or less consistent with pre-reflective notions of sexual difference outlined above.

Second, it is possible to be a realist about the division between male and female, but an anti-realist about the division between men and women. The sexual division between male and female exists in mind-independent reality and can be found across many species including our own, but in the human species the difference between men and women is constructed or a product of culture. Sex and gender here are separated. There is a fact of the matter about sex, being that only two are necessary for reproduction, but gender, is much more open to change and revision. There is no specific expression of gender outside of the narrow material conditions that make reproduction possible. We can call this a kind of moderate realism.

Third, it is possible to be an anti-realist about the division between men and women and an anti-realist about the division between male and female. That is, not only is gender a product of culture, but so is sexual difference. Sexual difference is not fundamentally related to reproduction as a matter of nature or reality. Instead, the relation between sexual difference and reproduction is also somehow a culturally imposed contingent matter. Interestingly, there is also a close relation between sex and gender as there is in the realist position. However, while for the realist, the reality of sexual difference is the ground for the reality of gender difference, for the anti-realist, the construction of gender is the ground for the construction of sex. An extremely broad scepticism about the possibility of knowledge of external reality tends

to accompany this position.[2]

Now, each of these positions has certain metaphysical commitments more or less easily discovered and articulated. For example, the third position could be interpreted as some kind of metaphysical idealism whereby there is no reality outside of the constructs of the human mind. Each also supposes some kind of anthropology or conception of what it means to be human. Again, for example, in regard to the third position, that our bodies as a natural given are not constitutive of who or what we are. Or to say the same thing, that our bodies are not a natural given at all but rather, a construct. Each of these positions must also have some view about the relation between human beings and other living things in terms of sexual differentiation.

Another way to understand these positions is in terms of their attitude towards 'essentialism'. The first position supposes a robust conception of 'essentialism', according to which there is something about men and women or male and female more generally, that determines what they are. Each has a certain fixed content and ends. The second position is a kind of moderate essentialism that has a determinate conception of male and female but not of men and women, and the third position eschews essentialism of any variety, seeing both sex and gender as a kind of construction.

The paradigmatic philosopher of 'essentialism' of course, is Aristotle, and like many philosophers throughout the centuries, Aristotle also has something to say about sexual difference.[3] One of Aristotle's great strengths is his appreciation of the breadth and depth of questions concerning sexual difference. He understood that to know what kind of difference exists between men and women, one must first know what it means to be human. He also understood that to know what it means to be human requires an account of what it means 'to

[2] Perhaps there could be a fourth position such that the division between the genders men and women is real and mind-independent, but somehow the division between male and female is mind dependent and constructed. This is not a position which has attracted defenders, or at least has not been clearly articulated.

[3] For a comprehensive account of philosophical reflection on sexual difference in general, and women in particular, see Prudence Allen's magisterial *The Concept of Woman: Volumes I-III* (1985; 2002; 2006; 2015).

be' a material thing. Aristotle did in fact push his inquiries significantly further than this, but a general ontology of material reality is both necessary and sufficient for the purposes of this thesis. It is necessary because, as I have already indicated and will show, any account of sexual difference must have some conception of what reality is like. Where a constructionist conception of nature might view classes or groupings we find in nature, from cats and dogs to barnacles and oak trees, as constructed by an observer, an Aristotelian will view those classes as some real aspect of each which makes them belong to a specific group i.e. their form. With such a radically different conception of nature in general, it is no surprise that adherents of these different positions tend to differ radically on their conception of sexual difference. A general ontology of material reality is sufficient for my purposes because even more general metaphysical questions about what it means 'to be' as such, would take us so far afield from sexual difference that we might never get back to the topic at hand.

It should be noted, however, that Aristotle's own characterisation of sexual difference leaves a lot to be desired. This is partly due to his faulty biology and partly due to his misapplied metaphysics. Furthermore, he never actually discusses 'gender' as such.[4] Nevertheless, a contemporary Aristotelian approach to sex and gender has much of value to contribute to current discussion on these matters. Not only does his realist metaphysical approach take into account that which connects things within a kind, as well as that which differentiates things within a kind, but his metaphysically informed hierarchical account of living things, provides a means for the contemporary Aristotelian to speak intelligibly about 'gender' without reducing it to sex. Aristotle's essentialism, including its holism, teleology and form-matter conception of nature, enables us to see how it is that males and females are different.

In this thesis, I will advance a *contemporary* Aristotelian account of sexual difference. Part of what this requires will be an up-to-date presentation of sexual difference as provided by biological science. Accordingly, Chapter I will provide a largely genetic narrative of sexual difference as found in standard medical textbooks on the subject. I will show how this narrative

[4] As I show in Chapter II, we have to wait until the 20th century for the inauguration of the sex/gender distinction.

is an efficient causal account of how males and female came to be through tracking their genetic development from zygote to adult. While not doubting the empirical discoveries, I will challenge the idea that we can discover what it means to be male or female through an examination of parts and mechanisms as revealed by biological investigation. I will examine both a chromosomal and gametic account of sexual difference which reduces that which makes us men and that which makes us women to the presence of a Y chromosome, and the creation of large or small gametes respectively. I will identify this approach to sexual difference as a form of neo-essentialism I call 'hidden structure essentialism', which seeks to find an 'essential' property of a thing in some hidden microstructure. I will argue that understanding sexual difference in this manner confuses efficient cause with formal and final cause; is reductionist insofar as it privileges parts over wholes; and insofar as it is reductionist, it presupposes some broader account of sexual difference and is therefore parasitic on some prior holistic notion of sexual difference.

While the hidden structure essentialists of Chapter I could be characterised as moderate realists insofar as they defend the idea of a mind-independent difference between the male and female of the human species, the writers in Chapter II, though beginning with a similar conception of sexual difference, move progressively away from this idea and end up endorsing a thorough anti-realism about both sex and gender. In this vein, in Chapter II, I will track the progressive diminishing of the role and importance of the body in sexual difference. Partly in reaction to political ideas which had claimed that women should be denied certain roles in society due to their biology, a number of thinkers over the latter half of the 20th century push the idea that sexual difference in terms of our bodies (whether conceived on the microscopic level, in terms of gametes and chromosomes, or macroscopic, in terms of pregnancy and impregnation), are largely irrelevant to our being men and women. Insofar as they are relevant, they are only so as made by culture. I will examine three especially influential thinkers in this tradition beginning with Simone de Beauvoir who is an early theorist in the separation of the biological and the cultural i.e. of sex and gender. Second, I will examine the materialist feminist, Shulamith Firestone, who adopts de Beauvoir's juxtaposition between the natural and the

human, and argues for radical change to our material bodies to alter the material conditions of gestation itself as a means of political change. Finally, I will examine Judith Butler's constructivist account of gender which eschews all notions of there being anything 'essential' to being a man or a woman, and, accordingly, basically ignores biological difference as itself constructed for political purposes. I will attempt to highlight the metaphysical and anthropological presuppositions behind each of these delineations of sexual difference.

While the thinkers in Chapters I and II certainly do contribute to our understanding of sexual difference, their fundamental anthropological vision and metaphysical presuppositions are mistaken. An alternative is needed, and, as I have suggested, this can be found in a contemporary Aristotelian approach to sexual difference which employs his understanding of essentialism, including form and finality, and his hierarchical understanding of being. Unfortunately, as I will show in Chapter III, Aristotle's own conception of sexual difference is deeply flawed. He combines a faulty biology with his misapplied metaphysics which mutually reinforce the mistakes he makes in each. This results in Aristotle's infamous characterisation of females as "mutilated" males (GA, 727a27-28) where he views males as the norm of the species, and females as defective. While the precise meaning of this must be situated within the context of his biology more generally, and his characterisation of other normal biological phenomena as 'mutilated' or lacking in some way, Aristotle's understanding of sexual difference cannot be defended in its original form.

Accordingly, Chapter IV will begin my rehabilitation of Aristotle first through an explanation and defence of his form-matter conception of essence, and second through a merging of his essentialism with the discipline of systems biology, which I will apply to sexual difference. Due to the fact that systems biology is both holistic and orderly, it can incorporate the biological data presented in Chapter I into an account of sexual difference without reducing being male or being female to some 'essential' part. I will argue not only that systems biology can be understood to be consistent with a hylomorphic conception of nature, but to make sense of the orderly change and development which systems biology assumes, a recognition of form, or

something like it, is necessary. I will argue that this can be seen in the use of computational modes of analysis which model change within an organism, and that such computational modes of analysis can only reveal something about the external world on the assumption that form is a real aspect of reality. This chapter will provide the foundation for the metaphysical presuppositions I bring to bear on the issue of sexual difference.

With the case for a hylomorphic vision of nature in mind, Chapter V will consist of a detailed breakdown of 'sex' as an accident. After explaining Aristotle's substance-accident ontology, I will draw heavily on Aristotle's medieval disciple and commentator Thomas Aquinas in his delineation of accidents and their kinds. In agreement with Aquinas, I will argue that 'being a male' or 'being a female' is a kind of inseparable accident which belongs to an individual within a species. I will argue that Aristotle and Aquinas are correct to argue that sexual difference arises from the material aspect of our essence, because locating sexual difference in the formal aspect of our nature risks bifurcating male and female into two different species within a given dimorphic species. I will differentiate 'sex' i.e. 'being male' and 'being female', from the power of generation, which is a generic power belonging to all living things just insofar as they are alive. I will explore the work of certain contemporary Thomists, at least one of whom has argued that sexual difference arises from the formal aspect of our nature. I will argue against this position. Furthermore, in this chapter, I will build on Aquinas by arguing that sexual difference is a kind of 'aptitude' in that it is a uniquely incomplete when compared to other powers.

In Chapter VI, I will argue that final causation is the cause of causes which ties together my account of sexual difference. Here I will relate the biological account of sexual difference in Chapter I to final cause, such that the mechanisms and parts of sexual difference act as efficient causes directed towards generation (the final cause) in the unique manner that males and females do. Second, I will explore how my characterisation of sexual difference applies to other species. In particular, I will consider a number of different organisms including ones which are sexually differentiated within the same individual e.g. roses, which have both male and female

parts, as well as animals which change sex throughout their lives. I will argue that the terms ‘male’ and ‘female’ apply analogously in such cases. Third, I will consider how we should understand disorders of sexual development in light of my analysis. I will argue that the existence of such conditions can create an epistemological difficulty in the sense that it can be very difficult, if not impossible, to know the sex of an individual with one of these conditions. However such conditions do not create any ontological difficulty and do not undermine the sex binary. Finally, in this chapter I will consider the possibility of a sex change – what this would mean, whether it might be possible, and if it were possible, whether this would result in the death of one individual and the creation of a new one.

With a detailed metaphysical classification of sexual difference in place, in Chapter VII, I will apply Aristotle’s underused hierarchical conception of living things to sexual differentiation. While pre-reflective (as well as contemporary Aristotelian and Thomist) notions of sex and gender, tend to conflate the two, a hierarchical conception of sexual difference permits us to see how sexual difference is different in the human species. In brief, our being rational elevates sex to gender. I will defend the idea of three broad philosophical species (vegetative, animal or sentient and rational), and show how the power of generation is elevated at each level of being. I will offer an extended comparison between gender and cuisine, such that what is passive nutrition for the plant becomes a meal for the animal, and cuisine for a human, and what is passive generation in the plant, becomes sexually differentiated mate-seeking in the animal, and marriage or some analogical gendered pairing in the human species. I will argue that the expression of cuisine and gender is extremely wide in the human species due to our rational capacity, but that, in each case, their expression is limited by their relation to food and generation respectively.

Following directly on from the previous chapter, Chapter VIII will explain the advantages my hierarchical system has over its competitors. First, it takes full account of our rationality and animality. Without reducing us to animals, gender difference in the human species remains related to sexual difference in other species. Second, I will juxtapose my hierarchical account of

sexual difference against those I critiqued in Chapter II. I will argue that in diminishing our animality and bodies they appear to be promoting a kind of hyper-liberalism which fails to recognise the embodied relations we are born into as inherently gendered beings. Our being gendered, grounded in sexual difference, relates us to our parents, those around us, and our potential children, as given relations. I argue that my approach integrates our dual nature as rational animals in sexual and gender differences, whereas, through the opposition of our animality and humanity, theorists in Chapter II create an anthropology which mistakenly views the human body as an adversary to be overcome. Third, I propose that my hierarchical conception of sexual difference provides an answer to the question of why we differentiate sexes or genders in the first place, as opposed, for example, to bald people and non-bald people. I argue that sexual differentiation is uniquely relational in the ways described and situates us in relation to others in a manner that no other division does. At the same time, almost paradoxically, it is uniquely individuating. Finally, I will reflect briefly on the seeds of this hierarchical conception of sex and gender as present in Aristotle and Aquinas.

The motivation for this study and its specific Aristotelian approach are three-fold. First, as indicated, the fact of sexual difference is a continual topic of interest in philosophy on which just about every major philosopher in the Western tradition, including Aristotle, has had something to say.[5] It remains a topic of interest because asking questions about what it means to be male and what it means to be female, raises further questions about what it means to be human; about how the male and female in the human species should relate to one another; and about the extent to which any genuine sexual differences should be taken into account in policy making in a just society. Although I will not be addressing the final of these concerns, it remains my contention that knowing how society should be structured, especially in relation to sexual difference, requires knowing what male and female are. Secondly, following on from this, sexual difference is obviously a particularly acute issue in the current political climate in which increasingly radical claims about what it means to be men and women are made, for example, that trans women are women. As I see it, such claims are typically made without any

[5] See Allen (1985; 2002; 2006; 2015).

serious attempt to consider what they could mean, and even less so to defend their actual content. Again, this thesis will not engage directly in any political disputes, but it will explore the deeper theoretical issues that underlie them. Third, while Aristotle's own account of sexual differentiation, and that of many of his disciples, leaves a lot to be desired, he continues to provide powerful concepts for reflection on such matters. In particular, his division between substance and accidents and especially, the hierarchy of being, are tools to express and understand sexual differentiation, the manner in which those various sexed aspects of things relate to the human person, and how sexual differentiation in the human species is different to sexual differentiation in others. I intend to provide a biologically accurate and metaphysically sound account of sexual differentiation which functions as both a necessary correction to Aristotle and a useful contribution to current discussion.

Finally, the reader should note that the focus of this thesis is sexual differentiation in the human person. The metaphysical lens and what makes a male a male and a female a female will be examined in the human case unless otherwise stated. That being said, much of the analysis I provide could apply to other mammals or other sufficiently similar creatures. The difference between males and men, and females and women will be the specific focus of the final two chapters and will seek to explain how our being rational influences our being sexually dimorphic. As I will argue, rationality is the specific difference that makes sexual differentiation different in human animals from all other animals.

Chapter I – Biological accounts of sexual difference

I) Method and metaphysics

For my Aristotelian account of sexual differentiation, it is important to have a shared foundational understanding of the relevant empirical data before we are in a position to interpret it. Importantly, as I will show, the very idea of selecting the *relevant* empirical data is contentious and depends upon pre-reflective notions about sexual difference. Even so, standard accounts of the mechanisms of sexual differentiation do focus on the same or very similar things, which itself is a significant fact since it implies a shared broad understanding of sexual difference. As such, it will be useful to outline a broadly accepted biological account of sexual difference. I have taken these accounts from standard medical textbooks focusing on sexual differentiation during the embryological stage of human development. Such accounts involve telling an origin story, so to speak, of *human* males and females, though no doubt a similar story can be told for any biological species adjusting for the specifics of that species. Through this origin story, these accounts seek to investigate the parts and mechanisms describing how a zygote can develop to either have a male body morphology (or phenotype) or a female body morphology (or phenotype).

Now, two preliminaries should be born in mind before proceeding. In terms of method, in this chapter I will focus on typical or statistically normal accounts of sexual differentiation, even while recognising there are various anomalies or deviations from the norm, so called 'disorders of sexual development' (DSD).[1] I do so to avoid confusing matters before they are sufficiently clear, and also because hard cases make bad metaphysics (Feser 2019, 392). That is, in general, it is a mistake to move from a handful of cases which are difficult to interpret to the idea that a particular rule has no application at all. In this particular case, it would be a mistake to conclude that there are no sharp boundaries between what makes us male and female due to a handful of cases of DSDs. Difficult cases should be interpreted in relation to the norm and not the other

[1] The general relevance of DSD for my account of sexual difference will be discussed in Chapter VI.

way around.

Second, it is important to understand that these standard biological accounts of sexual differentiation are not written by philosophers attempting to establish what we mean by the terms 'male' and 'female' or 'men' and 'women'. In Aristotelian parlance, these biological accounts are efficient and material causal accounts of how male and female bodies with which we are familiar came to be.[2] Philosopher David Oderberg is particularly clear and insistent on this point. There is, he says, "an important metaphysical distinction between what things are and where they come from" (2007, 184). In his arguments against a cladistic conception of species he rightly argues that "[t]o identify essence with descent is… to confuse formal and efficient causes" (ibid, 224). Now, while the biological accounts of sexual differentiation do not do precisely this, they do offer an account of the mechanism of how a particular individual came to be a male or a female, and this mechanism is liable to be interpreted in a way which confuses formal and efficient cause. In other words, these books could be interpreted as offering an account of how male and female come to be in the human species, and implicitly identifying this with what male and female are. This, I will suggest, is part of what happens when the data is interpreted through a reductive 'essentialist' lens.

The mechanisms presented in these textbooks are expressed in terms of genes being upregulated or suppressed, the presence or absence of certain chromosomes or hormones, and the formation of testes or ovaries, all for the sake of the male and female reproductive organs. As I will show, while the particular mechanisms of differentiation are not here in question, the interpretation of the empirical evidence is. The biological accounts themselves do not, or at least should not, attempt to settle the question of what it means to be a male or female, or a man or a woman. At best, they are able to give a partial account which, as I will show, *presupposes* an unstated holistic conception of maleness and femaleness. In short, the parts and mechanisms of sexual differentiation are not precisely the same as saying what it means to be male and female.

[2] These notions will be explored in depth in Chapters IV-VI.

With these methodological and metaphysical points in mind, after presenting a standard account of the biological mechanisms of sexual differentiation, I will present two common accounts of sexual difference, the chromosome and gamete accounts, and suggest that within the 'essentialist' paradigm of the authors who endorse these accounts, the latter is superior to the former since it is better able to incorporate DSD. Following this, I will argue that this 'essentialist' paradigm suffers from several major flaws making it an unsuitable lens through which to understand sexual differentiation. I identify this reductionistic 'essentialism' as 'hidden structure essentialism' which searches for the essence of a thing in some hidden (micro-)structure accessible only by the methods of empirical science. I argue that it is a fundamental error to give parts explanatory priority over the whole upon which they in fact rely.

II) A biological account of the mechanism of sexual differentiation

The following summary is taken primarily from *Langman's Medical Embryology* (2015). In its focus on the urogenital system,[3] it differentiates a number of sexed systems which, we are informed, play a key role in sexual differentiation,[4] including and in particular the genetic and chromosomal aspects of sex i.e. the SRY gene (or lack thereof) on the Y chromosome (or lack thereof).[5] "Sex differentiation is a complex process that involves many genes, including some that are autosomal. *The key to sexual dimorphism is the Y chromosome*, which contains the testis-determining gene called the SRY (sex-determining region on Y) gene on its short arm" (Sadler 2015, 261 [emphasis added]). The SRY gene on the Y then, is also called the testis-determining factor and starts the process of male morphological development. SRY acts in conjunction with an autosomal gene (non-sex chromosome), SOX9, to induce indifferent

[3] The fact of the book's focus on the urogenital system in particular, as opposed to say, the stomach or lungs, is indicative of the author's prior conception of male and female. It shows that the author recognises that this is where the important or most obvious difference between the male and female lies. This in turn implies that he already has some conception of male and female in order to recognise that a certain pathway of urogenital development properly belongs to one sex and not the other. I return to this point later in the chapter.

[4] That the mechanism of sexual differentiation is a standard aspect of embryology as seen here and elsewhere (Johnson 2007 and Larsen 2001), rather than say, differentiation in terms of the formation of epicanthal folds or skin pigment, is itself of note since it is indicative of the importance of that division for us. I shall return to the question of why sexual difference matters in a way that skin pigment does not in Chapter VIII.

[5] In general, and in reality, these are rarely distinct save for rare DSD where the SRY can translocate from the Y chromosome to the X chromosome (Gamble and Pruski 2018, 179; Johnson 2007, 5; Austriaco 2013, 703).

gonadal cells to become testes. Within the testes, SRY either directly or indirectly (through SOX9) “upregulates production of Steroidogenic Factor 1 (SF1) that stimulates differentiation of Sertoli and Leydig cells [within the testes]” (ibid, 267). Sertoli cells produce a hormone, anti-müllerian hormone, which causes regression of the Mullerian ducts (integral for development of a female morphology), while Leydig cells produce testosterone (integral for further male morphological development). There are many other genetic factors such as FGF9 and PTGDS which play an important genetic role in sexual differentiation, but the presence of the SRY gene on the Y chromosome seems to start and continue to the regulate the entire process. The hormone, testosterone, produced by the testes stimulates the development of the internal structures of the male genitalia such as the epididymis, the vas deferens and the ejaculatory duct, as well as the external genitalia including the scrotum and penis. Within the testes, the male gametes, sperm, develop (ibid, 261-277).

Conversely, development of ovaries in the female “occurs in the absence of the SRY gene and in the presence of WNT4, the master gene for this differentiation process” (ibid, 277). In general, there being no Y chromosome means there is no SRY gene (see Footnote 5). Without the SRY gene, the expression of WNT4 is uninhibited, which leads to the upregulation of another gene, DAX1 “that in turn inhibits SOX9 expression” (ibid, 267). This means that the indifferent gonads will not become testes. WNT4 is referred to as “the ovary determining gene” (ibid, 268), which functions with other downstream genes, such as TAFII105, to induce ovarian differentiation. On the hormonal front, oestrogens stimulate the development of internal structures of the female genitalia such as the uterus and cervix, as well as the external genitalia including the clitoris, labia and lower portion of the vagina. Within the ovaries, the female gamete, oocytes, develop. This extremely condensed account is sufficient for my purposes.

III) The chromosome account

As indicated, these mechanisms of sexual differentiation in the human male and female can go awry in various ways and those characteristics which we usually associate with males and

females can fail to manifest to a greater or lesser degree (see Ch. VI). However, as an empirical account of the development of different genital systems in a normal context, there is nothing wrong with the account just given. In itself though, this biological story does not indicate the metaphysical context in which it should be understood, nor how or if sexual difference in the human species is different to sexual difference in other species.[6]

The biological account of sexual differentiation does answer, or at least comes very close to answering, what it is that makes a male a male and a female a female. *Langman's Embryology* implies that that which makes a human male a male is the Y chromosome, and more specifically, the presence of the SRY gene on the Y chromosome, and, in the case of the human female, the absence of the SRY gene on the Y chromosome – because there is no Y chromosome (ibid, 261). Johnson's *Essential Reproduction* (2007), another biological textbook, tells a similar story and also gets close to telling the reader what makes a male a male and what makes a female a female. The book states that the "genetic determinant of sex is on the Y chromosome" (ibid, 3), which is later specifically identified as the SRY gene. It too tells a story about how the SRY gene initiates the development of testicles, which produce testosterone, which furthers the development of male gametes and male morphology. It too mentions a number of distinct sexual parts which it refers to as male and as female. Both *Langman's Medical Embryology* and *Essential Reproduction*, therefore, present an account of sexual differentiation which suggests that what makes a male a male and a female a female is the presence of some sexed part or parts which taken together make an individual a male or a female.

Philosopher Kathleen Stock identifies this as the "chromosome account" of sex in the human species which she tentatively endorses[7], and states as: "[a] human male is a human with a Y chromosome. A human female is a human without a Y chromosome" (2021, 47). She

[6] Of course, the book and its author cannot really be at fault on this point since a book on human embryology should not be attempting to address such questions in the first place.

[7] Alongside this account, Stock offers the gamete account of sexual difference (2021, 45-47), which I discuss later in the chapter, and the "cluster account" (ibid, 49-51). I will not be engaging with the latter since she relegates the notion of "having 'enough' of the 'important' properties in a cluster" (ibid, 51) that makes a male a male and a female a female to a practical concern. For a conceptual exercise, this particular position is unhelpful. In terms of Stock's own account she says: "I find all three equally plausible; each has some drawbacks but no drawback seems devastating and I won't choose between them" (ibid, 46).

characterises this as an "'essentialist' account" which "prioritises one particular feature (… Y chromosome or lack of one) as essential to, and also sufficient for, membership of a given sex" (ibid, 48).[8] Philosopher Theodore Bach also identifies something similar to this as "biological essentialism" (2012, 233)[9] which he characterises in the following way:

> *"An individual Q belongs to be kind woman if and only if Q possesses XX chromosomes and female reproductive organs. These properties (a) are individually necessary and jointly sufficient for being a woman, (b) supervene on, or are identical with, Q's occurrent physiology, (c) consist in the same thing in all times and places and (d) are causally rather than conceptually related to Q's salient, gendered behaviour*" (ibid).

Note though, that while these are both 'essentialist' accounts, they do not specify precisely the same property for the chromosome account. Stock focuses on the absence of a Y chromosome, and Bach on presence of a XX chromosomal pair for a female. With Bach, psychologists Tate, Ben Hagai, and Crosby (2020, 8-10) also implicitly accept the latter characterisation of the chromosomal account of sexual difference in the human species even while attempting to undermine the conclusion which one might be tempted to draw from it i.e. that sex is a binary. As I will show presently though, Stock's account of the chromosomal account of sexual difference is more plausible.

Bach asserts that the chromosome account of sexual difference is "empirically false" (2012, 234) but does not elaborate. Presumably though, he is hinting at chromosomal variations other than XX and XY, which biologist Colin Wright (2021) correctly identifies as a common argument deployed against the idea that sex is a binary.[10] Tate, Ben Hagai, and Crosby make precisely this point in order to undermine[11] the notion of a clear sex binary (2020, 9-13). To do this, these

[8] This is one way to characterise 'essentialism' but, as I argue later in this chapter, it is neither the best way to characterise it, nor is it Aristotelian.

[9] Bach seems to think this is the same thing as Aristotelian essentialism, or at least very close to it, but I show later in this chapter, that this is not the case (Bach 2012, 233).

[10] Not only is this argument present in Tate, Ben Hagai, and Crosby (2020, 8-10) and Bach (2012, 233), but also moral theologians Lawler and Salzman who argue that intersex persons (in this case, those with chromosomal variations other than XX and XY) undermine the chromosomal account of sexual difference (2020, 1-3); scholars Chau and Herring (2002, passim) who attempt to undermine the sex-binary in this way also. Neuroscientist Debra Soh also identifies this as a common argument employed by activists (2020, 24).

[11] Or 'queer' the sex binary. The verb, 'to queer' in this context refers "to the destabilisation of norms or accepted truths associated with [something]" (Pluckrose and Lindsay 2020, 54). See my discussion of Judith Butler in Chapter II who seeks to undermine ordinary categories through making them radically indeterminate.

authors list a series of "six major chromosomal configurations for humans: (1) XX, (2) XY, (3) X0… (4) XXY, (5) XYY and (6) XXX" (ibid, 9). While XX and XY are the typical chromosomal structures for women and men respectively, others do exist and are often classed as DSDs, and people with them are sometimes referred to as 'intersex'.[12] Depending upon precisely how intersex is understood, it can encompass people who have non-standard sex chromosomes, such as X0 (Turner's syndrome) or XXY (Klinefelter's syndrome), but also people who have hormonal conditions that can result in ambiguous external markers of maleness and femaleness such as adrenal hyperplasia and androgen insensitivity syndrome (Sadler 2015, 273), as well as extremely rare cases of ovotesticular disorders (ibid) and mosaicism where an individual possesses both XX and XY sex chromosomes (Gamble and Pruski 2020, 179).[13]

While I wish to delay discussion of DSD until a later chapter, it must be discussed here, if only in a cursory manner, because DSD are raised so frequently in this context. Now, although neither Tate et al. nor Bach spell out their argument fully, it seems to be based on the idea that the multiplicity of sex chromosome combinations means that there cannot be a sex-binary. Alternatively, if one is to insist on the binary and expand the list of chromosomal arrangements that constitute 'male' and those that constitute 'female', i.e. 'male' are those with XY and XXY and XYY, and 'female' as those with X0 and XX and XXX, this can only be done in an arbitrary manner. However, while the multiplicity of chromosome combinations might be a problem for

[12] The characterisation of intersex is not uncontroversial. As Stock notes (2021, 55-56), depending upon how this term is understood, as many as 1.7% of the population could be classified in this way, based on Anne Fausto-Sterling's estimate (in Blackless 2000, quoted in Stock 2021, 55), or as few as 0.018% (Sax 2002, quoted in Stock 2021, 56). The former figure though is implausible and an unreasonable way to classify intersex persons because, as Sax explains, it "includes conditions which most clinicians do not recognize as intersex, such as Klinefelter syndrome, Turner syndrome, and late-onset adrenal hyperplasia. If the term intersex is to retain any meaning, the term should be restricted to those conditions in which chromosomal sex is inconsistent with phenotypic sex, or in which the phenotype is not classifiable as either male or female. Applying this more precise definition, the true prevalence of intersex is seen to be about 0.018%, almost 100 times lower than Fausto-Sterling's estimate of 1.7%" (2002, 'Abstract'). In my own discussion of this issue in Chapter VI, I use the term 'disorders of sexual development'.

[13] Anne Fausto-Sterling's short essay 'The Five Sexes: Why Male and Female Are Not Enough' (1993), and her subsequent books length expansion of this essay, *Sexing the Body: Gender Politics and the Construction of Sexuality* (2000) have been especially influential in this discussion. In her essay, she argues that, in addition to male and female, there are also "true hermaphrodites, whom I call herms, who possess one testis and one ovary…; the male pseudo-hermaphrodites (the 'merms'), who have testes and some aspects of the female genitalia but no ovaries; and the female pseudohermaphrodites (the 'ferms'), who have ovaries and some aspects of the male genitalia but lack testes" (1993, 21). Stock (2021, 57) suggests that "merms" could simply be individuals with complete androgen insensitivity syndrome or CAIS. Similarly, "ferms" could be individuals with congenital adrenal hyperplasia or CAH. Importantly, as Stock again points out (ibid), both "merms" and "ferms" can be accounted for on the chromosome and gamete account. Male pseudo-hermaphrodites ("merms) are still male on the chromosome account because they have a Y chromosome, and on the gamete account, they are also male because they are on a developmental path to produce small gametes (sperm), even if this end is never realised. Female pseudohermaphrodites ("ferms") are still female on the chromosome account because they lack a Y chromosome, and on the gamete account, they are also female they are on a developmental path to produce large gametes (ova) even if this end is never realised due to their condition. So-called true hermaphrodites present more of an interpretive difficulty. I discuss this difficulty and the conditions mentioned here in the rest of this Chapter and in more detail in Chapter VI.

Tate and Bach's own characterisation of an essentialist chromosomal account, it need not be so for others. As Stock points out, "[t]he chromosome account [or at least my version of it] doesn't say females necessarily have XX sex chromosomes and males XY… It is rather the presence or absence of a Y chromosome in cells that is counted as defining the two groups" (2021, 47). In which case, a person with X0 is female because they lack a Y chromosome, and a person with XXY is male, because they have a Y chromosome. The sex-binary therefore can be maintained and basically unaffected by alternative chromosomal arrangements.

Even while employing Stock's more plausible chromosome account, there remain DSD which continue to present a difficulty for the chromosomal account of sexual difference. For example, the translocation of SRY gene onto the X chromosome resulting in XX males (Austriaco 2013, 703), and complete androgen insensitivity syndrome (CAIS) in which a person has a Y chromosome, but an external female morphology, even while lacking a womb or ovaries (Sadler 2015, 273; Johnson 2007, 10). In a highly unusual case Austriaco makes reference to a report "describing an individual who developed as a normal woman and was capable of conceiving and giving birth to a daughter, despite having a Y chromosome and a normal Sry gene…" (2013, 702).[14] Each of these cases appear to present a challenge to the chromosome account because while each of these people is chromosomally male, characteristics extremely strongly associated with a female phenotype or morphology are present.

The proponent of the chromosomal account of sexual difference could insist that the presence of a Y chromosome is both necessary and sufficient to make a human a male human, and its absence both necessary and sufficient to make a human a female human. In which case, the XY female who gave birth above would in fact be male, despite appearances to the contrary. In this way, the sex binary can be maintained. But such an insistence seems highly dogmatic, focusing, as it does, on chromosomes alone without reference to other macro-level properties such as the ability to give birth. That is, an insistence upon the 'essentialness' of the Y chromosome seems to unduly privilege this particular property above all indicators to the

[14] See Dumic et al., (2008; 2011).

contrary. As I will go on to argue shortly, this privileging of a particular 'micro-structure' (the Y chromosome) over other considerations (giving birth) is indeed arbitrary and the privileged microstructure, in fact, presupposes the neglected macro property (giving birth).

IV) The gamete account

Despite the chromosome account's broad applicability, there are certain rare cases in which it does not seem to work. Perhaps an alternative 'essential' property is required. Stock refers to the other main contender as the "gamete account" which she also tentatively endorses (2021, 46). She also characterises this as an 'essentialist' account of sexual difference and explains that "males, by definition, are those organisms on a developmental pathway to produce small gametes for the purposes of sexual reproduction. Females, meanwhile, are those organisms on a developmental pathway to produce larger gametes for the purposes of sexual reproduction" (ibid). She takes this clunky descriptor of the gamete account of sexual difference from philosopher Alex Byrne (2018a), who refers to organisms being on a "developmental pathway" in order to account for children or persons with certain disabilities or injuries. Baby boys, for example, are not actually capable of producing sperm (small gametes) until they hit puberty and persons who have suffered certain injuries may never be able to produce gametes. The gamete account then does not depend upon any individual actually being able to produce a particular gamete, only that they are orientated towards its production.

Wright, who also endorses the gamete account (2021), goes go on to point out that it need not be the case that a man is actually producing sperm, or a woman is actually producing ova in order to be the sex that they are. Rather, it is the potential to produce these gametes through the presence of functional testicles or ovaries that makes men men and women women. The organs exist for the sake of the gametes they are to produce. The orientation then, to produce these gametes, is what differentiates the male and the female of a given species. They are mutually exclusive with no third option.[15] As Wright notes, the gamete account is not affected

[15] I return to the notion of a 'third sex in Chapter VI.

by the various chromosomal arrangements because there are no intermediate gametes.[16] There are only small (sperm) and large (ova) relative to one another. This account of sexual difference aims to cover any sexually dimorphic species, not simply the human species.

In regard to ambiguity in nature, such as ovotesticular disorders where it might not be clear whether a particular person is on a "developmental pathway to produce small gametes… or larger gametes" (Stock 2021, 46), Wright points out that the claim that "there are only two sexes" is not the same as the claim "every human can be unambiguously categorized as either male or female" (2021). He regards the first statement as true and the second as false. Although not stating it in these terms, he seems to be implying that while there might be epistemological ambiguity in certain instances, there is not ontological ambiguity because there are and can only be two types of gametes, large and small, corresponding to the two sexes, female and male. In other words, given the kind of being we are, humans are orientated towards the production of one or the other, not both, and not something else. So even for someone with an ovotesticular disorder where it remains unclear to which gamete they are orientated, they are in fact orientated to one and not the other, even if the one to which they are orientated can never, in fact, be known.

Now, working within the 'essentialist' paradigm where "one particular feature (… developmental pathway; Y chromosome or lack of one)" is prioritised "as essential to, and also sufficient for, membership of a given sex" (Stock 2021, 48), I submit that the gamete account is superior to the chromosome account because it does not admit any variation thereby establishing a clear division between the sexes, and it does so across species. However, even if this is the best 'essentialist' account, this particular 'essentialist' paradigm, or metaphysical lens, has serious difficulties.

V) Hidden structure essentialism

[16] Soh (2020, 17) and Stock (2021, 46-47) make the same point.

It is important to note that while I have suggested that the gamete account is the best 'essentialist' account as compared with the chromosome account, there are other options. Indeed, *Langman's Embryology* (2015, 261-274) and *Essential Reproduction* (2007, passim) provide at least seven sexed parts which could be said to be 'essential': gametic sex (sperm and eggs); chromosomal sex (XX or XY); genetic sex (SRY gene or not); somatic or morphological sex (male or female body plan); genital sex (penis or vagina); hormonal sex (testosterone or oestrogen); and gonadal sex (testicles or ovaries).[17] Each is a possible candidate for the 'essence' of the male or female, and each is more or less helpful in accounting for sexual difference in the human species. However, rather than examining each specifically, it seems there are a number of serious difficulties with this kind of essentialism itself.

First, consider the idea that one of these features or properties (or even a cluster of them)[18] such as gamete size or presence of a Y chromosome should be thought of as necessary and sufficient for making a particular human either a male or a female in the first place. We should ask: 'why would we, or should we, look at *these* differences at all?' There are all sorts of differences between individuals within a species (from height to hair colour), so why do we focus on the parts listed above and argue about which is the most significant or important in determining maleness or femaleness? Why do textbooks focus on the urogenital system in particular, as opposed to say, differences in stomach size or skin pigmentation? The answer is that we are looking for a difference that *makes* a difference. The various properties of sex listed above all contribute in one way or another to our being male and female, and our being male and female makes a difference to the life of the whole organism in a way that difference in ethnicity and stomach size do not.[19] Being a human female or a human male means reproducing in a radically different way from each other even though each is involved.

More will have to be said on this point in due course, but for the time being, it must be

[17] Moore identifies nine which are more or less the same as mine adding 'psychological' and 'social' sex too (1968, 787-788. Quoted in Gamble and Pruski 2018, 180). Tate, Ben Hagai, and Crosby identify "four components": chromosomes, external genitalia, internal genitalia, and hormones (2020, 8).

[18] See Footnote 7

[19] I return to this topic in Chapter VIII.

emphasised that we focus on these differences, these various 'properties of sex', only because we have a *prior holistic conception* of sexual difference in the first place. To recognise that XX and XY chromosomes or gamete size is at *all* relevant, one would have to have some prior conception of male and female in the first place. Without a knowledge of the macro-level entity i.e. the whole male or female, it would be impossible to say that 'males have a Y chromosome and produce sperm' and 'females lack a Y chromosome and produce ova', or make any further assertions about the micro-level properties of males and females at all. That is to say, not only that knowledge of the whole takes precedence over its parts, but also that the whole is ontologically prior to its parts, that is, prior in terms of being. Only by having a conception of the whole entity, i.e. male or female, is it even possible to begin examining its parts and discover its inner workings.

We can see this in Barnes' thought experiment (2022a). Imagine an island with men but no women. The men on this island have never seen a woman, and do not even know what a woman is. These men did not arrive at this island but came into being on this island where there were only other men and therefore have no conception of women. If this group of men did DNA testing or anatomical investigation and found that some of the men had XX chromosomes even while most of them had XY, or that some of them had far larger gametes than the others, would they then conclude that some of the men were in fact women? No, they would not. This would not be recognised as something significant. Indeed, in the absence of women, it would not be significant. It would presumably be thought to be a kind of natural variation, like having brown or black hair. In fact, these men, having no conception of women, would also have no conception of themselves as men for it is only by comparison with women that any of the aspects of sex would be recognised as differentiae and significant to their being men at all. What this scenario shows is that biological sexed parts in the male have no meaning outside of the context of the whole male, and, just as significantly, that this meaning is co-dependent, as it were, on the meaning of the whole female, such that one cannot be understood without the other.[20]

[20] I shall return to this point in Ch V.

A second major difficulty with this kind of essentialism which follows directly from the first, is that the chromosome and gamete accounts, as specific instances of this kind of essentialism, require knowledge of the whole in order to recognise proper functioning. That is, DSDs, or intersex conditions, can only be recognised as disorders or deviations from the norm based on a prior conception of the norm. Only because we already have some conception of male and female are we able to recognise a condition like complete androgen insensitivity syndrome – in which a person is genetically male but an external female morphology, even while lacking a womb or ovaries (Sadler 2015, 273) – as a disorder at all.

A third and related difficulty is expressed by philosopher Crawford L. Elder (2004, 48-55). Although not writing directly on sexual difference, he raises the more general difficulty of the arrangements of 'physical simples' in making familiar objects. Speaking of the human body, Elder wants to know "*what it is* for a particular plurality of microparticles to be 'human-wise arranged'" (ibid, 52). He rightly points out that for the physicalist committed to reductionism, it is no good to point to the boundaries of one and the same human and say that those and only those particles contained therein are what it is for particles to be arranged human-wise, for this is precisely what is at issue. He wants to know why it is that *these* particles, arranged in *this* manner, rather than many more or far fewer particles arranged in *that* manner, make a human. As he asks: "In virtue of which properties and relations are the microparticles involved in each [arrangement] the ones that *are* involved – in virtue of what is it *not* the case that *more* microparticles or *fewer* are involved?" (ibid, 53).

The problem is a general one concerning the relation between parts and wholes, and can be adapted to the issue at hand in the following way. If we take the sex specific properties of sex identified above, (large gametes, the absence of a Y chromosome etc.) why is it that these sexed parts, arranged in a particular manner, rather than other sexed parts arranged in a different manner, make a human female rather than something else? Without reference to the female as such, understood as a whole, it is not possible to know which sexed parts are relevant

and in what arrangement they would need to be in to count as a woman to begin with. In short, the parts cannot be arranged woman-wise unless we already have a conception of what a woman is.

The problem then, as already indicated, is with the brand of 'essentialism' at work. As David Oderberg points out, the search for "internal structure and reductionism are one of the hallmarks of contemporary essentialist thinking" (2007, 12). The kind of essentialism I have been discussing so far can be helpfully called hidden structure essentialism (HSE) because of its commitment to the idea that the essence of something is hidden from view, in some micro-level property, to be accessed only by the methods of empirical science, something like a Y chromosome or a small gamete. This form of essentialism is also highly reductionistic, which, in this context, refers to the attempt to explain a thing and its properties through its parts. Whilst this kind of explanation has its place in the sense that part-based mechanisms are part of the efficient and material cause of a thing, reductionism here is characterised by the view that parts have explanatory priority over the whole. As a matter of historical fact, this is how essentialism has been conceived by a number of philosophers in the analytic tradition in the recent past. Again, as Oderberg notes (ibid, 1), in the work of Saul Kripke and Hilary Putnam, talk of 'internal structure' and similar concepts is common. Kripke, for example, says that all tigers are essentially non-reptiles, and connects their internal structure with their forming a species, and Putnam associated the essence of a lemon with its chromosomal structure (ibid, 12). More recently, we find Brian Ellis (2001) being especially concerned with the inner structure of things and focusing almost entirely on examples from physics and chemistry. Furthermore, he commits himself to physico-chemical reductionism. In terms of the essence of male and female in this context, the view that the lack of a Y chromosome or an orientation towards the creation of large gametes makes a female a female, and the presence of a Y chromosomes and the orientation towards the creation of small gametes makes a male a male, would be an instance of hidden structure essentialism because the chromosomes or gametes (parts of a larger whole) have explanatory priority over the being with the chromosomes. On HSE, the essence of each of these beings is reducible to these chromosomal structures, or some other hidden property.

VI) Conclusion

As indicated at the outset, biological accounts of sexual difference basically focus on efficient causes (where a thing comes from or how a thing came to be) and material causes (that which is in potency to be something), and neglect final (that to which a thing is directed) and formal causes (that which makes a thing the thing it is) even while implicitly presupposing them.[21] Insofar then as empirical accounts of sexual difference as collated in biological textbooks do this, it can cause confusion and difficulty when this presentation of sexual difference is thought to constitute a complete account of the issue.

While there is nothing wrong with the empirical content presented in these textbooks, there is much wrong with a particular 'essentialist' interpretation of this empirical content which seeks to reduce sexual difference to a particular (micro-) property or set of properties. I have called this 'hidden structure essentialism' to indicate both its commitment to reductionism, that is, the prioritising of parts over wholes, and its commitment to the idea that essence is found in some hidden micro-structure or property accessed only by means of empirical scientific investigation.

However, as I have argued, there are strong reasons to reject both this version of essentialism, and the chromosomal and gametic account of what it means to be a man or a woman which flow from it. This does not mean, and I am not saying that, in general and for the most part, the theses that 'men have a Y chromosome and women do not', or that 'males produce smaller gametes and women produce larger gametes' is false. It is true. What it does means is that it is a mistake to think that being orientated to the production of smaller gametes and having a Y chromosome is what *makes* a male a male, and being orientated towards the production of larger gametes and lacking a Y chromosome is what *makes* a female a female. As I will explain in Chapters IV to VI, this account gets things backwards. It is because a human

[21] I explain these concepts fully in Chapter IV.

male is a male that he is orientated towards the production smaller gametes and has a Y chromosome, and it is because a human female is female that she is orientated towards the production of larger gametes and lacks a Y chromosome.

The biological accounts which focus on the efficient cause of our being male and female do not, of themselves, provide a metaphysical lens through which to interpret the data they provide. The HSE lens I have investigated in this chapter, has been found wanting. In other words, efficient causal accounts of sexual difference do not tell us what makes us male and female. Rather, they presuppose a conception of male and female which they do not clearly articulate. However, insofar as they are interpreted through HSE, a number of answers can be given about what makes us male and female, each of which, even while recognising some important part of our being male and female, fails to provide a convincing answer as to what makes it the case that we are male and female. Furthermore, though I have not addressed this issue in this chapter, it seems that one could argue that our sexual psychology, so to speak, is what makes sex different in the human species from other species.[22] Once again though, insofar as this approach identifies a single psychological difference or feature as that which makes an individual either a man or a woman, that is, insofar as it assumes some variation of HSE and privileges a part or parts over the whole, it too will be susceptible of the same general problems I have identified in this chapter.

Finally, before moving on to a very different approach to sexual difference, it is worth emphasising that these biology textbooks and essentialists all focus on the urogenital system, chromosomes, gametes, hormones and so on, as the differentiae between men and women. This is revealing because, whatever their conception of male and female turns out to be, the remarkable agreement between the locus of interest indicates that this conception of male and female is shared, at least to a large degree. In focusing on the same group of properties, all the textbooks and authors examined in this chapter are showing they have a shared idea of what unites those properties. I have tried to avoid saying too much about this shared, prior and

[22] See Soh (2020, 41-52) for an overview of some of the debates concerning psychological differences concerning the sexes.

holistic conception of male and female and I will have much to say about it in later chapters, but for now all that need be noted is the relation between these parts and reproduction. Sadler (2015) and Johnson (2007) as well as the host of other authors I have looked at in this chapter all focus on parts of the human person which are related to or directed at reproduction in one way or another. Where we might typically see these relations as 'natural' and something that can be 'read off' of nature, the thinkers in the next chapter will argue, among other things, that the association between being male and being female and our reproductive capacity is basically arbitrary and constructed.

Chapter II – Constructing sex and gender

I) Gender difference as sexual difference

Where the last chapter examined biological accounts of sexual difference interpreted through an 'essentialist' lens, this chapter will examine a number of thinkers who attempt to eschew "essentialism" of any variety,[1] and instead focus on *gender* as the site of sexual difference in the human species in particular. The focus on 'gender' especially over from the mid-twentieth century to the present, has had an immense influence on contemporary discussion in sex and gender. In particular, the existentialist writer Simone de Beauvoir in her seminal work *The Second Sex* (1949), sets much of the groundwork for what literary theorist Jonathan Gottschall describes as the "liberationist paradigm" (2008, 5). This paradigm involves giving biology an increasingly diminutive role in our understanding of what it means to be men and women, and, by implication, what it means to be human. The trend can be seen in a number of thinkers over the latter half of the 20th century[2] to the present day and has resulted in an increasingly rarefied understanding of gender and a progressively diminished view of the human body in understanding sexual difference. As the biological reality of our bodies as embodying natural ends takes a less prominent role, gender, as the seat of sexual difference and meaning, takes on increasing significance. This trend culminates in the work of Judith Butler (1990; 1993) who takes the marginalising of the body in relation to its role in

[1] The rejection of "essentialism" is one of the defining themes of feminism, queer theory and authors who otherwise focus on gender (see Pluckrose and Lindsay 2020, 89-96). See, in particular, Butler (2004, 212) and Bankowsky, J., with Kotz, L. (1992); Alcoff, (1988, 419); Bach (2012, 233); Rubin (1984, 148); de Beauvoir (1949, 33; 68); Roughgarden (2013, 23); Mikkola (2019); Pilcher and Whelehan (2016, 46); and West and Zimmerman (1987, 137). Unfortunately, these authors tend towards characterising neo-essentialism or reductive essentialism (HSE) as essentialism simpliciter. As I explain from Chapter III onwards, Aristotelian essentialism is not like this.

[2] The "liberationist paradigm" can be tracked alongside the development of the term 'gender'. Although, as I argue, something like the division between sex and gender is already present in de Beauvoir, the first person to use the grammatical term 'gender' as opposed to sex to draw a distinction between the biological and behavioural, was "psychologist" John Money (infamous for his well-documented and sordid experiments on children [see Colapinto, 2000]). Money explains that "[gender's] first appearance in print was in the paper on 'Hermaphroditism, gender and precocity in hyperadrenocorticism,' [Money 1955] published in the subsequently dis-continued Bulletin of the Johns Hopkins Hospital. In this paper the word gender made its first appearance in English as a human attribute but it was not simply a synonym for sex" (2016, 18-19). Money developed and extended his understanding of a divide between sex and gender in subsequent work (1965). His work was endorsed by psychologist Robert Stoller, who founded the 'Gender Identity Center' at the University of California, Los Angeles in 1965. "Although the external genitalia (penis, testes and scrotum) contribute to the sense of maleness, no one of them is essential for it, not even all of them together. In the absence of complete evidence, I agree in general with Money, and the Hampsons, who show in their large series of intersexed patients that gender role is determined by postnatal forces, regardless of the anatomy and physiology of the external genitalia" (1968, 48). As Prudence Allen (2014, 16) explains these ideas were taken up by feminist authors Kate Millet (1970, 30, [in which she quotes Money and Stoller directly]) and Alice Rossi (1986, 143) before being widely disseminated in university textbooks which spread this idea further. The story is further complicated, and the meaning of gender further stretched through the influence of post-modernism (see Footnotes 4 and 5).

understanding gender, men, women, male and female to an extreme. As I will show, for Butler, it is not the case that sex is a fixed but essentially meaningless surface on which socially constructed gender is imposed. Rather, our body, as totally shaped by discourse, is also socially constructed. In relation to the positions I outlined in the introduction, the liberation paradigm represents a progressive move from the second to the third position. That is, where earlier thinkers like de Beauvoir establish a separation between sex and gender,[3] whereby sex is a real though meaningless aspect of nature only made meaningful through gender, later thinkers like Butler profess an anti-realism about sex and as well as gender.

This story is further complicated by the influence of post-modernism with its accompanying scepticism of knowledge and concern about the role of power.[4] Against the backdrop of the role of power in discourse about gender, the political nature[5] of the project of reflection on gender can be understood. This is important to note for my purposes because it should be born in mind that Butler is not attempting to find the 'truth' about reality. Rather, there is no truth, and assertions or arguments to the contrary are really an attempt to wield power. Indeed, the work that I am attempting to do in this thesis would be interpreted as itself a kind of power play to further some political end of mine, whether or not I even realise it. In which case, in the following discussion, any anthropology which I discern as present in Butler, committed as she is to scepticism about truth and the role of power in forming discourse, and any objections I offer therein, will not be accepted. My effort to discern the truth of the matter is at best a fool's errand, and possibly something far more sinister. Needless to say, I reject this way of thinking

[3] Although she never actually uses the term 'gender'. See section II) of this chapter.

[4] As Pluckrose and Lindsay explain (2020, 30-42), there are two core principles which run through post-modern discourse. First, the 'knowledge principle' – a thorough going scepticism about the possibility of objective truth or knowledge; and second, the 'political principle' which sees knowledge and power as inextricably intertwined. As they explain: "Because of their focus on power dynamics, [post-modern] thinkers argued that the powerful have, both intentionally and inadvertently, organized society to benefit them and perpetuate their power" (ibid, 36). In addition to these two principles, Pluckrose and Lindsay argue there are four "themes" which can be detected in post-modern thought and which flow from the scepticism about knowledge and the role of power. That is, 'blurring the boundaries', the power of language, cultural relativism and the loss of the individual and the universal. The first of these is especially relevant in the development of gendered discourse.

[5] The political nature of discourse on gender is especially clear in the work of Gayle Rubin and Judith Butler. "It is impossible to think with any clarity about the politics of race or gender as long as these are thought of as biological entities rather than as social constructs. Similarly, sexuality is impervious to political analysis as long as it is primarily conceived as a biological phenomenon or an aspect of individual psychology" (Rubin 1984, 149). Commenting on this passage Pluckrose and Lindsay explain: "This is a highly pragmatic, even agenda-driven, argument. Rubin asserts that we should believe sex, gender and sexuality to be social constructs, *not* because it's necessarily true, but because it is *easier to politicize them and demand change* if they are social constructs than if they are biological" (2020, 99 [emphasis original]). Similarly, in her paper 'Contingent Foundations: Feminism and the Question of 'Postmodernism'' (1994), Butler argues that the point of post-modernism is to "understand that oppressive power structures form as a result of firm definitions and stable categories and that recognizing this enables queer political activism" (Lindsay and Pluckrose 2020, 54).

and submit that the argument be judged on its own merits (or lack thereof). For theorists like Butler, my analysis of de Beauvoir would also be subject to the same charges.

Leaving aside such concerns for the time being, much discourse on gender can be found in authors who identify as feminists, though there are other theorists who reflect on this matter. While there are far too many branches of feminist thought[6] to examine individually in any depth, and a vast array of scholars from psychologists like Money and Stoller (see Footnote 2) to theorists like Rubin (see Footnote 5) who write on gender, it is possible to distil a somewhat simplified schema[7] which can be mapped onto my delineation of the problem. In a loose parallel[8] to Descartes dualism and subsequent materialist and idealist responses, there is a kind of dualism between the sexed body and cultural gender in de Beauvoir which, subsequently, leads to a focus on the sexed body in thinkers like Shulamith Firestone, as well as an idealist reaction present in the work of Judith Butler. I focus then on these three thinkers because each illustrates a different approach to gender and sexual difference, and each has had significant influence on subsequent generations of writers working in the field.

However we choose to categorise these authors, whether dualist, materialist or idealist, it is clear that each embraces, to a greater or lesser extent, the arbitrariness of bodily difference, and attempts to find sexual difference in gender instead. These authors tend to disregard wider questions about sexual difference as such and focus almost exclusively on sexual difference in the human species. They are less concerned to articulate the precise metaphysical lens through which to understand sexual differentiation or to provide a classification that highlights some specific difference that makes males males and females females, than to provide an explicit

[6] Pluckrose and Lindsay list the following, noting that this list is probably incomplete: radical cultural feminists, radical lesbian feminists, radical libertarian feminists, separatists, French psycho-analytic feminists, womanists, liberal feminists, neoliberal feminists, Marxist feminists, socialist/materialist feminists, Islamic, Christian and Jewish feminists, choice feminists, equity feminists, postfeminists and intersectional feminists (2020, 136).

[7] I am indebted here to Jane Pilcher and Imelda Whelehan (2016, 11-13) who provide a helpful framework for understanding feminist conceptions of the body which serves as the inspiration for my own schema. While I do not use precisely the same categories, their schema is helpful. They suggest feminists can be grouped into those who view the body 'as nature', 'as mildly' or 'strongly socially constructed', and those who adopt an 'embodiment perspective'.

[8] This is indeed a loose parallel, and I have already indicated the story is far more complicated. Indeed, it would be more correct to say that there are dualisms present in de Beauvoir's writing, between 'transcendence and facticity', the 'species and the individual', the 'facts of biology and the meanings we attach to these facts' (see next section). These overlap to some degree and, as I show, she uses them to emphasise different aspects of her account of womanhood.

account of sexual difference at the human level in terms of the difference between men and women, understood in our humanity as opposed to our animality. The reason for this, it seems, arises out of their concern with politics and oppression (perceived or real) which each believes is present in the current gender system including societal, as well as individual, expectations about men and women.[9] There is obviously nothing intrinsically wrong with this, but it does leave their accounts open to the sort of sceptical analysis I will be applying. While making their cases, they inevitably commit themselves to certain anthropological assumptions, and precisely because these remain unaddressed, their accounts remain vulnerable and ultimately unconvincing. I will return to questions of this sort, about the difference that sexual difference makes to the human species in particular in the final chapter.

II) Gender dualism

Proceeding historically, though de Beauvoir never explicitly made a distinction between sex and gender, she is often thought to have inaugurated it (Bergoffen and Burke, 2023).[10] This supposition is not unreasonable especially when de Beauvoir's existentialist approach is considered.

> *"The perspective we have adopted is one of existentialist morality. Every subject posits itself as a transcendence concretely, through projects; it accomplishes its freedom only by perpetual surpassing toward other freedoms… Every time transcendence lapses into immanence, there is degradation of existence into 'in-itself', of freedom into facticity; this fall is a moral fault if the subject consents to it; if this fall is inflicted on the subject, it takes the form of frustration and oppression; in both cases it is an absolute evil"* (De Beauvoir, 1949, 37).

Much could be made of this paragraph, but I want to focus on her distinction between 'facticity' and 'transcendence' and interpret her work through this perspective. As Kevin Aho explains,

[9] As indicated above (Footnote 5), this is clearly present in Butler, but also in de Beauvoir and Firestone. Firestone is explicit about applying revolutionary Marxism to her account of sexual difference (1970, 1-14) and Mari Mikkola explains how de Beauvoir is reacting, at least in part, to a biological determinism that refused certain political rights to women on the grounds of their being women (2019).

[10] Mikkola (2019) suggests this is encapsulated in her famous dictum that "[o]ne is not born, but rather becomes, woman" (1949, 330). Judith Butler too thinks the distinction between sex and gender can be found in de Beauvoir: "When Beauvoir claims that 'woman' is a historical idea and not a natural fact, she clearly underscores the distinction between sex, as biological facticity and gender, as the cultural interpretation or signification of that facticity" (1988, 522).

seeing existence as a process of self-making does not mean that there are not “determinate aspects or ‘facts’ about our situation that limit and constrain us… But what distinguishes us as humans is that we have the capacity to rise above or ‘transcend’ these facts in the way we relate to, interpret, and make sense of them” (2023). Further divisions which de Beauvoir makes between, for example, the human and the animal (ibid, 66-67), the individual and the species (ibid, 60-62, 66) and the biological and the historical (ibid, 68, 70-72, 848), should be understood from this perspective. Each of these juxtapositions is an illustration, in one way or another, of the more fundamental perspective of ‘facticity’ and ‘transcendence’. There is indeed a sense in which humans are able to transcend the facts of nature which limited us, and as I will argue in the final chapter, humans are not limited in the kinds of lives they are capable of living in the way that other animals are. However, in her account of sexual differentiation, it seems the de Beauvoir goes considerably further than she should in this direction.

For instance, in her discussion of the “facts” of biology (ibid, 67) in the context of men, in general, having greater muscular strength than women, she argues that such facts, “do not carry their meaning in themselves” (ibid, 69). This statement, however, and her subsequent explanation of it are ambiguous in regard to what it means for something to have “meaning” or have “meaning in themselves.” In this particular case, the “facts” to which she makes reference concern muscular differences between the male and the female of the human species. De Beauvoir could be saying they have no “meaning in themselves” in the sense that they do not matter or are not of interest unless society chooses for them to matter or to be of interest. Alternatively, she could be making a deeper point that these “facts” and other biological facts, have no “meaning in themselves” in the sense that they are not directed towards anything else, or, to say the same thing, that they have no intrinsic teleology.

If she is arguing that such “facts” have no “meaning in themselves” in the former sense, that is, that they only have meaning or interest relative to some observer, whether that be de Beauvoir herself or the wider culture, then this is quite plausible in at least some instances. In a Western highly technological society “facts” of muscular difference between the sexes do not

have the same interest or significance to the wider culture that they used to, or that they have in other less technologically advanced cultures.[11] Muscular difference is compensated for through the use of machinery. In this sense, the meaning of muscular difference is not in the "facts" themselves but in the wider culture. And, as seen, the meaning of these facts is not fixed, but subject to change. This is plausible insofar as biological facts are interpreted and have meaning within a wider human context. As de Beauvoir goes on to say, it is only from the human perspective that these "physiological [facts] (muscular inferiority) [take] on meaning, [and] this meaning immediately becomes dependent on a whole context…" (ibid, 69).

However, as indicated, there is a deeper and more controversial sense in which biological "facts" have no "meaning in themselves". This assertion could be read as a denial that the human body has its own natural ends. This can be seen in the following passage: "[T]he relation of maternity to individual life is naturally regulated in animals by the cycle of heat and seasons; it is undefined for woman; *only society can decide*" (ibid, 68 [emphasis added]).

This passage indicates not only that women have a control over their maternity that other animals do not, but also and more radically, that in the human species, unlike other species, there is no natural relation between maternity and the life of the individual. Rather, such a relation is established by society alone. But this kind of supposition is only plausible, or even possible, if there is no natural teleology in the human body. Here, de Beauvoir's existentialist commitments come to the fore. In contrast to other animals, humans are in a state of 'becoming',[12] our 'existence precedes our essence' (Sartre, 1946 [2001, 292]), as it were.

[11] Theologian Carl Trueman emphasises the important role of technology which helps to make this conception of the human person plausible. He discusses two different ways of viewing the world: mimetically and poietically (2020, 39). The former, he suggests, is a more traditional conception of reality that sees the world as having a given role and meaning, and it is our job, as rational agents, to discover that meaning and conform ourselves to it. By contrast, the poietic conception sees reality as a kind of raw material out of which meaning and purpose can be created by the individual. Technology, Trueman argues, is integral to the societal transformation from mimetic to a poietic. "[W]ith the advent of more advanced agricultural technology [for example], [the] given authority of the environment became increasingly attenuated. The development of irrigation meant that water could be moved or stored and then used when necessary… The point… is that we all live in a world in which it is increasingly easy to imagine that reality is something we can manipulate according to our own wills and desires, and not something that we necessarily need to conform ourselves to or passively accept" (ibid, 40-41). Perhaps then, only in a poietic culture with technology at its centre, is de Beauvoir's conception of facts with "no meaning in themselves" even possible. This point will come out more clearly in Firestone.

[12] "[T]he scope of the verb to be must be understood; bad faith means giving it a substantive value, when in fact it has the sense of the Hegelian dynamic: *to be* is to have become, to have been made as one manifests oneself" (1949, 33). For de Beauvoir, this is part of the human predicament, so to speak.

Something like the natural process of maternity though, is itself a strong reason to doubt this dictum because the supposition that there is no natural relation between maternity and individual life is itself not plausible. To be sure, it is certainly the case that the relation between motherhood and the life of the individual has a far broader scope than it does in other species, since the fact of maternity does not determine the kind of life an individual woman can live to anything like the same extent that it does in other species.[13] However, to claim, as de Beauvoir does, that the relation between maternity and the individual woman's life is "undefined" and "only society can decide" goes too far. Even if it is only defined in broad strokes, which it surely is, it is not *only* society that decides such a relation. For example, given the biological "facts" of being a woman, generally speaking, sexual encounters carry a "risk" and potential bodily burden i.e. becoming pregnant, which is not present for men, or at least not present in the same way. Furthermore, the state of being pregnant, possible only for women, sets certain narrow limits on the kind of activities an individual can pursue at any given time. In other words, not all 'facticity' can be 'transcended', and the facts of biology *do* contain at least some meaning in themselves even if such meaning can be extremely broadly defined.

This point will be picked up again in our final chapter, but the strongly dualistic tendency in de Beauvoir's thought whereby our human nature, as women and men, is disconnected from the "facts" of biology, is of particular interest here. The division she creates between the two is a stark one and even if she did not intend to create what has since become known as the distinction between sex and gender, where sex refers to a relatively stable bodily reality on which culture (gender) is imposed, the seeds of it are clearly present in her thought, and it is not unreasonable for later authors to attribute the distinction to her, at least in its nascent form.

What sort of anthropology, then, is most consistent with the vision of the human person implied in her account? For de Beauvoir, bodily difference between male and female is, it seems, real, but the significance of this difference is entirely determined by culture. Returning

[13] See Chapters VII and VIII for further discussion of this point.

to her example, the fact of real muscular difference between the male and the female is a distinction without a difference. It is only a meaningful difference insofar as culture decides it is a meaningful difference. Perhaps the situation is analogous to the use of red and green traffic lights. The green light does not in itself, outside of the culture we impose on it, mean 'GO' and the red light mean 'STOP'. In this case, it really is society alone which decides and defines their meaning. The distinction between the male and the female is real, as is the distinction between the red and green traffic light, but it is only made meaningful, both in the sense of being of interest and having teleology imposed upon it, through culture or society.

This dualist anthropology nascent in de Beauvoir is evidenced in many of her successors who make the distinction between sex and gender explicit. As philosopher Mari Mikkola explains, in much feminist thought the distinction between sex and gender tends to differentiate chromosomes, hormones, genitals and other physical features (sex), or, in de Beauvoir's parlance, those biological "facts" which lack meaning in themselves, from social roles, positions, behaviour and identity (gender), which are societally imposed, and give the meaningless facts meaning (2019). The sexed parts of the body, while real, have socially constructed roles, positions, behaviour and identity, imposed on them. In this way, the meaningless body is given meaning through gender.

De Beauvoir's comments of the animal-human differences are also revealing in regard to her anthropological commitments since they show the gulf between the human species and all other animal species of which we know. Consider the following passages:

> *"Humanity is not an animal species: it is a historical reality. Human society is an anti-physis: it does not passively submit to the presence of nature, but rather appropriates it"* (1949, 88).

> *"The female, more than the male, is prey to the species; humanity has always tried to escape from its species' destiny; with the invention of the tool, maintenance of life became activity and project for man, while motherhood left woman riveted to her body like the animal"* (ibid, 100).

> *"[I]t must be repeated again that within the human collectivity nothing is natural, and woman, among others, is a product developed by civilization…"* (ibid, 856).

The separation of humans from other animal species and women's alienation from their own bodies is present throughout the *Second Sex* (ibid, 57-66; 67-71). In these passages and the ones quoted above, the highly prescriptive nature of the lives of animals is emphasised in contradistinction to our own nature which de Beauvoir sees as a kind of escape from our animal existence. Maternity, we are told, "is undefined for women"; "[h]umanity is not an animal species." Tools allowed us to "escape from [our] species' destiny" but "motherhood left woman riveted to her body like the animal." There is, in other words, little relation between our bodies as male and female, and our gender, as men and women.

Males and females are sexes belonging to animals. Insofar as we are animals we have these sexes, but, for de Beauvoir, we are barely animals at all. As we have seen, humans are radically different from other animals in our ability to transcend the 'facticity' of our being, so much so that de Beauvoir does not even count us among them. Since we are so different from other animals, it is no wonder that bodily sex is meaningless outside of the cultural meaning we give it. The human species is a species constantly attempting to escape the restraints that nature has put upon it. We should be disembodied but find that we are not. Again, although de Beauvoir does not say this explicitly, our gender seems to be a purely intellectual construct which is the true basis for difference between men and women. And because gender is constructed, it can be changed, it does not have the fixity that we find in other animal species.

It is not entirely clear how this anthropology should be understood. There is a kind of human exceptionalism which relies on the dualism of facticity and transcendence, apparently not present elsewhere in nature. De Beauvoir is clearly operating within a poietic conception of reality (see Footnote 11) with an extremely desiccated conception of the body, and is Cartesian at least to that extent. In terms of political anthropology, we can detect the presence of a strong individualism such that what women, and men, are, first and foremost, is individuals. That is to say, what we might think of as natural relations and unchosen obligations between,

say, mother and child, are in fact not natural and they are chosen by the individual, not through nature, but through culture and cultural expectations. Philosopher Daniel Kaufman defends a similar anthropology in a piece arguing against what he terms “identificationism" – the thesis that a “person is whatever he takes himself to be” – which he sees as a threat to gay and lesbian liberation. He says:

> *“The reasonable version of this conception [of the self] entails a rejection of the pre-modern idea that a person is defined entirely in terms of his or her position in a social framework that is governed by a normatively thick conception of natural law, in favor [sic] of the notion that (to a substantial degree) who we are is a matter of our internal consciousness and thus, is determined by us”* (2018).

In other words, a traditional conception of reality and our bodies in which the ends inherent in nature make moral and political demands of us, ought to be abandoned in favour of the idea that we are largely free to determine our own ends. This seems to be entirely in line with de Beauvoir’s conception of the human person in which she recognises the existence of the human body but fails to recognise anything natural about any relations that appear to arise from it. Any such relations are determined by us. “[W]ho we are” as Kaufman puts it, “is determined by us” (ibid).[14]

It is worth noting that the seeds for what will later be identified as a crisis within feminism (Alcoff, 1988) are already present in this conception of women and men, because de Beauvoir’s hyper individualism (arguably implicit in her existentialism) makes it difficult to identify the group ‘women’ (and ‘men’) in the first instance. Her denial of natural teleology is unconvincing, in part due to the fact that it separates us entirely from other species such that sexual difference in the human species, is radically unlike sexual difference in every other species of which we know.

[14] As Feser points out (2018b), Kaufman faces an acute difficulty on this point because he wants to safeguard gay liberation but also deny identificationism (Kaufman, 2018). Although Feser does not phrase it in these terms, Kaufman basically takes the liberationist paradigm only so far. That is, he denies the normative aspects of biology enough so as to secure gay liberation, but not so far as to be permit identificationism. But Feser argues that Kaufman’s “reasonable… conception [of the self]” is ad hoc and indefensible. There is no principled reason why biology should be normative in the latter case but not the former. Kaufman’s position collapses either into “a normatively thick conception of natural law” or into identificationism itself, the end point of the liberationist paradigm. It is unclear whether de Beauvoir would be susceptible of the same charge.

Importantly, as is also the case with Butler, at the heart of de Beauvoir's existentialist outlook lie two incompatible commitments. In the above quoted passage, de Beauvoir is clear that when "transcendence lapses into immanence, there is degradation of existence into 'in-itself', of freedom into facticity", and that this is a "moral fault" (De Beauvoir, 1949, 37). Furthermore, if this transcendence lapses into immanence on the part of a third party, "it takes the form of frustration and oppression" (ibid). At the same time though she is also clear, in accord with her ideas about existence and essence, that "[w]oman is not a fixed reality but a becoming" (ibid, 68). However, these claims cannot both be true. In order to identify an instance of lapse of "freedom in facticity" and therefore an instance of oppression, it is necessary to have at least a minimal conception of what a thing *is*. To deny women the vote would only be an injustice if we have at least some minimal conception that a woman is a rational being capable of such activity (which she undoubtedly is). But de Beauvoir cannot say this without denying that there is at least some fixed reality in 'being a woman'. Being a woman, or a man for that matter, is not only 'becoming' but must be fixed to at least some degree. Otherwise, the very idea of oppression makes no sense. In other words, it cannot be the case that 'there is oppression' and that "within the human collectivity, nothing is natural" (ibid, 856).

III) Gender materialism

The strong dualistic flavour of de Beauvoir's anthropology should be clear. The basis of sexual difference is to be found in constructed gender, which ascribes meaning to a meaningless body. Similar to other sorts of dualism, de Beauvoir's dualism runs the risk of collapsing into a form of materialism, which (over-)emphasises the role of the body in our understanding of sexual differentiation, or idealism, which emphasises the mental at the expense of the material. Though the liberationist paradigm has tended towards the latter, there are some, Shulamith Firestone among them, who have adopted the former.

Though deeply indebted to de Beauvoir, the Marxist feminist writer Shulamith Firestone, in her work *The Dialectic of Sex* (1970), adopts a strongly materialist conception of sex while minimising the role of gender. Where there are still hints of dualism, Firestone leans strongly on the material side. To construct an anthropology consistent with her account of sexual differentiation, two ideas she has about the body need to be brought to the fore. First, she sees inequality between the sexes as arising from biological differences in reproductive function which are reinforced culturally by men. She argues that there are certain "fundamental – if not immutable – facts" which account for sexual differentiation. These facts include women being at the "mercy of their biology" including menstruation, childbirth and child rearing which makes women "dependent on males… for physical survival" (ibid, 8).

These 'fundamental [biological] facts' play an important role in Firestone's thought, and she is clear that 'being a woman' or 'being a man' has a bodily dimension that cannot be theorised away. However, her statements about "the end goal of the feminist revolution [being] not just the elimination of male privilege but of the sex distinction itself," and about "artificial reproduction [where] children would be born to both sexes equally, or independently of either" (ibid, 11), indicate that while these 'fundamental facts' about women and men are real, they are only so contingently.[15] They are not so fundamental as to be completely fixed, they can be changed. They are contingent in the sense that their particular arrangement and function can be altered through material, rather than cultural, means. That is to say, while material differences cannot be theorised away, they can be done away with through technological means.[16] In accordance with her Marxist commitments, culture only changes when the material conditions which underlie it change.

Second, like de Beauvoir, and in anticipation of my own argument in the final chapter,

[15] According to Alice Schwarzer, de Beauvoir approved Firestone's thesis that the liberation of women involved the elimination of the distinction between the sexes, "because women will not be liberated until they have been liberated from their children and by the same token, until children have also been liberated from their parents" (Anderson 2018, 152, quoting from Schwarzer 1984, 39).

[16] The role of technology in making this conception of the human person plausible is explored by Carl Trueman: "Once [sex and gender] are detached from each other – something that can only really be plausible in a world in which psychology rather than biology is seen as fundamentally determinative of identity – then the problem becomes one of the body, to be treated with medication and surgery. Technology therefore makes the whole claim plausible. Technology, one might even say, defines ontology" (2020, 260). See also Trueman (2020 39-41; 100-101; 182-183) and Footnote 11 of this chapter.

Firestone seems to imply a division between our human nature *qua* animal and human nature *qua* 'what makes us distinctly human' i.e. a *historical* reality. "We are no longer just animals. And the Kingdom of Nature does not reign" she says, and "the 'natural' is not necessarily a 'human' value. Humanity has begun to outgrow nature…" (ibid, 9-10). The juxtaposition between the human and 'Nature' is similar to de Beauvoir but with a heavy emphasis on the sexed body rather than societal/cultural gender.

In some ways, Firestone's anthropology runs counter to the liberation paradigm precisely because of her recognition of the importance of bodily reality. However, because, as far as she is concerned, the biological given is not a fixed reality but a contingent artefact, it is subject to change and manipulation in accordance with our wills. In which case, the 20th century trend of minimising the biological in sexual differentiation remains intact because, paradoxically, even while Firestone acknowledges the importance of the body, she simultaneously diminishes it by reducing it to an artefact to be rebuilt and reconstructed as the 'user' sees fit.

What then might an anthropology consistent with these views be like? First, as just stated, Firestone's thoughts about biological manipulation indicate that our bodies are a kind of artefact. Her account suggests that those powers and properties that make women women and men men, what Firestone calls 'fundamental [biological] facts', are reducible to biological parts. Those biological parts are naturally directed towards certain ends, that is, the creation of children in the unique ways that women and men do. Importantly though, her account does not view the whole human being as either man or woman. It is only the parts, which are almost an extrinsic attachment to the individual, which make us men and women. It is as if there is a human neuter who has been bequeathed teleological parts, by nature, which, through human ingenuity, can be altered to unearth the neuter human lying beneath those parts. The human body then, is a kind of natural conglomeration of parts which happen to be arranged man-wise or arranged woman-wise. These parts, however, can be rearranged or removed to eliminate sexual difference and create the desired androgynous human. Hence, the human body is properly understood as a kind of artefact. While there is a kind of naturalness in the parts,

there is not naturalness in the whole.

This could be called the 'potato-head' model of the body in reference to the popular children's toy which consists of a plastic potato-like head, with holes to attach different facial features, arms, legs and hats/wigs. There is a sex-neuter body to which various combinations of sexed parts can be added, red lips or a bushy moustache or what have you. Firestone apparently views the human body in a similar manner where reproductive parts can be removed, rearranged, or made inert so that reproduction can happen in a *Brave New World* fashion. Mary Harrington uses the term 'meat-lego' to express the same idea (2023, 133-162).[17]

Second, it seems that given Firestone's materialist commitments, gender, or that peculiarly human aspect of sexual differentiation, is a kind of epiphenomenon which arises out of the material conditions of our existence. This is not meant merely in the Marxist sense, but rather also in terms of a philosophical materialism to which she seems committed. Gender comes into being when humanity is able "to outgrow nature" (1970, 10). This is possible when matter is arranged in a certain way, presumably through the evolutionary process, and when the material conditions of existence, i.e., technology, are sufficiently advanced to permit this division between the human and the natural. The foundational role that the material, both philosophically and technologically speaking, play in her account, ensure that she is advancing a materialist anthropology where sexual differentiation is found primarily in our bodies but only so in a contingent and mutable manner. The human therefore, as opposed to the natural, arises out of the material as a kind of epiphenomenon.

Anthropologically speaking, there are a number of difficulties with this account. As argued in the first chapter, the idea of an entity consisting of parts arranged so and so-wise faces serious difficulties. It is not clear how parts arranged man- or woman-wise is possible without a prior conception of what a man or woman is. If being a man or woman is nothing other than a contingent conglomeration of parts, it is not possible to know which parts or in what

[17] "[O]ur bodies are mere parts to be disassembled and reassembled at will, like Lego bricks made of meat" (Harrington 2023, 148-149).

arrangement they would need to be for the conglomeration of parts in question to count as a man or a woman in the first instance. In short, the designation of something as a man or woman would be entirely arbitrary, since it would not be possible to identify what those things are.

Secondly, according to Firestone, humans are able to transcend their own animality and to transform it in the way she suggests (or presumably any number of other ways). Combining the potato-head model of the sexed body with this implicit division between sex and gender, Firestone's position is consistent with a kind of materialism of the body to which cultural gender, considered as an epiphenomenon, attaches. The teleology of the body is only a teleology of parts which can be rearranged and removed. It is not clear whether this would result in a substantial change of the individual, where what was really a woman becomes an androgynous being, or whether the individual was really an androgynous being in the first place and the removal of the sexed parts simply reveals the androgynous being underneath. As should be clear from the first chapter though, understanding the body as a collection of parts fails to account for the unity of individuals and inevitably creates ambiguity about identity. It is no longer clear what makes a man a man or a woman a woman, or even whether such terms can be properly applied to the whole human, rather than just specific parts.

Despite these difficulties, Firestone's ideas about the elimination of sexual difference through technological means still have purchase for some thinkers today.[18] Still in terms of the progress of the 'liberation paradigm' the tendency, especially under the influence of post-modernism, has been in the idealist rather than materialist direction.

IV) Gender idealism

Judith Butler is a pivotal figure in what Pluckrose and Lindsay call the "post-modern turn" in

[18] Sophie Lewis is one such thinker who argues for "gestational communism" by destroying the idea that there is anything natural about the relationship between a mother and her own child (2020, 168). Harrington explains that, for Lewis, this can only be "attained by de-normalising first the 'natural' heterosexual mode of reproduction, second the idea that gestation affords a mother any particular bond with a baby, and finally the idea that gestating, birth and nursing are in any unique sense something done by women" (2023, 115).

feminism (2020, 138), and what sociologist, Judith Lorber, calls a "paradigm shift" (2006, 448) in feminist thought. This paradigm shift refers to the influence of post-modernism on feminist thought, or, more generally, to reflection on gender. Where a previous generation of reflection on gender had tended to think in metanarratives, where women are viewed as a "subordinated class" (ibid, 448) with men as oppressors and women as oppressed, under the influence of post-modernism and its accompanying scepticism of knowledge, this binary is no longer possible. Instead, the very concepts of 'woman' and 'man' must be deconstructed and cease to have the (relatively) stable meaning they previously had. We can see what this actually means by comparing materialist feminist Mary Poovey with Butler.

Poovey is concerned with how patriarchal and capitalist assumptions create socially constructed gender roles (1988). She was attracted to post-modern techniques of deconstruction because of their usefulness in undermining what she saw as socially constructed gender stereotypes, but at the same time, she recognised that if deconstruction was taken all the way, as it were, it could end up eliminating the category of women entirely (Pluckrose and Lindsay, 2020, 53-54). In her own words:

> *"To take deconstruction to its logical conclusion would be to argue that 'woman' is only a social construct that has no basis in nature, that 'woman', in other words, is a term whose definition depends upon the context in which it is being discussed and not upon some set of sexual organs or social experiences. This renders the experience women have of themselves and the meaning of their social relations problematic, to say the least..."* (Poovey 1988, 51).

Butler, however, does not have the same squeamishness. She is highly critical of versions of feminism which seek to maintain a clear and consistent distinction between sex and gender, seeing the former as having a basis in nature, and the latter as socially constructed.[19] Instead, Butler advances a sceptical position which attempts to make our understanding of ourselves as gendered radically indeterminate. That is to say, our being 'men' and our being 'women' does not have the fixed content that we ordinarily think it has. The content is not something we

[19] Although Butler does not reference Poovey and may not even have had her work in mind, the dichotomy between sex and gender in Poovey is clearly susceptible to Butler's criticism.

derive from nature, rather it is something that is determined by discourse. To understand her position though, it is necessary first to examine her attacks on what I call 'sex/gender dualism'.

Butler rightly draws attention to one of the key difficulties facing dualism of any variety: "If gender is the cultural meanings that the sexed body assumes, then a gender cannot be said to follow from a sex in any one way. Taken to its logical limit, the sex/gender distinction suggests a radical discontinuity between sexed bodies and culturally constructed genders" (1990, 10). This criticism of sex/gender dualism is a kind of parallel to the interaction problem all forms of dualism must address. Namely, once the distinction between the two is made, an account of how they are related must also be provided. Here, she is suggesting that, followed through consistently, the sex/gender distinction leads to a "radical discontinuity" between the (meaningless) body and (meaningful) gender. As I argued, de Beauvoir can be read as making the claim that "facts" about the sexed body have no intrinsic teleology, and that gender is the entirely extrinsic cultural means by which those meaningless facts are given meaning. So Butler's criticism would apply to de Beauvoir at least to this extent.

Is it really the case though, as the above passage implies, that since gender is the "cultural meanings" assumed by a sexed body, that is, gender is the socially constructed meaning imposed on a sexed body, and there is no relation between the sexed body and socially constructed gender, that gender can be *anything* at all? This would lead to all sorts of apparent absurdities. To see this, consider the following. That the sexed female body should wear a dress and the sexed male body should not, would be an instance of socially constructed gender. That is to say, a more or less arbitrary relation between the female sex and dresses has been constructed in our culture. It is the imposition of a culturally meaningful artefact on a meaningless body. Different accounts of sex and gender would give different explanations of this. Dress wearing in certain contexts is arbitrarily imposed on the sexed female body and the only relation between the two is plausibly thought of as socially constructed.

More specifically, we could say that dress wearing would be a manifestation of 'being a

woman', or a manifestation of gender. But while the relation between dresses and 'being a woman' are clearly socially constructed, could a relation between a 'disdain for the poor' and the sexed female body or the sexed male body be constructed? Could this social construct be imposed on these bodies? Think of other examples, like a car crash or eating breakfast. Could these somehow be constructed to become a gendered phenomenon? Gender has not been constructed (so far) to have any relation any of these activities, but that does not mean it could not. And if there is a radical discontinuity between sex and gender, it is not clear that there is a principled limit to what gender can be. The sex/gender dualist thereby risks gender becoming a completely empty term because the supposed determinateness of gender grounded in our bodies has completely evaporated. Any socially constructed reality could be considered 'gendered', but without any reference whatsoever to the sexed bodies of males and females, it is not clear that a gendered social construct means anything at all.

Dress wearing being feminine, and shirt wearing being masculine, or a 'disdain for the poor' being an expression of femininity and 'car crashes' being an expression of masculinity are all equally constructed and therefore equally possible or reasonable instances of (doing) gender.[20] This can be difficult to see because given our own preconceptions about what it means to be a man and what it means to be a woman, our minds immediately attempt to relate these gendered concepts (whether actual – dresses – or potential – car crashes) to the sexed human body in some way. But if the 'radical discontinuity' between the sex and gender is accepted, then this is a completely arbitrary relation.

Now, to be sure, many, perhaps most, instances of the construction of gender have nothing at all to do with the sexed body. This is not so obvious in English, but in many other languages, words are more or less arbitrarily assigned a gender. The French word for tree (l'arbre) is masculine, and the world for leaf (la feuille) is feminine. Chair is feminine (la chaise) and coffee is masculine (le cafe). Here, the gender of these words as masculine and feminine has no clear

[20] "[D]oing gender means creating differences between girls and boys and women and men, differences that are not natural, essential or biological. Once the differences have been constructed, they are used to reinforce the 'essentialness' or gender" (West and Zimmerman 1987, 137).

relation to the sexed body whatever. But this point about language does not undermine the difficultly for the sex/gender dualist. Rather, it reinforces it because it is not clear that on this account of the relation between sex and gender that any socially constructed gender is any less arbitrary than any other. The cultural construction of l'arbre as masculine, of a dress as feminine, or, in the hypothetical case, a disdain for the poor as feminine are all equally possible. None of these has any relation to the sexed body beyond a socially constructed one. All of these social constructs are equally arbitrary. On this view, there would be no more relation between something like maternity leave (a social construct) and the sexed female body, and disdain for the poor (a social construct) and the sexed female body.

This is precisely Butler's point about the "radical discontinuity" between sex and gender. Once a discontinuity is established, it becomes impossible to relate gender, including woman and man, to sex in any non-arbitrary way. Butler, though, would have us embrace the arbitrary relation between a 'disdain for the poor' and the feminine precisely because such a relation could be established through discourse. As she explains: "If the immutable character of sex is contested, perhaps this construct called 'sex' is as culturally constructed as gender; indeed, perhaps it was always already gender, with the consequence that the distinction between sex and gender turns out to be no distinction at all" (1990, 10-11).

Where the realist position I outlined in the introduction typically collapses gender into sex, Butler collapses sex into gender. For Butler, the distinction between sex and gender cannot be maintained due to her performative account of gender. Gender is not a thing, it "is not a noun, but neither is it a set of free-floating attributes… within the inherited discourse of the metaphysics of substance, gender proves to be performative – that is, constituting the identity it is purported to be" (ibid, 33). The idea that gender is performative appears throughout her work (1988, passim; 1990, passim; 2004, 212), and she explicitly invokes Nietzsche's idea that there is no 'being' behind the doing of gender (1990, 33). Rather, gender is a performance created through the repetition of "acts, gestures and desires" which "produce the effect of an internal core or substance, but produce this on the *surface* of the body…" (ibid, 173). She goes

on to point out that since gender is a performance, and since there is no body without gender, the 'gendered body' "has no ontological status apart from the various acts which constitute its reality" (ibid). Through some kind of repetition then 'woman' could come to mean or entail a disdain for the poor, for this would be a kind of performative construction of gender. The "ontological status" of woman would be *constituted* by some act which realises a 'disdain for the poor' in one way or another.

It is important that this is not misunderstood. For Butler, 'woman' is not merely *associated* with 'being able to gestate children' but partially *constituted* by it. And it is constituted by it through repetition – "an identity instituted through a stylized repetition of acts" (Butler 1988, 519). In which case, a 'disdain for the poor', for Butler, could also come to constitute the identity of woman through a performance or "stylized repetition of acts."[21] Importantly, this repetition of acts is not chosen, but something forced upon us through the discourses which we inhabit.[22]

What then is her anthropology? As Butler explains the "body is not a 'being' but a variable boundary, a surface whose permeability is politically regulated, a signifying practice with a cultural field of gender hierarchy and compulsory heterosexuality" (1990, 177). It is not that the body does not exist. Rather, it is that our access to and understanding of bodies is totally permeated by gender which is itself a performance which exists only in and through discourse. The body is itself a construction of gender. That the sexed female body is directed towards being impregnated, and the sexed male body is directed towards impregnation are both gendered constructions built-into, as it were, our access to the body. They are discourses through which we must interpret the body and discourses which we can never get away from. There is no sense in which the 'female' body is directed towards certain ends or naturally has certain reproductive functions. All of these supposed natural ends are a product of socially

[21] Butler makes the same point in *Gender Trouble*: "That the gendered body is performative suggests that it has no ontological status apart from the various acts which constitute its reality" (1990, 178).
[22] Butler makes this clear in an interview she gave in which she says: "Performativity has to do with repetition, very often with the repetition of oppressive and painful gender norms to force them to resignify. This is not freedom, but a question of how to work the trap that one is inevitably in" (Bankowsky, 1992).

constructed gender. There are no "fundamental facts" to use Firestone's phrase.

Where we might ordinarily think that the sexed body is prior to discourse, that is, language, culture and the constructions we make of it, Butler denies that a such thing is possible. As she explains in *Bodies That Matter*: "If gender is the social construction of sex, and if there is no access to this 'sex' except by means of its construction, then it appears not only that sex is absorbed by gender, but that 'sex' becomes something like a fiction" (1993, 3).

Sex becomes a kind of fiction because whilst we cannot but think about the body as sexed, as male and female, this is not how the body is in itself. We have no access to the body in itself, but only through gendered constructions. This is why Butler's position can be interpreted as a kind of idealism.[23] To be sexed is to be gendered, in an analogous manner to the way in which Berkeley argues that 'to be, is to be perceived'. It is not only that the construction that is gender becomes the lens through which the body must inescapably be viewed. It is rather that the gendered body is prior to sex, ontologically, even while it cannot be so in time. Perhaps, on Butler's account, we could say there are some bodies which interact with the world in a certain way and become pregnant, and other which interact with the world in a similar way and do not become pregnant. There is no meaningful sense though in which the first set of bodies are *for pregnancy* while the latter set are not. There is no directedness in any of the bodies except the directedness we apply through discourse.

A number of serious difficulties arise from this account of gender. First, few actual arguments are provided to think that sex actually is constructed in the first place, and if sex is not constructed through gender, perhaps the distinction between sex and gender can be maintained. Philosopher Alex Byrne (2018b) reconstructs an argument he finds implicit in Butler that he calls the 'Performative Argument' (PA).[24] Butler writes: "Consider the medical

[23] Butler expresses the same idea when she says: "Is there a 'physical' body prior to the perceptually perceived body? An impossible question to decide. Not only is the gathering of attributes under the category of sex suspect, but so is the very discrimination of the 'features' themselves. That penis, vagina, breasts, and so forth, are named sexual parts is both a restriction of the erogenous body to those parts and a fragmentation of the body as a whole. Indeed, the 'unity' imposed upon the body by the category of sex is a 'disunity', a fragmentation and compartmentalization, a reduction of erotogeneity" (1990, 146). Franks also sees Butler's position as a kind of idealism (2023).

[24] This should not be confused with Butler's claim that gender is a performance.

interpellation which (the recent emergence of the sonogram notwithstanding) shifts an infant from an 'it' to a 'she' or a 'he'" (1993, 7-8). Byrne suggests that the basis for PA can be found here. The basic idea is that when the appropriate medical professional asserts after birth or during an ultrasound that 'It's a girl' he is actually making it the case that the baby is question is a girl, his assertion brings the reality into effect. The assertion 'it's a girl', Byrne argues, should be understood in the same way that the assertion 'I apologise' brings the reality into effect. My assertion, assuming I am being truthful, makes it the case that I have apologised. So, the argument goes, the doctor's assertion also makes it the case that the child becomes a girl (or boy). As Byrne shows though, PA is wholly implausible and there is no analogy with 'I apologise'. This is so because if I truthfully assert 'I apologise' and then later find out that I had nothing to apologise for, it remains the case that I really did apologise. "I will say 'I shouldn't have apologized,' not 'I didn't apologize'" (2018b). In the case of the doctor sexing a baby however, if the doctor misinterprets the ultrasound image for instance, the assertion that 'it's a girl' was simply false. The doctor "won't say 'The baby shouldn't have been a girl,' but rather 'The baby wasn't a girl'" (ibid). All this is to say then, that while Butler can *claim* that sex (and gender) are constructed through discourse, until substantive reason is given for thinking that 'it's a girl' is anything other than a statement of reality based upon our recognition of a natural phenomenon, her claim remains unpersuasive.

Second, politically speaking, Butler has created what Linda Alcoff (1988) calls an 'identity crisis in feminism'[25] whereby the point of unity for the feminist political project, i.e. women as a category, ceases to be. If it is not clear what a woman is, or to what the social construct 'woman' refers, it is not clear what or who feminism is seeking to liberate. In fairness to Butler, she does recognise this implication of her thought although she views it as an opportunity rather than a problem. As the category of 'women' loses its stability, it calls "into question the foundational restrictions on feminist political theorizing and opens up other configurations, not only of genders and bodies, but of politics itself" (Butler, 1990, 181). She implies that the unity and goal of the feminist project can be found through political action itself rather than through

[25] "The dilemma facing feminist theorists today is that our very self-definition is grounded in a concept that we must deconstruct and de-essentialize in all of its aspects" (Alcoff, 1988, 406).

the category of 'woman' (1990, 20-21; 2004, 175).

Whether or not activism itself is a sound basis for political unity, a third, related, though deeper, concern arises. The political feminist project, even if it can find its unity, point of departure and end through political action alone, must depend upon some robust conception of what it means to be a woman in order to be liberatory at all. If the 'meaning' of woman is indeterminate, or determined by discourse alone, or even, having nothing 'essential' to it at all, it is not clear why or how any discourse or conception of 'woman' is to be preferred to any other or why or how any social construction should be thought of as oppressive or liberatory.

Butler claims, for example, that constructing 'woman' or defining 'woman' prior to discourse "will have some normative force and, indeed, some violence, for it can construct only through erasing; it can bound a thing only through enforcing a certain criterion, a principle of selectivity" (1993, 11). She says elsewhere that "we are also constrained by norms in ways that sometimes do violence to us" (2004, 206). Butler makes the difficulty especially acute in her account of gender as performance when she states explicitly that "there is no pre-existing identity by which an act or attribute [of gender] might be measured…" (1988, 527). Her basic idea is that the allegedly arbitrary limits that we place on individuals through categories, such as 'man' and 'woman', is a kind of wrong, indeed, a kind of "violence", against those individuals because it involves an 'erasure' of their true selves. But given the logic of her own epistemology where we have no access to what persons are outside of discourse and no access to their true selves, it is not clear why limiting individuals in this manner might be considered a bad thing or a kind of wrong. If there is no definite content to the individual, then the ascription of any particular socially constructed gender is neither good nor bad (Barnes 2021, 53-55). In short, Butler wants to make claims about what is good and bad for individuals, but her epistemology forbids her from making precisely those claims.[26,27] This inconsistency in Butler gets us closest to an explicit statement of her anthropology, for while it is not clear how she knows this, she

[26] This is a variation of the same difficulty de Beauvoir faces above.

[27] To be fair to Butler, in some of her later works she does recognise this difficulty. As Franks explains: "*Gender Trouble* urged resistance to these discourses of power. But the notion of resistance encourages covert appeals to substance—to the real me who is being oppressed. *Undoing Gender* and other later works adopt a more consistent outlook, which forestalls such appeals" (2023).

evidently believes that human beings are androgynous. That humans are, in themselves, neither male nor female, man nor woman.

Fourthly, Butler's epistemology is itself highly questionable and starts from the assumption of a radical disjunct between the knower and the thing known. There is an unbridgeable gap between the two. Her entire epistemic approach is susceptible of one giant 'tu quoque' by which her emphasis on the role of power in knowledge claims can be turned back against her. Citing Michel Foucault with approval[28] she says: "Having or bearing 'truth' and 'reality' is an enormously powerful prerogative within the social world, one way in which power dissimulates as ontology" (2004, 215). In accordance with Pluckrose and Lindsay's knowledge and political principles (see Footnote 4) Butler goes on to say: "Knowledge and power are not fully separable but work together to establish a set of subtle and explicit criteria for thinking the world…" (ibid). In which case, it is not clear why the sceptic of her position should accept her account of gender, including knowledge of it, as anything other than "power dissimulat[ed] as ontology." This of course is a foundational difficulty with such a sceptical hermeneutic since it leaves its advocate unable to defend her own premises.

V) Conclusion

Where then are we left in our quest to understand sexual differentiation? The strongly anti-essentialist and anti-realist approach must fail because sexual differentiation becomes completely unintelligible. There is no 'naturalness' to being a man or being a woman, it is all constructed. There is no natural, non-imposed teleological relation between men and women, between parts of the body and specific ends such as childbirth, nor between mothers and their own children. Since there is no natural relation between the body and gender, gender really can be constructed in any way we like and can mean anything we like. But if it is not grounded in any tangible reality at all, it is not clear that we have explained anything. Rather, Butler's

[28] Foucault 1978, 50-53

epistemology assumes there is no real explanation for anything.[29] Only certain ways of speaking about things, and the terms 'men' and 'women' are intelligible in relation to a particular discourse. They have no meaning in themselves. Furthermore, no specific argument is actually provided as to why we should think that there is no teleology in nature, or why we should think the bodies we encounter have no directedness. Furthermore, given that the denial of directedness leads to the unintelligibility of reality itself, this itself is strong reason to think that a teleological conception of nature, and human nature, is in fact justified.[30]

What are we to conclude from the preceding discussion? In effect, Butler provides a critique of a sharp distinction between sex and gender without a solution. This does not mean, for instance, that her insights into the relation between sex and gender, or de Beauvoir's regarding how sexual difference in the human species is unlike sexual difference in other species, are without merit. Each provides important insights which challenge the fixity of male and female and help us to see that male and female in the human species are importantly different from male and female in other species. This is a topic I will return to in the final two chapters. However, as I hope to have made clear, jumping as they do to sexual difference in the human species without careful philosophical consideration of their preferred ontology and an accompanying anthropological foundation has made their positions susceptible to the kind of criticisms I have levelled against them.[31] Their wholesale rejection of essentialism has left these

[29] There have been various reactions to Butler especially by those authors concerned to safeguard feminism against the indeterminacy bequeathed to it by Butler (See Alcoff 1988; Lorber 2006). There have also been neo-essentialist reactions to Butler which, while rejecting a reductionist view of essentialism, seek to ground 'womaness' in a historical lineage (Bach 2012), or seek to ground 'being a woman' or 'being a man' through their shared oppression or oppressiveness (Haslanger 2000). I contend that such approaches are indeed correct to recognise the dead end down which Butler's epistemology leads and are right to try to find an alternative. Such approaches have their own strengths and deficiencies but ultimately fail to provide a convincing answer to the problem of sexual differentiation, since they share many of the same unarticulated metaphysical assumptions as the thinkers they are reacting to.

[30] I expand on this point significantly in Chapter VI.

[31] A notable exception to my concerns about a lack of serious philosophical consideration of metaphysics and ontology can be found in the work of philosopher Charlotte Witt. In her book, *The Metaphysics of Gender* (2011) she distinguishes 'kind essentialism' from 'individual essentialism' concerning herself the latter which she calls "uniessentialism". "Uniessentialism explains why an individual exists rather than a heap" (ibid, 14). In her account of gender, she distinguishes 'persons', 'human organisms' and 'social individuals'. All that is required to be a person is to have a first-person perspective; to be a human organism is to be biologically human which does not require a first-person perspective (ibid, 51-63); to be a social individual "is always essentially to be an occupant of a social position, or to be in relation to a social world… Social individuals are relational beings and their existence is dependent upon the existence of social reality" (ibid, 55). Occupying a social position involves having norms, expectations and roles imposed upon the human organism, which may or may not be a person. Within this schema, gender is identified as the "mega social role" (ibid, 80) which unifies other social roles. She argues that 'being a man' or 'being a woman' is *the* unifying principle of the social individual as opposed to race, for example, because gender is lifelong and universal, and therefore has a social and unifying role that race does not (ibid, 98-99). I find Witt's division of the human person into human organism, person and social individual artificial and unconvincing, and despite her argument, she jeopardises rather than safeguards the unity of the human person. I discuss some of Witt's insights in Chapter VII.

authors wanting to make political gains for women even while their philosophical assumptions leave them unable to articulate the subject of their concern. Because these authors do not properly develop their underlying anthropology, the adversarial relationship they establish between our animality and humanity, so to speak, is not the conclusion of an argument but the starting point for further reflection. But if the adversarial relationship between the human and the natural, and the species and the individual in de Beauvoir, as well as Butler's ideas about the "violence" that definition does to our true selves, is a mistaken starting assumption, it follows that much of their further reflection will also be in error.

As I will argue in Chapter VII and VIII, Aristotle and Aquinas provide a robust metaphysical anthropology which is capable of establishing an alternative starting point which sees our animality and humanity as integrated. If this position can be defended, I will have shown that in acknowledging the importance of our bodies in understanding sexual differentiation and human nature in general, we are not thereby committed to reducing our humanity to our animality, as it seems, de Beauvoir, Firestone and Butler, are fearful of doing. Instead, our animality, is elevated without being eradicated. To start my own positive realist account of sexual and gender difference, I will next examine Aristotle's own account of sexual differentiation. Unfortunately, despite the foundations he lays for my own thinking on the matter, his own account is not without serious flaws.

Chapter III – Aristotle on sexual differentiation

I) The body as integral to sexual difference

Emphasising the difference between the meaningless sexed body and culturally meaningful gender, the writers in the last chapter adopt a similar position to Plato in regard to sexual difference. In his discussion concerning the suitableness of women to be guardians in the *Republic* (Book 5 esp. 454c-460d), Plato makes clear that since it is the soul that is the true seat of identity, the sexed body is a kind of irrelevance: "if the only difference appears to be that the female bears the children, and the male mounts the female, then we shall say this in no way proves that for our purposes a woman is any different from a man" (ibid, 454d-e). Plato makes this point with reference to the suitability of women to be guardians arguing that differences between men and women do not prohibit this. The only qualification he makes is that in tasks of war and being guardians of the city "women should be given lighter [tasks] than men, because their sex is weaker" (ibid, 457b). He even suggests the differences between men and women, such as they are, are like the difference between the bald and hairy man (ibid, 454c) i.e. no real difference since each has the same nature. Women's weakness is accounted for by their inferior bodily incarnation.[1]

Since the soul, the true seat of identity, is neither male nor female, (Allen 1985, 61-62), there is no reason why men and women are not fit for the same tasks. Plato, however, can only really say this because of his body-soul dualism, and here the comparison with the writers in the last chapter is clear. Those thinkers with Plato exemplify what Prudence Allen calls the 'sex unity' thesis whereby men and women are said to be equal and not significantly different (ibid, 3). While for Plato the natural differences between the sexes are like the natural differences in a bald and hairy man, the differences between men and woman in the thinkers in the last chapter are not really natural at all but a construct of discourse or culture, and, where they are

[1] See Plato's discussion concerning the creation of women in the *Timaeus*: "Of those who were born as men, such as were cowardly and spent their life in unrighteousness, were, according to the probable account, transformed into women at the second incarnation" (91d-92b).

natural, are subject to revision through technological means.[2]

However, due to his emphasis on the unity of the body and soul as together comprising the complete human person, Aristotle is unable to characterise sexual difference in the same way as Plato. Precisely because our bodies are an integral aspect of our selves, bodily differences between the male and the female constitute a difference that makes a difference. Attempting to take bodily difference seriously though, causes an acute difficulty for Aristotle insofar as the differences in male and female bodies appear to run contrary to his insistence that they belong to the same species. His ultimate and infamous solution in the *Generation of Animals*, which finds that "the female is, as it were, a mutilated male" (GA, 727a27-28), is woefully inadequate. It results in what Allen calls 'sex polarity' whereby men and women are viewed as different, but men are thought to be superior to women (1985, 3).[3] To understand why he thinks this and what we might be able to salvage from his account of sexual difference will require an account of his metaphysical anthropology as well as the empirical content of sexual difference upon which Aristotle applies his anthropological speculation.

This task is made all the more difficult because Aristotle's discussion of sexual difference can be found in numerous places throughout his corpus, and, more significantly, because he frequently combines his metaphysical speculation and empirical data. This latter point means that understanding Aristotle's account of sexual difference also requires at least a basic knowledge of his understanding of essence and its relation to definition. In which case, to disentangle these threads, I will first explain how Aristotle understands the union of body and soul in his *De Anima*. It is on account of this union that Plato's 'sex unity' is not an option for him. Here I will also introduce the concepts 'form' and 'matter' which play an essential role in Aristotelian thought, both ancient, medieval and modern,[4] as well as Aristotle's own

[2] Allen sees Plato raising an obvious question: "whether sex unity is necessarily associated with the devaluation of the body… [I]n the first articulation of sex unity we also find a radical devaluation of human materiality" (1985, 81). Whether or not there is a necessary relation would seem to depend on how 'equal' and 'significantly different' are characterised. However this is in fact worked out, the trend to devalue the body in the search for equality (and liberation) is certainly present in the 20th century thinkers I examined in the previous chapter.

[3] See Allen (1985 and 2002) for the historical development of this idea, and especially how Aristotle set the tone for academic discussion of sexual difference from 1255, when he became required reading at the university of Paris through to the Reformation (2002, 65).

[4] Depending upon the role these concepts perform they are characterised in different ways. Matter is simultaneously the 'principle of individuation'; that which form makes determinate; and that which need actualising in change. Form is that which makes a thing what it is or

understanding of essence which is quite unlike the hidden structure essentialism I critiqued in Chapter I. This account of the relation of body and soul will provide the foundation for his account of sexual difference. I will focus on how Aristotle characterises the problem he encounters in the *Metaphysics*, namely: how women and man are the same species, when their difference is the "greatest difference" (1055a5). Here Aristotle fails to provide a satisfactory answer to the difficulty he raises.

Second, Aristotle's biological account of sexual difference both follows on and informs his metaphysics. His answer to how sexual difference is possible consists in a norm-defect theory of sexual difference whereby the male of the species is understood to exemplify the norm or perfect type, and the female is a defective or mutilated instance of the same type. Here I will show how the results of his empirical investigations are combined with his anthropology mutually supporting each other.

Third, I will look at the some of the important insights of Michael Nolan regarding the meaning of 'mutilated' which help to place the norm-defect theory in its proper context. Despite this context, I will argue that Aristotle had good reason to question his own account even without the biological knowledge that we now possess.

As to why I think there is anything worth salvaging in Aristotle's account of sexual difference in the first place, there is a kind of reverse parallel to the biological account of sexual difference I explored in the opening chapter. I implied that such accounts of sexual difference had all the right empirical data but the wrong metaphysical lens through which to view it. This resulted in a question begging account of sexual difference which simultaneously attempted to characterise sexual difference in terms of chromosomes or gametes, all while relying on a prior, holistic and unarticulated account of sexual difference that made the biological account possible in the first

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that which gives unity to a thing making it what it is. It is not precisely the same as essence, since essence, in material beings must include matter. This is why form and matter are said to be incomplete and, in material things, one is not capable of existing without the other. Furthermore, there is no such thing as matter as such for that would be pure potentiality, and in material things, there is no such thing as form as such. These principles are foundational to ancient and modern Aristotelians alike and there are numerous attempts to explain, defend and 'update' them within the contemporary era. For a sample of authors who discuss these in a contemporary context, see Feser (2014 and 2019); Oderberg (2007); *Neo Aristotelian Perspectives on Contemporary Science* (2018). I will engage with a number of these attempts in Chapter IV-VI.

instance. Here the situation is almost the reverse. Aristotle has a powerful and defensible metaphysics, (which, admittedly, he misapplies to his accompanying anthropology), but all the wrong empirical data. Both these errors are mutually reinforcing and lead to the disastrous results I explain below.[5]

II) The union of body and soul and the human essence

As indicated, Aristotle's thoughts on sexual differentiation are multi-layered and can be found in several different parts of his corpus. In his discussion of the hierarchy of rule in the *Politics* he remarks that women have the "deliberative faculty… but it is without authority" (1260a14). This is indicative of the 'sex polarity' which Allen (1985, 13) identifies whereby women are subordinate to men,[6] and is an example of the way in which Aristotle is interested in how sexual difference is different in the human species compared with other species. To understand why he says this though, we must first understand the essential unity of the human person.

Recognising that the soul is not some external thing outside the body which is the true seat of identity but, instead, that which gives unity to the body and makes the body the kind of body it is, is essential to understanding why sexual difference causes such a problem for Aristotle, and indeed, a number of his followers throughout the century.[7] As Aristotle explains:

> "*The soul… is the first grade of actuality of a natural organized body. This is why we can wholly dismiss as unnecessary the question whether the soul and the body are one: it is as meaningless as to ask whether the wax and the shape given to it by the stamp are one, or generally the matter of a thing and that of which it is the matter. Unity has many senses… but the most proper and fundamental sense… is the relation of actuality to that of which it is the actuality"* (DA, 412b8; 413a3-8).

[5] In addition to a broadly defensible metaphysics, Aristotle's hierarchical understanding of living things provides an extremely useful and underused tool for understanding sexual difference. I explore these themes in Chapters VII and VIII.

[6] Thomas Aquinas' commentary on this passage closely follows Aristotle and acts as confirmatory evidence of Allen's sex polarity thesis: "But the female, since she is free, has the power of deliberating, although her deliberation is weak. And the reason for this is that her reason, because of the tenderness of her nature, weakly adhere to decisions and is quickly drawn away from them because of particular emotions (e.g., desire, anger, fear, or such like)" (*Commentary on Aristotle's Politics*, 72).

[7] See Thomas Aquinas who more or less accepts Aristotle's characterisation and solution to this problem in the Middle Ages, and contemporary Thomists John Finley (2015) and William Newton (2020). I discuss each of these authors in this chapter and in Chapters IV-VI.

This is a somewhat involved definition, and a certain amount of unpacking is required. We first need a basic grasp of the contentious concepts 'form' and 'matter' as two constituent principles of material being.[8] In the *Physics* (194b16-195a3) and *Metaphysics* (983a24-938b7) Aristotle characterises these as two of the four possible answers to questions concerning *why* something is, "for men do not think they know a thing till they have grasped the 'why' of it…" (Phys., 194b19-20).[9] They are listed as "causes" but are perhaps better understood as 'explanations' (Ainsworth 2020). In the *Physics*, the formal cause of a thing is said to be "the archetype i.e. the definition of the essence" (194b26-27) and the material cause of a thing is said to be "that out of which a thing comes to be and persists... e.g. the bronze of the statue" (ibid, 194b23-24). Returning to the *De Anima*, Aristotle informs us that "matter is potentiality, [and] form [is] actuality" (412a10)[10] and that "the body is the subject or matter" (ibid, 412a19). With all this is mind, we are able to see how these two principles of being, form and matter, and therefore the body and soul, relate to one another. Matter cannot exist by itself but must always have some form. Consider the bronze statue – it could be in the shape of a melted puddle or a shield or any number of other configurations. For the purposes of this example, each of these shapes or configurations just is the particular form that the bronze takes. Each of these forms makes the matter (the bronze) which is common to each, the particular thing it is, such that we can point to it and identify what it is i.e. a statue, rather than a melted puddle. Matter, the bronze, is indeterminate and waiting to be determined, while form is that which makes the matter a determinate thing (Feser 2014, 161). As Oderberg points out, form is the explanation for the unity of a material thing so that it is not a local conglomeration of parts (2007, 66-67).[11] In which case, there is no real separation between the statue and the bronze from which it is

[8] Only a cursory explanation can be provided at this juncture though more is said in the next chapter. Some of the difficulties arising from the characterisation of matter, what exactly it is, especially prime matter, as well as how matter can function as the principle of individuation are discussed therein.

[9] Alongside the formal and material cause, Aristotle also lists the 'final' and 'efficient' cause which I shall have reason to examine in Chapter VI.

[10] In *De Anima* 412a16-27, Aristotle explains that there are two senses of actuality, "corresponding… to the possession of knowledge and the actual exercise of it" and the difference between the two concerns how they relate to potency. If one has knowledge of mathematics, for example, this is a kind of actuality, and the exercise of this knowledge is a further, secondary actuality. The soul is like the former for it is presupposed when it is exercised as when awake and doing philosophy or not exercised as when asleep. This is why Aristotle describes the soul as "the first grade of actuality". See also Aquinas (*Commentary on Aristotle's De Anima*, II. 1. § 216; 227-229).

[11] Feser rightly points out that there is a distinction between 'form' and 'essence' even though Aristotle does identify 'essence' with definition (*Top.*, 102a3), as he identifies 'form' with definition here. "[T]he essence or nature of a stone, tree, dog, or other material substance includes both its form and its matter, since matter is essential to the operations such things carry out by virtue of their substantial forms. The essence or nature of an immaterial substance, however, would be identical to its form" (Feser 2014, 211).

made. Or indeed between the wax and the shape given to it by the stamp, and, of course, the body and the soul which informs it.

The body and soul are related to one another then as form (soul) to matter (body)[12] and this, so says Aristotle, is unity in its "most proper and fundamental sense" (DA, 413a6). While form and matter are really distinct, they are not separable. The bronze always has *some* form, it is never entirely devoid of it.[13] This unity means that our identity as men and women cannot be abstracted from the body-soul composite in the way that Plato and those beholden to the "liberationist paradigm" do. The soul is what makes the human body a *human* body, without it, there would be no human body at all. What this appears to entail then is that if men and women are different in their bodies, then they really are different.

The union of body and soul in the human person forms the first pillar of Aristotle's account of sexual difference. The second pillar arises from the closely related ideas of 'essence' and 'definition'. Essence in Aristotle is another contentious topic and one which describes it in numerous ways which appear to emphasise different aspects of the same thing.[14] Aristotle ties 'essence' to definition (*Top.*, 102a3; *Met.*, 1017b21-22; *An. Post.*, 93b28-30a and 94a10-13); to what a thing is 'in virtue of itself' (*Met.*, 1029b14-15 and 1030a2-6); to the 'nature' of a thing (*Met.*, 1014b35; *An. Post*., 93b28-30 and 94a10-13); and to (secondary) substance (*Cat.*, 2a11-18). The relation of essence to definition is of particular interest for the moment since

[12] A further distinction can be made (as indicated in the prior footnote) between 'substantial' and 'accidental' form. While form accounts for the unity of a thing in general, the distinction between substantial and accidental forms emphasises the manner of that unity, whether as intrinsic to the substance or extrinsic i.e. imposed upon it in some way. Feser, once again, is informative: "Being a liana vine involves having a substantial form, while being a hammock [made of liana vine] involves the imposition of an accidental form on components each of which already had a substantial form, namely the substantial form of the liana vine. A liana vine is, accordingly, a true substance. A hammock is not a true substance, precisely because it does not *qua* hammock have a substantial form – an *intrinsic* principle by which it operates as it characteristically does – but only an accidental form" (2014, 165). Aristotle alludes to this distinction in both the *Physics* (192b8-23), and immediately following the definition of a soul in the *De Anima* in which he distinguishes "a *natural* body… one having *in itself* the power of setting itself in movement and arresting itself" (412b17-18) from artefacts like an axe. The natural body possesses a substantial form, an intrinsic principle of operation and unity, where the axe possesses only an accidental form, where the unity of parts is extrinsic to the thing itself. Importantly, the distinction between accidental and substantial form does not precisely overlap with the distinction between artificial and natural objects, since a heap of stones formed at the bottom of a hill as the result of erosion would be a natural object which has a kind of extrinsic unity and therefore an accidental rather than substantial form (Feser 2014, 166). Therefore, while it is true that the soul is the form of the body, it is more accurate to say that it is the substantial form of the body. See also Aquinas (*Commentary on Aristotle's De Anima*, II. 1. § 218).

[13] While matter cannot exist by itself for it would be pure potentiality and entirely indeterminate, devoid of all properties, attributes and accidents, form of itself, can exist, at least according to the theory. In Scholastic philosophy such things are identified as angels i.e. beings with form but lacking matter (Feser 2014, 163).

[14] Koren, for example, describes how 'nature' and 'essence' can be used more or less interchangeably. The former would be used in preference to the latter in those cases in which essence is the "principle or terminus of activity" (1955a, 131).

'definition' in Aristotle is not merely of words but of real things. As Aristotle explains in the *Topics* a "'definition' is a phrase signifying a thing's essence" (102a3) and Aristotle's manner of definition consists in his identifying the general class of a thing, its genus, and then identifying that which makes it different from everything else in that class, the specific difference.[15] Taken together, the genus and specific different give us a definition of a thing and tell us its essence, or species. Using water as an example, the neo-Aristotelian David Oderberg explains that all definitions have the general form: "Water is a… (genus as indicated by the sum of the properties common to two or more species) with the following properties… (specific difference marking out water from everything else no matter how similar in other respects)" (2007, 15).[16]

Applying this mode of definition to the human species we arrive at the classic formula where the essence of the human being is defined as a rational animal, with 'animal' denoting the genus, and 'rational' the specific difference.[17] Here though bodily differences between the sexes, as arising from their body-soul union, create a difficulty because it is not clear how they can be incorporated into this understanding of essence and definition. That is, it seems that Aristotle must explain precisely how men and women are different since each belongs to the same genus (animal) with the same specific difference (rational). How, in other words, are they to be further differentiated without making them a different species or essence? Though a technical concern, this is not a minor one. After all, for ancients and moderns alike, a distinction between men and women, male and female, is arguably one of the first things given in experience and a primary lens through which we interpret our experience of nature.[18] If Aristotle's account of definition and essence cannot cope with such a basic aspect of our experience, it may call into question his entire approach.

Aristotle though did recognise this difficulty and thought it serious enough to devote a

[15] He explains this general method of definition through division of difference in the *Posterior Analytics* (96a20-97b40).
[16] The actual content of this definition does not matter for our purposes.
[17] Aristotle never explicitly uses the phrase 'rational animal'. As Oderberg explains, the closest he comes can be found in the *Protrepictus* where he says: "If, therefore, man is a simple noncomposite living being, and if his being and essence are determined in accordance with reason and intelligence, then he has no other function or ordination than the attainment of the most exact truth which is the truth about reality" (Chroust 1964, 26-27 quoted in Oderberg 2007, 289). It is also worth noting that while Aquinas clearly does believe that man is an essentially rational animal, he accepts that this definition does not exhaust our essence. In *On Being and Essence*, for example, we read: "to man as man belong rational and animal, and whatever else falls in his definition" (Bobik 1965, 54).
[18] I will return to this topic in the final chapter.

chapter to it in his *Metaphysics*. He presents the problem in the following manner:

> *"One might raise the question, why woman does not differ from man in species, when female and male are contrary and their difference is a contrariety; and why a female and a male animal are not different in species, though this difference belongs to animal in virtue of its own nature, and not as paleness or darkness does; both female and male belong to it* qua *animal"* (Met., 1058a 29-34).

The problem is all the worse because, as he states five chapters earlier, a contrariety is not just a difference but the "greatest difference" (ibid, 1055a5). Within the genus animal for instance, there is no greater difference than between rational and non-rational, and this difference creates a difference in species. So why is it not the case that male and female, which also belong to animal, do not make a difference in species?

Aristotle answers that it is only contrarieties in definition or form, rather than contrarieties in matter that make a difference in species or essence (which includes both form and matter). This is the reason why paleness and darkness of skin colour does not make pale men and dark men different species (ibid, 1058b1-25). Yet at this crucial juncture, Aristotle is frustratingly unclear, for he has just said that male and female belong to the nature of an animal in a way that paleness and darkness does not, and he concludes by making exactly this point without having really resolved it: "But the male and female, while they are modifications peculiar to 'animal', are so not in virtue of its essence but in the matter, i.e. the body" (ibid, 1058b22-23). But paleness and darkness too are modifications peculiar to the body. As Thomist John Finley rightly observes, the precise relation between paleness and darkness and that which is pale and dark, and maleness and femaleness, and that which is male and female, is not clearly spelled out (2015, 591). Without a clear answer, Aristotle runs the risk of implying that the difference between paleness and darkness, or baldness and hirsuteness for that matter, are the same sort of difference as maleness and femaleness. One could be forgiven for thinking that, when all is said and done, his metaphysical account of sexual difference commits him to a view which is, in fact, very similar to Plato's. That he does not in fact think maleness and femaleness relates to the body-soul union in the same way that baldness or paleness does is clear from this passage,

though his actual reason for thinking this is less clear.

In short, Aristotle wants to maintain that males and females really are different in a way that pale men and dark men are not. His reference to 'sex' being related to animality indicates as much, and perhaps, as I maintain, he also indicates that there is a kind of sui generis relation between maleness and femaleness and the male and female individual that cannot be found among other accidents or properties. This relation though and the difference it makes, as he rightly insists, is not a species making difference. Turning to his empirical or biological account of sexual difference, will shed some light on this conundrum.

III) Female as privation, "mutilated" and the norm-defect model

As indicated, the general metaphysical framework laid out in the last section, as well as the specific difficulty of specifying the relation between maleness and femaleness and the human essence as instantiated in an individual, informs the interpretation of data based on empirical discovery. Aristotle is not unique in this regard as I tried to show in Chapter I. Those authors thinking about sexual difference in a contemporary context and reflecting upon the data of the biological sciences cannot do so but through some metaphysical lens or other. Hidden structure essentialism though, is not a plausible lens through which to interpret said data. For Aristotle, not only does his metaphysics inform his biology and confirms it, but his biology also informs and confirms his metaphysics.

Now, while Aristotle does not sufficiently specify his idea of maleness and femaleness as contrarieties and their relation to the body-soul union, further specification can indeed be found in his biological account of sexual difference which it informs. In particular, the idea of the female being a *privation* of the male comes through clearly in the *Generation of Animals* and follows directly on from their being contrarieties. Aristotle is explicit on this point for "clearly all contrariety must be privation" (Met., 1055b14-15). He provides a number of metaphysically informed biological definitions of the male and the female of a species where the notion that female is the privation of male can be clearly seen. These definitions can also be

viewed as an answer to the question of what it is that makes a male male and a female female.

Aristotle defines the female as that which "provides the material, the male that which fashions it, for this is the power that we say they each possess, and this is what it is for them to be male and female" (GA, 738b 20-25). Through her menstrual fluid the female provides the matter for generation and in his semen, the male provides the form. Since form is the determining principle and matter that which is determined, matter, lacking all determination, is a privation. In a similar fashion to the gamete account in Chapter I where the male and the female is defined by something they produce i.e. small and large gametes respectively, for Aristotle, what the female produces i.e. the menstrual fluid containing matter alone, is a privation of what the male produces i.e. the semen containing the form. Again, discussing generative fluids, Aristotle confirms this saying that "the semen in the male differs in that it contains a principle within itself of such a kind as to set up movements also in the embryo… whereas the secretion [menstrual fluid] of the female contains material alone" (ibid, 766b 10-15). The application of his metaphysical principles of form and matter to sexual difference is also present in his identification of the female with passivity and the male with activity: "The female as female is passive and the male as male is active – it is that whence the principle of movement comes" (ibid, 729b 15-20).

Recall from the last section that the form of a thing provides the definition of a thing, it is that which determines the matter and makes a thing the thing it is. So, in Aristotle's explanation of generation, it is the male who provides that which makes a conceptus a human being (the form) by determining the matter of the menstrual fluid into a human form. This in turn creates a further problem for we are informed in the *Metaphysics* that "the begetter is of the same kind as the begotten… i.e. in the case of natural products (for man begets man), unless something happens contrary to nature, e.g. the production of a mule by a horse" (Met., 1033b30-33). This indicates that in the generation of the species the form that is passed on from parent to child is the parent's own form. Gareth Matthews calls this the "doctrine of reproduction by eidos [form] transmission" (1986, 21). However, as we just saw, the form that

is passed on is the father's form since the female does not provide form but only matter. In other words, it is not a generic form that is passed on from parent to child, but the father's form, the *male* form, that is passed on. Matthews helpfully terms this the "doctrine of paternal agency" (ibid, 22). In which case, given Aristotle's "doctrine of reproduction by eidos [form] transmission", it should be the case that every child is a male child and, as a corollary of this, that there should be no females at all. Yet there are females, so how is this possible?

These two doctrines virtually guarantee the norm-defect model of sexual difference which is clearly expressed in Aristotle's view that the female is a kind of natural failure:

> *"[F]or just as the young of mutilated parents are sometimes born mutilated and sometimes not, so also the young born of a female are sometimes female and sometimes male instead. For* the female is, as it were, a mutilated male*, and the menstrual fluids are semen only not pure; for there is only one thing that they have not in them, the principle of soul"* (GA, 737a25-29 [emphasis added]).

In fact then, male and female are differentiated according to their corresponding to the norm and defect of a particular kind. Males instantiate the human form fully, and females instantiate it in an imperfect manner, as mutilated or deformed, that is, not as the fully formed male. In terms of final cause, the conceptus intends the adult male as its end for this is the full realisation of its form, and insofar as the end is anything other than a healthy male, there is a deviation from kind and the result is a deformity of one sort or another. It is in this sense then that the female is a mutilated or deformed male. This interpretation is confirmed when Aristotle explains that "even he who does not resemble his parents is already in a certain sense a monstrosity; for in these cases nature has in a way departed from the type. The… first departure indeed is that the offspring should become female instead of male; this, however, is a natural necessity" (ibid, 767b6-7).

Now, this way of thinking about difference within a species, in terms of a norm and a defect, is not, in itself, an unusual way to understand difference. For example, when a person is born missing a limb, we do not think that that person is a new kind of three-limbed human.

Rather, we recognise that something has 'gone wrong' in the development of the human from embryo to baby. Perhaps the umbilical cord became wrapped around a limb and cut off circulation so that the limb did not develop properly, or perhaps there is some unknown genetic condition which meant that that which was supposed to be there i.e., two arms and two legs, did not manifest. In Aristotelian terminology, one might say that something interfered with the matter so that the form was not able to fully actualise.

To be sure, Aristotle's application of the norm-defect model to sexual difference *is* unusual, but, within his own system, it functions as a neat solution to the problem of classification of male and female difference. Rather than, say, genetic differences or abnormalities being used to explain differences in offspring, Aristotle accounts for such differences, and in particular, the difference between male and female, in other ways. He provides several possible sources of variance that can lead to the production of females rather than males such as a lack of heat which results in the generation of a female (ibid, 766b17-18; 29-30); the effects of the south wind which tends to result in more females (ibid, 766b33-34; 767a10); the effects of age, where older or younger females not in their prime, tend to produce more female than males (ibid, 766b28-30); or, in the *History of Animals*, the effects of salty water, where the taking of salted water is more likely to result in male offspring (HA, 573b35-574a16). If everything were as it should be and the menstrual fluid "properly concocted, the movement imparted by the male will make the form of the embryo in the likeness of itself…" (GA, 767b 16-17). If however there is any interference due to lack of heat or something else that might cause the form in the semen to be imperfectly received in the menstrual fluid, then generation, which tends towards the male due to the doctrine of paternal agency, will change into its opposite i.e. female (ibid, 766b16-17).

The norm-defect model then provides us with an answer as to how female can be the contrariety of male but still exist within the same species, belonging to the same genus with the same specific difference. Female is a privation of male, where one and the same rational animal has failed to actualise properly, and the female has resulted. Aristotelian biology then,

combined and confirmed by his metaphysics, results is the 'sex polarity' with the male as superior to the female that Allen identifies (1985, 3).

IV) The norm-defect model rehabilitated?

One scholar in particular, Michael Nolan, has made a serious attempt to rehabilitate Aristotle (and Thomas Aquinas who follows Aristotle's lead) on this point.[19] In particular, in his important article 'The Aristotelian Background to Aquinas's Denial that "Woman is a Defective Male"' he focuses on the meaning of the Greek '*peperomenon'* (2000, passim), translated as deformed/mutilated/defective, as in "the female is, as it were, a mutilated male" (GA, 737a28). Significantly, as Nolan points out, there are other instances of animals being *peperomenon* in nature (ibid, passim). The seal, in *Parts of Animals*, is said to be *peperomenon* because, unlike other mammals, it does not have ears (PA, 657a23-24).[20] The crocodile, Aristotle thinks, is '*anaperia*',[21] i.e. being in "a state of mutilation" (Nolan 2000, 26), due to the fact of its abnormally small tongue for a creature of its size (PA, 660b26).[22]

As Nolan points out though, both these apparent deficiencies or defects have a purpose, given by nature, for the benefit of the animal (2000, 27). The seal does not have ears, only auditory passages because

> "*its life is passed in the water; now the ear is a part added to the passages to preserve the movement of the air at a distance; therefore an ear is no use to it but would even bring about the contrary result by receiving a mass of water into itself*" (GA, 781b 23-29).

The work of nature here is described as "admirable" (ibid, 781b23). Similarly, the crocodile's tongue is small so as not to hinder the swallowing of food (PA, 660b26). When the female of a

[19] See Nolan (1994; 2000).
[20] "There is also one of the vivipara, namely the seal, that has no ears but only the auditory passages. The explanation of this is that the seal is a deformed [peperomenon] quadruped" (PA, 657a23-24).
[21] This is also a word he uses to describe females: "The females are weaker and colder in nature, and we must look upon the female character as being a sort of natural deficiency [anaperia]" (GA, 775a14-15).
[22] "For its upper and lower jaws are, as it were, inverted…" (PA, 660b26). Aristotle actually uses the word "anapalin" meaning 'inverted' or 'upside down' which, as Nolan explains, is a kind of mutilated state (2000, 26).

species is described as *peperomenon* and *anaperia* therefore, *these need not be understood as a denigrating terms.* As with the seal and the crocodile, it is precisely because the female is *peperomenon* and *anaperia* that the species is able to continue. Females are, after all, a "natural necessity" (GA, 767b6-7). Just as the 'mutilation' or 'deficiency' is a benefit to the seal and crocodile, so the deficiency of the female is a benefit in regard to the generation of the species. The male generative substance (semen) is lower in volume than the female and therefore more concentrated (ibid, 765b4).[23] Being more concentrated the male needs less actual space to store the generative substance. For Aristotle, it could be stored in the ureter (ibid, 739a1).[24] Less volume is needed because it is more concentrated and to be more concentrated requires more heat (ibid, 765b15).[25] Conversely, for the female, the uterus has a greater volume (ibid, 739a1)[26] because the generative substance (menstrual fluid) is less concentrated. This indicates a lack of heat, and it in this restricted sense that the female is *peperomenon* (Nolan 2000, 53-54). But it is also precisely by being *peperomenon* in this way that the female is able to generate in herself, while the male cannot. Like the seal's ears and crocodile's jaws and tongue, the female's manner of generation is another instance of the "admirable" "workmanship of nature" (GA, 781b23).

Nolan has done important work here and he does indeed lessen the impact of the particular characterisation of the female as a 'mutilated male'. However, even while explaining the proper context of *peperomenon* and *anaperia*, it is not clear that this affects Aristotle's deeper metaphysical account of male and females as contrarieties. Indeed, it is this metaphysical view which informs his biological account of sexual differentiation and is, to some extent, confirmed by it. Aristotle's specification of females as a deficient model of the same kind of thing that males are is part of the answer to the metaphysical difficulties I outlined above.

It would be unreasonable to fault Aristotle for certain parts of his biological account, not

[23] "The concocted semen is hotter than the unconcoted; again, the thickened is concocted, and the more thickened is more fertile" (GA, 765b4).
[24] Aristotle calls it a "mere passage" rather than a ureter and was unaware that semen is generated from the testicles and the prostate.
[25] "And all concoction works by means of heat. Therefore the males of animals must needs be hotter than the females" (GA, 765b15).
[26] "[H]ence the part of the female which receives the semen is not a mere passage, but the uterus has a considerable width, whereas the males that emit semen have only passages for this purpose, and these are bloodless" (GA, 739a1).

having the perspective afforded to us by modern biology. Even granting this though, Aristotle's norm-defect account suffers from grave difficulties which he should have addressed. Foremost among these is the fact that unlike other 'defects', or departures from type to which the female is compared, it is not clear how fully half of any given species could plausibly be a defect of that species. Aristotle is aware of this difficulty and suggests that unlike other "monstrosities", females are a "natural necessity" (ibid, 767b6-7). It is certainly true that females are a "natural necessity" in the sense that, for sexually dimorphic species, the species cannot continue without the presence of the female. Yet this kind of answer is vague and unhelpful. The very fact of the comparative rarity of other monstrosities gives us, and should have given Aristotle, reason to think that the norm-defect model which can reasonably be applied in all sorts of cases, does not apply here.

In addition to this, Matthews draws attention to some parts of Aristotle's discussion of mules which present a problem for Aristotle's theory of reproduction by eidos [form] transmission (1986, 23-25). In the *Metaphysics* Aristotle suggests that the mule, being the offspring of a horse and a donkey, has an imperfect form (*Met.*, 1034b4). But as Matthews points out, "an imperfect eidos is still an eidos" (1986, 24). The doctrine of eidos [form] transmission, whereby the form of the parents is passed onto the offspring, cannot account for the existence of the mule, for it should be the case that mule begets mule but that is in fact not the case. Further, the form cannot simply come from the father of the mule as it should according to the doctrine of paternal agency, because otherwise the mule would not be a mule at all, but a donkey. In the previous chapter in the *Metaphysics*, Aristotle implies that the solution lies in a shared genus of donkey and horse without a name (1033b33). In which case, when one donkey-horse mates with another, the offspring is a third donkey-horse and eidos [form] transmission is preserved. As Matthews argues though, this solution does not really work since it fails to explain "why when a certain variety of donkey-horse (what we would otherwise call a horse) mates with a different variety of donkey-horse (what we could otherwise call a donkey) the offspring will be, naturally and entirely predictably, yet another variety, in fact a sterile variety, of donkey-horse, namely, a mule" (1986, 24). The generation of

a mule in this manner therefore is a predictable outcome which both the doctrines of eidos [form] transmission as well as paternal agency are unable to cope with. In short, mules are a good reason for Aristotle to reconsider his doctrines related to generation and, in turn, his characterisation of male and female difference as norm and defect.

If there were any doubt about the viability of his biological account of sexual difference, the data of empirical investigation into biology in the contemporary era definitively puts those doubts to rest. We know that half of the genetic material needed for new life is provided by the male and the other half provided by the female.[27] This implies, on an Aristotelian model, that both the male and the female each provide the form and matter needed to generate a new individual of the same kind, rather than the male providing the form and the female the matter.[28] Of course, Aristotle also gravely erred in his understanding of anatomy, his ideas about heat in males and females, and in his pronouncements about the generative substance in the male and the female. It is of course not the case that semen and menstrual fluid are variations of the same basic identity, or that semen is stored in the ureter, nor most of his other biological analysis of parts. These aspects of his account of sexual differentiation and his norm-defect model as a whole then, cannot be maintained.

V) Conclusion

Aristotle seamlessly integrates his metaphysics and biology. The problem of metaphysical classification he raises whereby male and female within a species belong to the same genus with the same specific difference is solved through his use of the norm-defect model. While the norm-defect model is a relatively neat solution within the framework he provides, I have shown that even in his own day, he had reason to doubt it. From our perspective though, as well as being biologically inaccurate, this process of reasoning that ends with the norm-defect model involves the misapplication of the principles form and matter to sexual difference in the

[27] Strictly speaking the female, at least in the human species, provides a slightly greater proportion of the genetic material due to the presence of mitochondrial DNA which comes exclusively from the mother.

[28] I explore attempts to salvage Aristotle's account of sexual difference removing that which is suspect and integrating it with contemporary biology in Chapter IV and V.

ingredients of generation i.e. semen and menstrual fluid.

For Aristotle, sex does not belong to our essence or form which means that "nothing is essentially male and nothing is essentially female" (ibid, 22). As Matthews explains: "If reproduction is by eidos [form] transmission, and the sex of the begotten may differ, as it surely may, from that of the begetter whose eidos is being transmitted, then [sex] is not included in eidos [form]" (ibid).[29] This much was clear when we examined Aristotle's solution to why the male and the female were not different species in the *Metaphysics*. He located sexual difference in matter of the individual rather than their form and it is only difference in form that creates a difference in species.

Now, in preparation for the next chapter and despite the manifold difficulties, there is much that is worth salvaging in Aristotle's account of sexual difference.[30] His anthropology with its body-soul union attempts to recognise both our universality as members of a species and also our individuality or that which differentiates us, including our being men and women, without reducing sexual difference to a property like baldness in the way that Plato does. Aristotle continues to provide a useful anthropological lens through which to think about sexual difference even though his account is ultimately unsatisfactory.

The contemporary Aristotelian then, needs to disentangle Aristotle's faulty metaphysically informed biology and the misapplication of his theory of form and matter from this basic anthropology. Prudence Allen lays out the difficulty this way:

> *"[Aristotle's] theory of gender polarity does pose a particular challenge to Aristotelians. If all the roots of gender polarity are extracted from his philosophy, then some new principles will need to be articulated to offer a thorough explanation for sex and gender differentiation consistent with contemporary scientific evidence. What principle can replace the principle of contrariety that Aristotle uses to explain how a single seed in the human species becomes*

[29] Matthews uses the word 'gender' not 'sex', but since I will be employing the former epithet in my own specific way, I have used a different term so as not to confuse the reader.

[30] I also include the hierarchy of living things as an aspect of Aristotle's anthropology worth salvaging. This is an underused aspect of his philosophy of nature and philosophical anthropology as a lens through which to understand sexual differentiation which I explore in the final two chapters.

> *either a male or female child? Those persons who want to preserve the Aristotelian approach to all of reality need to consider what Aristotle would say today if he knew what we know about human generation"* (2002, 93).

I intend to take up this challenge and attempt to reconstruct an Aristotelian account of sexual difference which employs his anthropology whilst attempting to integrate it with contemporary biology. I will attempt to replace Aristotle's principle of contrariety with an analysis of the power of generation which sees it as a uniquely incomplete accident. I will employ the work of Thomas Aquinas and his developed account of accidents and their relation to the substance in which they inhere.

In regard to the reconstruction of Aristotle, there is one final definition of male and female which he offers which I did not discuss above. This definition will serve as the springboard for the next section of my thesis because it emphasises the holistic and teleological nature of being male or female in generation. "For by a male animal we mean that which generates in another, and by a female that which generates in itself…" (GA, 716a 13-14).

Chapter IV – Aristotelian essentialism: form, matter and systems biology

I) What can be salvaged from Aristotle's account of sexual differentiation?

Despite his failed account of human generation, where the female of the species and her contribution to generation via menstrual fluid are identified with matter and passivity, and the male of the species and his contribution to generation through semen are identified with form and activity, Aristotle's form-matter account of material things remains a powerful tool for understanding sexual differentiation. As I suggested in the last chapter, adopting a broadly Aristotelian metaphysics does not commit us to applying it in precisely the same way as Aristotle and certainly does not require that sexual difference be understood as a norm-defect relation. Nor are we beholden to Aristotle's outdated biology. Rather, even while rejecting these errors an authentically Aristotelian account of sexual difference can be reconstructed.

What though are the requirements for a contemporary Aristotelian account of sexual difference? I submit first, that, in order to be *contemporary*, any account of sexual difference must make some attempt at integration with the data of empirical discovery.[1] Second, in order to be *Aristotelian*, any account of sexual difference will have to employ his division of material reality as a composite of form and matter. As indicated in the last chapter, these are not complete beings in themselves, but together constitute the 'structure of essence' which inseparably includes both (Oderberg 2007, 62-65). Additionally, it will involve employing Aristotle's substance-accident ontology including his understanding of powers.[2] This cluster of closely related concepts typically comes as a package both in Aristotle, and in later Aristotelians.[3]

[1] Even those authors I examined in Chapter II who approach sexual difference largely as a construct of culture or discourse, do at least mention biological explanations of sexual difference, if only to juxtapose them with their own accounts of sexual difference or to dismiss them as beside the point. See, for example, de Beauvoir (1949, 41-72).

[2] It should also make use of Aristotle's hierarchical understanding of living things, this being a fundamental part of his account of the soul and his philosophy of nature more generally. I discuss this in Chapters VII and VIII.

[3] Book length treatments which I drawn from extensively include Wippel (2000); Koren (1955a), Oderberg (2007), and Feser (2014). For a scientifically informed neo-Aristotelian approach to these concepts see *Neo-Aristotelian Perspectives on Contemporary Science* (2018).

To explain and defend these concepts fully is a daunting task which would go beyond the parameters of this thesis. However, an explication and defence is indeed required if only in a piecemeal fashion, because a defence of Aristotelian essentialism will form the backbone of my realist account of sexual difference. Accordingly, this chapter will provide the motivation for an Aristotelian conception of essence and offer a defence of a form-matter conception of essence. Building on the presentation of these concepts in the last chapter, I will argue that form and matter remain concepts needed to account for change and multiplicity of essence. Contrary to how we might be tempted to think about this, it is matter, and not form, which is the more difficult concept to grasp. I will then argue that this form-matter understanding of essence allows for both the dynamism and stability within living organisms, and can be seen to be at work within the discipline of 'systems biology'. This computational means of analysis recognises the complexity of sexual differentiation left out in the first chapter and understands the holistic nature of 'being male' or 'being female' in a way that hidden structure essentialism does not. In the final section I will present an argument to the effect that systems biology presupposes that form is a real aspect of nature.

In the next chapter, I will look at Aristotle's substance-accident ontology building significantly on his work through Thomas Aquinas' delineation of accidents and explore the manner in which sex, understood as a kind of accident, relates to the sexed being. The structure of essence in terms of form and matter though, must come prior to this discussion since the accidents and powers I will be discussing are differentiated partly by their relations to form and matter.

II) Essence

Aristotle's understanding of essentialism discussed in the last chapter can be contrasted with two versions of essentialism from the first, namely, *hidden structure essentialism* (HSE) and *'historical' essentialism* or essentialism by descent. HSE is characterised by reductionism,

which in this case, refers to the explanatory privileging of parts over wholes as well as the emphasis on the use of modern empirical science needed to discover some micro-structure or property thought to be both necessary and sufficient for making a thing the thing it is.[4] As I argued, this understanding of essentialism unduly privileges parts over wholes and is in fact parasitic upon a prior, often unacknowledged, holistic conception of a thing whose 'essence' is identified in this way. Historical essentialism is characterised by its identification of essence with a historical lineage, whether that be natural or social.[5] As I suggested, from an Aristotelian perspective, this account of essentialism confuses formal and efficient causes. There is, as Oderberg notes, a difference between "what things are and where they come from" (2007, 184).

There are indeed other conceptions of essentialism[6] but for my purposes, the above is sufficient to draw out some important features of Aristotelian essentialism. As I showed in the last chapter, essence in Aristotle is variously related to definition, to what a thing is in itself and nature. As explained, in Aristotle to state the essence of a thing is to state what that thing is in itself and is expressed in terms of genus, or general class, and specific difference. Importantly, as Koren points out, this means that 'essence' as such, cannot be given a strict definition since it cannot be defined in terms of genus and species (1955a, 131). Rather, in accordance with

[4] Stock endorses this version of essentialism and identifies the relevant chromosomal and gametal structures as the hidden micro-structures or properties which are both necessary and sufficient for membership of a particular sex (2021, 46-48). See Chapter I.

[5] Bach argues that gender is a natural kind with a historical essence and locates the difference between men and women in their historical lineage: "[B]eing a woman or a man…" he says, "is to have the right sort of origin and replicative history in relation to a more fundamental historical kind – a replicating gender system" (2012, 246). This replicating gender system involves being differently socialised as men and women through the relation of each to a social hierarchy, the division of labour, personal and interpersonal characteristics and body management (ibid, 247-248). This version of essentialism, however, suffers from the following insurmountable difficulty. If it is the case that to be a man or a woman involves having a certain kind of historical relation to a means of socialisation, how should we understand the *first* woman (or man)? Indeed, on his system, how could there be a first woman at all? And if there can be no first woman, it is not clear how any other person in her lineage could be counted as a woman either. Bach could reply that since she is the beginning of the lineage, she comes to exemplify the relational properties listed above and subsequent women are a "reproduction of [this] historical lineage". But such a response will not do and indeed concedes the point. This first woman is not a woman because she is a "reproduction of a historical lineage", for there is, as yet, no historical lineage of which she can be a part. If she is a woman at all, in virtue of being the first one, it must, of necessity, be for some reason other than her participation in a history for there is no history. In other words, Bach's historical essence of being a woman and being a man must be parasitic upon something more fundamental. In short, Bach confuses formal and efficient cause and fails to recognise the difference between what a thing is and where it comes from. Oderberg identifies the same difficulty for cladistic conceptions of species (2007, 224).

[6] The 20th century Thomist George Klubertanz further contrasts 'essentialism' of a number of varieties with the existential metaphysics of Aquinas (1953, 35-39). Among them he lists *Platonic essentialism* where universal essences are the most real thing and concrete individuals participate in this essence in some way, though the manner of participation is unclear (ibid, 35). Aristotle's conception of essentialism is, in part, an attempt to make up for the difficulties in this account.

Additionally, as I suggested in Chapter II, the rejection of 'essentialism' is one of the defining features of reflection on gender in the latter half of the 20th century to the present. The essentialism that is rejected though, while sometimes a strawman as in the case of Roughgarden who thinks 'essentialism' is an error that involves "using biological categories as though they were social categories" (2013, 23), is typically identified with HSE and rejected for political rather than philosophical reasons.

Aristotle's formulation (*Met.*, 1029b14-15) it must be described as "that by which a thing is what it is" (ibid). This is the most basic commitment of essentialism.[7] Unlike HSE, essence here is not reduced to some single micro-property or structure but should be understood holistically. Essentialism, so understood,

> *"takes all objects, from the very big to the very small, at face value. This means that the qualitative character of things are held to be a real part of ontology, not mere epiphenomena of, or expressions of, or reducible to, the underlying quantitative characteristics given by a mathematical theory…"* (Oderberg 2007, 15).

In our case, this means that if there is an essence to being a man or being a woman, it cannot be reduced to a gamete or particular chromosomal structure. Furthermore, under Aristotelian essentialism, the microscopic is not privileged over the macroscopic unless that which is being investigated is specifically microscopic. Sticking with Aristotle's formulation, 'what a thing is in virtue of itself' (*Met.*, 1029b14-15) should not be confused with where that thing came from or how it came to be. Aristotelian essentialism is not historical in this sense. To be sure, as Oderberg acknowledges, knowing where something has come from may shed light on what a thing is and vice versa (2007, 184) but whether something came into being through several million years of evolution[8] or whether something popped into existence *ex nihilo* ten minutes ago, these things have essences.

Essence, then, is that which the mind grasps when it knows a thing, even if only in an inchoate manner. As Aquinas points out: "whatever can in any way be grasped by the intellect

[7] There is an important difference between '*what* something is', its essence, and '*that* something is'. This is otherwise known as the 'real distinction' between essence and existence. See Feser (2014, 241-256); Klubertanz (1953, 41-45); Koren (1955a, 130-141).

[8] The idea that evolution undermines essentialism has become a virtual orthodoxy (Walsh 2006; Boyd 2004). This orthodoxy, however, typically rests on confusions about what 'essentialism' is and what its commitments are. The biologist Ernst Mayr asserts "[t]he essence or definition of a class (type) is completely constant; it is the same today as it was on the day of Creation" (2002, 80). In other words, he claims that essentialism is committed to the fixity or constancy of species. But essentialism is committed to no such thing. All essentialism claims is that everything has an essence (Feser 2019, 401). Moreover, on essentialism, it is possible for there to be species which are now extinct, and more importantly, for there to be substantial change. As Oderberg points out, that hydrogen has an essence does not preclude its being fused in helium. Having an essence is compatible with going in and out of existence in this manner (Oderberg 2007, 204). Walsh points out that another common argument levelled against essentialism involves thinking 'essentialism' is incompatible with modern biological species concepts and modes of classification (2006, 431). This line of attack is mistaken since Aristotelian essentialism, as I argue in this chapter, is an explanatory doctrine accounting for the unity of an individual and accounting for its membership in a particular class of things (ibid, 430-432; Feser 2019, 402). Furthermore, some authors argue (Walsh 2006; Feser 2019, 406) that evolution actually presupposes essentialism in the stability and malleability of organisms. This malleability being the source of variation which makes evolution possible. But this malleability is itself grounded in the essence or nature of the organism. "Evolution could not occur unless there were a fact of the matter about what an organism is that determines what sorts of mutations and adaptations it is capable of (Feser 2019, 406).

is called a nature. For a real thing is not intelligible except through its definition and essence" (Bobik 1965, 9). This point about intelligibility seems to be part of Aristotle's claim in the *Physics* concerning the absurdity of attempting to prove the existence of essence in the first place. "*That* nature [essence] exists, it would be absurd to try to prove; for it is obvious that there are many things of this kind, and to prove what is obvious by what is not is the mark of a man who is unable to distinguish what is self-evident from what is not" (*Phys.*, 193a2-6). In other words, it is not doubtful that essences exist, but rather so obvious that any evidence that could be adduced for or against their existence would be more contentious than the existence of 'essence' which the evidence purports to prove or disprove. Reality is exactly as we would expect were there to be such things as essences (Feser 2014, 212).

This last point could be seen as a variation of Putnam's 'no miracles' argument for scientific realism:

> "*The positive argument for realism is that it is the only philosophy that doesn't make the success of science a miracle. That terms in mature scientific theories typically refer..., that the theories accepted in a mature science are typically approximately true, that the same term can refer to the same thing even when it occurs in different theories – these statements are viewed by the scientific realist… as part of the only scientific explanation of the success of science, and hence as part of any adequate scientific description of science and its relations to its objects*" (1979, 73).

The positive argument for essence is that it is the only conception of reality that does not make our experience of reality miraculous. We can see this in the manner in which essence plays a role in accounting for the twofold unity of things. First, this oak tree and that oak tree, and another oak tree all exhibit a kind of unity which they do not share with a moose, or rock. "These groups of things manifest common causal powers and other properties in just the way we would expect if there were a common real essence or nature they all instantiated, but which would be mysterious… if their being grouped together was merely a matter of human convention" (Feser 2014, 212-213). Second, the individual oak tree, moose or rock manifest a unity of their own, in themselves, as it were. Each will behave over time in a more or less predictable and stable manner exhibiting characteristic properties and having parts that

function in an integrated way, a point especially evident with living things. "This too is just what we would expect if each of these things had a real essence or nature, and would be mysterious if what we thought of as their essences were merely a matter of human convention" (ibid, 213).[9,10]

III) Form and matter

There are various anti-essentialists arguments on offer which have been adequately dealt with elsewhere[11] but for my purposes, I want to consider another formula of essence or nature in the *Physics*: "nature is a source or cause of being moved and of being at rest in that to which it belongs primarily, in virtue of itself…" (192b22-23). This characterisation of essence is especially helpful since it serves to introduce, and provides motivation for, the concepts form and matter. A thing's nature or essence, what it is, functions as the explanation for the kinds of change of which a thing is capable and its stability as the kind of thing it is. As we saw in the last chapter, in the *Physics* and *De Anima* Aristotle relates the formal cause of a thing with its definition and actuality, and the material cause of a thing with "that out of which a thing comes to be" (*Phys.*, 194b23-24) and potentiality. Both contemporary and medieval Aristotelians have characterised form and matter in similar ways.[12] Here, it is necessary to understand what these two aspects of essence are and what role they play in an Aristotelian metaphysics including the role they have in making an individual thing a member of a species, as well as in terms of multiplying the individual instances of a species. In particular, form and matter are introduced

[9] The conventionalist holds that all essences are a product of the human mind, a matter of convention. However, Elder convincingly shows that this is not a coherent position (2004, Chapter 1). On conventionalism, all things to which we ascribe essences, that which makes a thing the thing it is, is a product of the human mind and therefore mind-dependent. But since the mind also has an essence, whether that be identified with the brain or something immaterial or whatever, it too would have to be mind-dependent. But this would mean that the essence of the mind, which is a matter of convention, would have to be dependent on the existence of the mind, which is also a matter of convention. Being mind-dependent entails that the mind is posterior to that on which is depends, i.e. the mind. The mind will also have to be ontologically if not temporarily, prior to that which depends on it. This would make the mind both prior and posterior to itself which is incoherent. As Feser asks, if conventionalism cannot be coherently applied to us "[w]hat reason can we have, then, to take it seriously when applied to other things?" (2014, 216).

[10] Essence should not be confused with properties or a cluster of properties (Feser 2014, 230). I will return to this point in the next chapter.

[11] See Oderberg (2007, Chapter 2), wherein he examines a number of empiricist objections to essentialism and objections from Quine in particular. See also Feser (2014, 216-223).

[12] For instance, neo-Thomist Edward Feser characterises matter as "the determinable substratum of potency", and as "that which needs actualizing in change", and form as "the determining patterns that exist once the potency is actualized", and as "that which results from the actualization" (2014, 161). Henry Koren says that "the act of a specific essence is form, and that of its limiting potency is matter… conceived as a real potency for the act of essence" (1955a, 144). David Oderberg defines form as "the principle of specificity of a thing, that by which a thing is what it is" (2007, 65) and characterises matter as potentiality though does not offer a definition because matter is not the kind of thing that can be defined. Like essence, it can only be described (ibid, 72).

to account for the possibility of change.

Form and matter, then, are more specific instances of Aristotle's general division between act and potency which functions as part of Aristotle's response to the dynamic monism of Heraclitus and the static monism of Parmenides (Feser 2019, 13). Heraclitus denies the stability of reality which, he claims, is constantly in flux. The configuration of molecules that makes up you as you read this, the slightly different set of molecules that make up you as you proceed with this sentence, and the entirely different set up molecules that make up you 5 years after having read this and long forgotten it, are all successive things with nothing underlying them that persists through the change. Parmenides adopts the opposite extreme by denying change in reality. For Parmenides, change is only possible if something can move from non-being into being. For the ice cube to melt into a puddle, the puddle, which does not exist, must come into being. But since the puddle has no being, it just is nothing, and nothing comes from nothing. But what is true of ice cubes is true of any supposed instance of change. Change, for Parmenides, involves something coming from nothing, which is impossible. Change itself must therefore be impossible (ibid, 14).[13]

Contrary to this, Aristotle offers his own account of change which involves recognising that things have actualities and potentialities. As Feser explains, the ice cube is actually solid and actually cold, but potentially liquid and potentially warm. Change here consists in the actualisation of a potential (ibid, 15). Contra Parmenides, it is not the case that being arises from non-being because potential has real being. The potential to be liquid water is something really present in the ice in a way that its potential to be iron ore is not.[14] As we have already seen, form and matter are related as actuality as to potentiality (DA, 412a10), they are two aspects of being which make change possible.

[13] Aristotle explains and attempts to refute these denials of change and stability in the *Physics* Book I. As Feser points out, both positions are ultimately incoherent. In the case of the denial of stability, the argument results in performative incoherence such that, since there is not a single mind which comprehends all the premises and conclusion all at once, one could not be convinced that the argument for dynamic monism is sound. "The truth of dynamic monism would thus be incompatible with the existence of people who affirm dynamic monism" (2019, 14). Similarly, against the static monist, to consider an argument, to reason from premise to conclusion, to offer replies to objections all involves change which the static monist maintains is not possible (ibid, 15). In other words, the argument against change presupposes the possibility of change.

[14] See also Aristotle (*Met.*, 1017a35-1017b9) for a concise statement of the distinction between actuality and potentiality.

It is not however, change as such that the form-matter understanding of essence makes possible, but substantial change in particular. This is the kind of radical change that involves a thing going out of existence and being replaced by something different. It is the kind of change that happens when a banana is cremated. This should be contrasted with accidental change where a substance remains and survives the change but some attribute or feature of it changes as when a banana turns from green to yellow or a person gets a tan.[15] In accidental change such as the banana changing colour, the banana loses one accidental determining pattern or accidental form i.e. being green, and gains another different determining pattern or accidental form i.e. being yellow (Feser 2019, 29). In substantial change however, the substantial form of a thing, that intrinsic principle by which a thing operates as it characteristically does, is lost and a new substantial form takes its place. When the banana is cremated, the substantial form of the banana is lost, and replaced by the substantial form of ash. Unlike accidental change where the substance or thing itself remains even throughout the change, in substantial change, the substance is lost and replaced by another substance, it is only the matter which remains (Feser 2014, 164-171; Oderberg 2007, 62-65; Wippel 2000, 303-325).

Corresponding to these distinctions in form, there are distinctions in matter too. As Thomists and Aristotelians are wont to point out,[16] our ordinary use of the term 'matter' differs considerably from theirs. Outside of an Aristotelian context 'matter' typically refers to things like a lump of wood or a stone which Aristotelians would call 'secondary matter'. It is matter which is already subject to some determination and therefore has a form, in this case, the form of wood or stone. Secondary matter then is already a compound of form and matter. Matter though which is not subject to any determination at all, and therefore underlies all change, is referred to as 'prime matter'. This is matter devoid of all form and therefore pure potentiality. As Aristotle describes it in the *Metaphysics*: "By matter I mean that which is in itself neither a

[15] There are various types of accidental change too. In the case of the banana going from green to yellow, we can call this *qualitative* accidental change; in the case of a banana shrinking as it dries out, we can call this *quantitative* accidental change; and in the case of the banana moving from A to B as I throw it across the room, we can call it change in *local motion*. Each though is an accidental change where the thing itself, the banana, persists throughout the change (Feser 2019, 29).

[16] See, for example, Koren (1955a, 144); Oderberg (2007, 72) and Feser (2014, 171-175; 2020).

particular thing nor of a certain quantity, nor assigned to any other of the categories by which being is determined" (1029a19-20). Prime matter then underlies all matter, lacks all form and determination and, as pure potentiality, it is receptive to any form whatever. "It is the closest there is in the universe to nothingness without being nothingness, since it has no features of its own but for the potential to receive substantial form" (Oderberg 2007, 72).

As Oderberg readily admits, this certainly seems like "spooky metaphysics" (ibid), yet, he maintains, there is no other satisfactory way of thinking about substantial change. The idea here is that without prime matter, substantial change would not be possible because there would be nothing that persists throughout the change. Rather, there would be the complete annihilation of one thing and the immediate creation of a novel substance in its place. That this is not the case though, is evident from experience. When wood is burned, it turns to ash and not a bicycle or a rock. It is not clear why, if nothing persists through the change, that in the destruction of the wood, something entirely new and different should come into existence (Feser 2020).

Now, there are certainly alternative accounts of change. An especially prominent competitor comes from ancient atomists and their contemporary descendants. Where the former accounts for change through the arrangement and rearrangement of fundamental particles, the latter share more or less the same view but might refer to subatomic particles like fermions and quarks in their account of the composition of things and the changes they undergo (Rosenberg 2011, 179). On this view, the objects of ordinary experience such as dogs, bananas and rocks are all different arrangements of the same kind of fundamental particle or particles. There is no fundamental difference between substantial and accidental change therefore, since there are no such things as substantial and accidental forms. All change, from the green to yellow banana and from the wood to ash consists in the rearrangement of fundamental parts. This account of change though has several major flaws. First, there is the general reductionist difficulty I explained in the first chapter whereby it is not clear on this account what arrangement of fundamental particles makes a thing the thing it is. It is unclear

why some thing with x number of particles in y arrangement is not an entirely different thing with the addition of a single particular and therefore a slightly different arrangement (Elder 2004, 48-55). Why, for instance, is one of these a banana and the other with the additional micro-particle also a banana rather than something entirely different? The reductionist can provide no non-arbitrary answer. Furthermore, it is not clear what makes it the case that this or that particular arrangement of particles constitutes a banana in the first place, without reference to something like the form or determining pattern of the banana. That is, if we identify the arrangement of particles with the banana itself, then the account is circular.

There is a second more fundamental difficulty. Even if we grant that it makes sense to say that the objects of everyday experience could consist of "nothing more than" fundamental particles arranged dog-wise, banana-wise and so on, this would not mean that the so-called fundamental particles are not themselves subject to change and therefore, composites of act and potency. It is one thing to assert that there are unchangeable fundamental particles, it is another thing entirely to show how there could be (Feser 2014, 183). As Thomas Holden argues, many of the early modern philosophers were committed to, what he calls, the 'actual parts doctrine' where all bodies consist of a determinate number of actual already existing parts that make up the whole. Division does not create the parts, but merely separates them (2004, 16; 33-35). The determinate parts were thought to be metaphysically indivisible, that is, in principle indivisible, even by God, because of the many paradoxes that result from having an infinite number of actually existing parts. For instance, if it were the case that bodies were infinitely divisible into their already existing actual parts, there would be infinitely many of these actual parts and all objects would have been of an infinite size (ibid, 22; 45-47).[17] It must be the case therefore, as the early moderns reasoned, that objects are not infinitely divisible. However, it is not clear how this metaphysical indivisibility could be established, for any body with parts, can, it seems, be divided into yet further parts.[18] And if these fundamental particles are

[17] This particular paradox was articulated by Giordano Bruno, Henry More, Joseph Glanvill, the younger Isaac Newton, George Berkeley and David Hume (Holden 2004, 46). There are also thought to be paradoxes which arise from the possibility of different sized infinities, not as a mathematical postulate, but as physically instantiated actual infinities. The collections of actual parts of objects must be infinitely many and therefore, all be of the same infinite size, but objects must also have larger infinities. But this is not possible (ibid, 41-43).

[18] Holden refers to this as the argument from geometry according to which whatever is extended can be divided. It is not clear how this division could be limited in principle (2004, 206-231).

metaphysically divisible, they are therefore subject to change and cannot themselves be used to explain all change. Furthermore, even if such particles were indivisible, they remain subject to change insofar as they are limited to being this way with these powers rather than that, or to being in this location rather than that. But being limited in these ways also means that these supposedly fundamental particles have various potentials and actualities. In other words, they too would be compounds of substantial form and prime matter (Feser 2014, 183-184).

For the Aristotelian or Thomist, it is not only the case that the division in being between form and matter makes change possible. Importantly, as Wippel argues, it also allows us to account for the fact that many individual entities share in the same kind of being (2000, 310-311). Things which share in the same kind of being just means they have the same essence, and this is what accounts for their unity within the species. At the same time, each individual within a species differs numerically from the others. It must therefore possess the essence of the species in a limited or restricted fashion. No specific individual exhausts the possibilities marked out by the specific kind of being it is, or of the essence to which it belongs. If this were not the case and an individual did exhaust the possibilities of the species, there could be no multiplicity of that being. "[I]f that whereby Socrates is a human being were identified with that whereby he is this individual being, then just as there cannot be many Socrateses, there could not be many individual human beings" (ibid, 311).[19]

It is necessary therefore to distinguish between that which makes an individual belong to its kind or species and that which makes it an individual of that kind or species. The former is accounted for by a thing's substantial form, that which makes the thing determinate, and the latter by a thing's prime matter, which is indeterminate and limits a thing's essence. Form, of itself, cannot account for what make an individual within a species because "[i]f an individual difference is introduced into the form of each individual, that individual at once becomes a species, and henceforth irreducible to any other species. Socrates will be as different from Callias as both Socrates and Callias actually are from an animal or a tree" (Gilson 1936, 195).

[19] One famous Thomistic corollary of this view is that immaterial beings i.e. angels, are each of their own species. See Aquinas (ST. I. Q.50, A.4).

All well and good, one might say, but how is that prime matter individuates anything especially since it is said to be devoid of all determining features and itself common throughout substantial change? How matter functions as the 'principle of individuation'[20] is a vexed and contested subject[21] and not one which I will enter into here. The basic idea as explained by contemporary Aristotelians and Thomists is that it is not prime matter as a principle of pure potency that is the cause of individuation, but rather matter as made distinct by quantity or dimension, sometimes called designated matter (Feser 2014, 199).[22]

IV) Systems biology

[20] Owens notes this phrase is not Aristotelian but became standard usage in 13th century Scholasticism (1994, 181).

[21] For contemporary and extensive discussion of how matter functions as that which individuates essence see Owens (1994); Koren (1955a, 147-160); Feser (2014 198-201), Oderberg (2007, 108-117), Wippel (2000, 351-375). For an excellent introduction to this issue see Gracia (1994a) who characterises the 'problem of individuation' as follows: "[T]o know individuality is to be able to determine the causes and principles that are responsible for it… What is it, for example, that accounts for the individuality of Socrates, or this chair, or the color [sic] of Socrates' hair…? This is what most scholastic authors understood as the central issue concerning individuation, since most of them had been exposed to and influenced by the Aristotelian conception of science" (ibid, 1-2). He goes on to note that the solution to the problem "depends to a great extent on (1) the interpretation of individuality, (2) the things considered to be individual, and (3) the ontological status accorded to individuality in the individual" (ibid, 2). In the Middle Ages there are disagreements between Suarists and Scotists in regard to individuation, but my account is Thomistic and therefore more closely resembles Aristotle's own account. See Gracia (1994b) and Wolter (1994).

[22] As the prior footnote indicates, this is a topic discussed extensively in the literature, and one that Aquinas returns to frequently (see Owens 1994, 173). Precisely how matter as made distinct by quantity or dimension can remain indeterminate in the manner in which it is supposed to is a subject of particular contention. Koren, for example, in his Thomistic account of individuation, argues that this quantity or dimension is not actual quantity or dimension, for "actual quantity is an accident, and as such is not prior to the body which is to be individuated, but presupposes [the body] as its subject of inhesion" (1955a, 152; see also Wippel 2000, 352, in which he comments on Aquinas' recognition that quantity as an accident cannot be the principle of individuation). But a twofold issue remains. First, how can matter require any determinate quantity and remain purely potential? And second, why matter requires *this* quantity rather than *that*? In answer to the first, Koren suggests that the potentiality of matter need not be compromised because the requirement for a certain quantity limits matter only in a negative manner. Matter remains potential but it is limited to a form accompanied by a certain determinate quantity. He provides the example of an empty pint glass in potency to the reception of water: "its potency or capacity for water is limited to the reception of water having a volume of one pint. So also, matter is fully in potency to the reception of a form; but insofar as matter requires a form accompanied by a certain determinate quantity and no other, its potency is limited to the reception of a form with this quantity and no other" (1955a, 153). In answer to the second, Koren points out that matter, as it actually exists in union with form in a substance, can more easily adopt some forms over others. For instance, the informed matter of water, can more easily become the informed matter of hydrogen and oxygen rather than lead. Something similar happens in regard to individuation, he says. "Matter always exists under a certain determinate quantity because matter is always actuated by a certain form which has a determinate quantity" (ibid, 154).

One objection to this account might be that for matter to individuate an essence it must have actual dimension prior to its being informed by substantial form, but prior to being so informed, it cannot have any features at all, since it is pure potency. This however is to confuse formal and efficient causality (Feser 2014, 200). Matter and form are not related in the way that clay and the shape of a piece of pottery are related where the clay already has many determinate features prior to its taking the shape the potter desires. Instead, prime matter and substantial form always operate together. Prime matter as made distinct by quantity or dimension only exists as informed by some substantial form, even as the substantial form only exists as informing some matter.

Additionally Gilson makes a further important distinction between the idea of individuation and individuality. He affirms that the principle of individuation is matter and this causes individuality. "[B]ut it is not in his matter that the individuality of the individual consists; on the contrary he is only individual, that is to say undivided in himself and divided from everything else, because he is a concrete substance taken as a whole" (1936, 200). The individuating matter as made distinct by dimension is only so because of its integration within the whole essence, and since the whole essence is determinate by means of its form, individuality must be part of form as much as it is part of matter.

With this account of essence and its form-matter composition in place, we are in a position to articulate a hylomorphic (form-matter) vision of sexual difference which uses insights from systems biology to explain the stability, dynamism and teleology found in the human body. To see this, recall the biological story of sexual development and differentiation in the opening chapter. This involved setting out the genetic pathway which leads to sexual differentiation in terms of differentiation of sexual organs such as the ovaries and testicles. This general approach is part of trend seen throughout the twentieth century whereby biologists have attempted to reduce biological phenomena to the behaviour of molecules (Hartwell et al. 1999). This much is clear in the genetic story I told. Now, this is not false, and I do not wish to repudiate what I said, but it is simplistic. Although the SRY, SOX9 and WNT4 genes play an essential role all things being equal, in male and female sexual differentiation and development, there is far more going on. Discrete biological functions can only rarely be attributed to an individual gene. Rather "most biological functions arise from interactions among many components. For example, in the signal transduction system in yeast that converts the detection of a pheromone into the act of mating, there is no single protein responsible for amplifying the input signal provided by the pheromone molecule" (ibid).

Systems biology is also part of the attempt to account for biological phenomena in molecular terms but does so in a non-reductive manner. It seeks to understand the living whole as a dynamic system of integrated parts. Its goal is to discover a system's structure and dynamics with a view to being able to predict outcomes. As Austriaco says "[a]n analysis of a system's *structure* identifies all the parts of the system and describes their interactions" and "[a]n analysis of a system's *dynamics* focuses on the behavior [sic] of these interacting molecules over time" (2004, 772 [emphasis added]). The 'parts' identified are not parts like the digestive or respiratory system as such, nor are they organs or even cells. Rather, identifying all the parts involves "cataloging [sic] all the molecules that go into assembling a living organism and then determining which ones interact with each other" (2013, 705). The interaction between molecules is studied in an attempt to account for how both the structure and dynamics within a living thing give rise to the properties and behaviour of the organism.

Austriaco offers a highly simplified illustration of what this might look like in a simple organism with only ten molecules:

> *"[T]ake a hypothetical living network, say the simple organism of ten molecules… at time t=0... When these ten molecules are in close proximity, they interact… [S]ome of these interactions result in transformative reactions that generate new molecules, and the living system becomes the network of eight molecules… at time t=T1. This system is deterministic because the system can only change in this one way—the identity of the molecules in the initial state of the organism at time t=0 determines the kind of change possible. Molecule A and molecule B, because they are what they are, interact and produce molecule D… [M]olecule D is then able to interact in a subsequent reaction with molecule C to produce more of A and E driving the organism to change into the network of nine molecules… at time t=T2"* (2002, 662).

This example illustrates that an organism changes and develops through a sequence of *ordered* molecular changes because each step is driven by the products of the previous step. Animal development is like a falling chain of molecular dominoes regulated by the gene regulatory network which manifests itself as outward physical changes in the organism. "Once the process begins, it is a self-driven, self-perpetuating chain reaction of molecular transformations that continues throughout the lifespan of the animal" (ibid, 663).

There are two key features of systems biology which are of particular interest here. First, systems biology offers a holistic perspective on the living organism (Austriaco 2013, 705-706). In systems biology a living thing is recognised as a complete unified whole which consists of "a complex and dynamic network of interacting molecules that appear and then disappear in time" (ibid, 705). This means that systems biology does not fall victim to the kinds of difficulties with the reductionistic perspective I examined in the first chapter. It does not attempt to find the essence of a biological process in a certain micro-structure while also having a prior unstated holistic conception of the living thing being investigated. Rather, it is precisely the whole system through the dynamic interaction of molecules that is being investigated. Second, systems biology recognises the order in living organisms (ibid, 706-707). Austriaco refers to this as the "determinism of animal development" (ibid, 705). Where an orchestra is an

indeterminate system such that a given performance cannot be predicted simply by studying its parts, that is woodwind, brass, strings, percussion and so on, an organism is a determinate system. All things being equal, there is a discernible determinate order in the development and maintenance of an organism. There is a causal relationship between how the organism was, how the organism is and how the organism (likely) will be.[23] The molecular composition of the organism constrains the possible path of development of an organism. Cabbages have a molecular structure which make it impossible that they development into cats.

The molecular constraint on possible developmental pathways is not limited to organs but also to systems and parts within organisms, and can be seen in what philosopher Christopher Austin calls 'developmental modules'. These are "discrete biological systems causally responsible for the development of particular morphological features" (2018, 189). These morphological features would include the size, shape and structure of a particular feature of an organism. There would be a developmental module for features such as ears and separate developmental modules for the male or female genitalia. Each of these morphological features is controlled discretely, by individual sub-systems which initiate and direct the formation of these body parts. These sub-systems – or developmental modules – are properly treated as individuals due to their causal autonomy during the process of development: the developmental modules are characterised by "an extremely high causal connectivity among their constituents and an extremely low causal connectivity with other parts of the organism" (ibid, 190). As Austriaco puts it: "[a] few molecules are highly connected to other molecules… while the rest of the molecules are only peripherally connected to a few other molecules…" (2013, 711). These developmental modules are treated as individuals because of their united causal role. The developmental module that gives rise to the genitals, for example, is composed of many discrete parts which are causally unified in their generation of the genitals, and which have relative independence from other developmental modules in the body, such as the ears.

[23] It is also worth emphasising that the order present in biological processes that drives development allows for environmental influence. From a systems perspective, the development of the organism is determined by the molecular network actually present. This means that it can only develop in particular way or range of ways, and not others. The molecular network, however, is not exclusively derived from the living thing's own genetic resources but from external environmental factors as well. That is to say, within the orderly development of an organism there are a range of possible outcomes limited by both genetic and environmental molecular interactions. There is a species-specific manner in which humans develop such that their developmental outcomes are constrained, whilst at the same time admitting a degree of variation depending on adventitious factors (Austriaco 2013, 707).

Now, the kind of causal order which systems biology identifies between molecules within developmental modules and organisms more generally, means that two types of change can be identified. There are changes wherein the organism remains, even while various molecules within the organism change, and there are changes in which the organism itself ceases to be. This is accounted for by the fact that there is high connectivity between certain molecules and low connectivity between others such that there can be additions or removals of certain molecules which do not affect the overall trajectory of the system.[24] Any number of changes among molecules with low connectivity to an overall system, need not make any change to the fundamental structure of the system. Austriaco gives the example of gaining weight (2004, 728), but others could include cutting one's hair, or shaving one's beard, or even the loss of a kidney. Despite these gains and losses, the basic of structure of the organism remains intact.

Conversely, there are molecular changes that can lead to the destruction of the entire organism. From a systems perspective, this would involve the loss or gain of certain molecules with a high level of connectivity which are essential to the overall well-functioning of the entire system. In a living system, a serious genetic mutation or a poison like cyanide can lead to the collapse of the entire system. Cyanide for instance, prevents the formation of ATP which leads to the cessation of respiration, which leads to death. The molecular network collapses with this addition and the organism would die (Austriaco 2013, 712).

Now, it is clear that within an Aristotelian context, the first kind of change where someone gains weight would be an instance of accidental change, where a new accidental form is adopted but the underlying substantial form, that of being a human, remains unaffected. There is still a living human, just a bit fatter or more muscley. Precisely because the living human is a 'robust' system it "can tolerate much error and variation without collapsing" (Austriaco 2002, 669). Gaining weight is just one example of the toleration for variation, and, presumably in

[24] In a slightly different context, Denis Walsh discusses the property of 'robustness' which refers to an organism's capacity to develop and maintain a well-functioning individual that is typical of its kind, despite the complexity of its development and the vagaries of its genome and environment (2006, 436). The high degree of causal connectivity between some groups of molecules and the low connectivity with others would, it seems, form part of the explanation for the robustness of living things.

cases of massive weight gain, the toleration of error. Other more radical departures from the norm are clearly possible though. A person with Down's syndrome has an additional chromosome yet remains unambiguously human, and a person with Turner's syndrome also remains unambiguously human, and, indeed, female despite lacking a second X chromosome which should, all things being equal, be present. Despite the additional chromosome or lack of a chromosome that should be present, and the effects these have on development and morphology in these cases, the entire system does not collapse. As Austriaco says: "From the systems perspective, these system-nondisruptive mutations must be in molecules that only have a peripheral role in defining the interactions which drive the development of the living system. The overall developmental trajectory of the network basically remains intact" (ibid, 670). These kinds of genetic variations also indicate the presence of substantial form, that intrinsic principle by which a thing operates as it characteristically does, precisely because despite the variation, individuals with these conditions remains unambiguously human.

While the system is robust in the manner described, it cannot undergo just any kind of change or variation and remain the thing it is. The second kind of change in which someone dies of cyanide poisoning would be an instance of substantial change where the substantial form of the human is lost due to the action of the cyanide which results in death, but the matter remains in the corpse after death. The molecular collapse that cyanide causes in the formation of ATP which is essential for respiration would be an instance of collapse between molecules with a high level of connectivity essential to the well-functioning of the entire system. Equally, while the human organism can tolerate variation or error in terms of trisomy-21 (and -18 and -13 for that matter) and X0, there is strong reason to believe that it cannot tolerate the equivalent error on other chromosomal pairs. There is not, for example, a term for humans with trisomy-1, -2 or -3 because such humans are spontaneously aborted in utero. Where the "system-*nondisruptive* mutations must be in molecules that only have a peripheral role in defining the interactions which drive the development of the living system" (ibid [emphasis added]), the system-disruptive mutations must be in molecules that have an essential role in defining the interactions which drive the development of the living system. This

is due to the high connectivity among their constituents and to the entire organism. Additionally, the very fact that individuals with trisomy-1, -2, or -3 do not exist, at least outside of the womb, indicates that what it means to be a human has a determinate content i.e. that it has a substantial form, and that at least these genetic variations are not compatible with the instantiation of this substantial form.[25]

Recall Aristotle's characterisation of nature or essence as "a source or cause of being moved and of being at rest in that to which it belongs primarily, in virtue of itself…" (*Phys.*, 192b22-23). This points to his subsequent distinction between form and matter. From a systems perspective, there is also a concern to account for the stable dynamism of a thing which can be modelled through kind of molecular account I detailed above. I have already shown how this account is susceptible of a hylomorphic analysis through the robustness of an organism, and its tolerance for certain kinds of change and not others. However, the Aristotelian conception of essence can also be seen in other ways. Returning to Austriaco, there is a tension between the vast changes that the human body undergoes, including the near total atomic change whereby 98% of atoms in the human body are changed every two years, and the fact that, despite all the change, there remains a stability such that we can still say this is the same human being (2013, 708). How is this possible? We can think about this in terms of a 70kg man. This man will be about 43kg of oxygen, 16kg of carbon, 7kg of hydrogen and an assortment of other elements (ibid, 709). Because he is a substantial unity of form and matter, he is not a disordered pile of these elements. Rather, these elements are organised and interact in a particular species-specific manner. Within systems biology "this particular pattern, this organization of the molecules of the human being, would be a manifestation of his soul" (ibid, 710). Importantly, as I argued in the last chapter, the form of a living thing just is its soul. As such, all living things, from the lowly cabbage to the cat and the human, have a soul, which is just the form of a living thing. It is that organising and determining principle that makes a thing the thing it is.

[25] In one sense, the incompatibility of the human substantial form with trisomy-1, for instance, may be relative rather than absolute. That is, there have been a tiny number of known cases of trisomy-1 (Benzai et al. 2004), which indicates that the substantial form of the human person can be realised in an organism with otherwise normal human genetic make-up and trisomy-1. However, the fact that no such human organism has survived beyond the embryonic stage, indicates an incompatibility with the human substantial form since trisomy-1 does not allow for human development and results instead in death. From the systems perspective, we can say that this molecular variation is sufficiently system-disruptive that it must be the case that the molecules have an essential role in terms of their high causal connectivity in defining the interactions which drive the development of the living system

This soul/form then is made manifest in three ways (ibid, 710-711). First, within the hylomorphic analysis of the human person, it is the form or soul of the organism that makes the organism the kind of organism it is and determines its end. Physiologically, we can say that the particular net of molecules and their interactions considered holistically manifests the human form and makes a human the kind of being it is and distinguishes it from an ostrich or a cucumber. The molecular structure and interactions also determine his developmental trajectory and biological end. Second, the form or soul unifies and integrates an organism maintaining its identity through change. At the molecular level, despite the changes in specific molecules and their quantities, the interactions remain the same "providing a ground for the substantial unity and identity of an individual with a lifespan of eighty or more years" (ibid, 711). So, while the atoms and molecules change, they do not just change in any way, they are *re*placed. This implies of course, that they were already 'placed' as it were. That is to say, that they were already organised or ordered in some way, and that when the molecular and atomic parts were changed for other molecular and atomic parts, they were not changed for just any old molecular and atomic parts, but so far as possible, changed with the same molecular and atomic parts which played the same role in the overall system. Hence, they were *re*placed, and it is the form that accounts for this. Third, the form is the source of the power and capacities of the organism. It is from form that powers such as nutrition – the ability to assimilate substance from outside the organism to the organism, changing the outside substance into its own substance for its benefit – and generation – the ability to reproduce the species – arise. The network of molecular interactions can also be said to ground the human being's physiological capacities. The power of generation for instance is grounded in the organised molecular interactions which form the generative organs and direct them to their end.

Now, the above hylomorphic understanding of systems biology is highly general but it can be applied to my present concern, sexual differentiation. Due to its holistic perspective, it should be clear that for the systems biologist it is unhelpful to link the specification of sex in the human species to the action of single gene on the Y chromosome or the production of a single

specific gamete type as some authors did in Chapter I. The presence of the SRY gene is not sufficient to establish maleness (ibid, 713). Conversely, the presence of the WNT4 gene and the absence of the SRY gene is not sufficient to establish femaleness. Rather, the holistic conception of organisms adopted in systems biology, encourages us to understand the whole, and we can know what it is by examining what it does. To know what the male is then, involves knowing what the male does.[26] We can look at the discrete male specific molecular trajectory, including the various genetic mechanisms as outlined in Chapter I, and discern that these are directed towards the production of a certain morphology and small gametes. Looking at the female specific molecular trajectory, including the various genetic mechanisms as outlined in Chapter I, we can discern that these are directed towards the production of a certain different morphology and larger gametes (ibid, 714). In which case, from the systems perspective, we can say that the gamete account understood as to involve the directedness of the male towards the production of sperm and the female towards the production of ova, is what makes males males and females females.

Two final points need to be made. The directedness towards gamete production is an essentially teleological conception of living things which does not sit well with reductionist accounts of life. Because systems biology is holistic though, it is able to accommodate teleology. Second, it would be a mistake to stop here since the directedness of the male and female towards their respective gametes, is directedness towards a *proximate* end. The gametes themselves are further directed towards some additional end i.e. the production of the next generation.[27]

V) Computation minus form

I want to go beyond saying that systems biology is compatible with a hylomorphic understanding of nature or that biology *can* be interpreted in a manner consistent with

[26] Aristotle is clear that the form of an entity is to be identified with its function. Sometimes he utilises examples involving artefact analogies – he states, for instance, that the 'form and actuality' of a house is its serving as a "receptacle to shelter chattels and living beings" (*Met.*, 1043a16-18) – and sometimes organic ones – musing, for instance, that if 'the eye were an animal, sight would have been its soul, for sight is the substance of the eye which corresponds to the [form]" (DA, 412b18-20). See also Austin (2020, 114-115).

[27] I explore 'teleology' and the end of generation further in Chapter V and VI.

hylomorphism. Here, I want to suggest that form (or something very much like it), as a constituent aspect of nature, is a necessary condition for the possibility of a systems analysis of nature. To do this, I will draw heavily from Feser's important article 'From Aristotle to John Searle and Back Again: Formal Causes, Teleology, and Computation in Nature' (2016), where he makes an argument to this effect.

To understand this argument though, a few preliminaries are necessary. As Austriaco says, part of a systems analysis of nature involves "computer modelling of dynamic networks" (2004, 738). But what exactly does *that* involve? As Feser explains, computation is a way to model and understand order within a system which involves turning certain informational inputs into certain informational outputs according to a rule or algorithm (2016, 466). As readers may be aware, 'information' in computer science has a specific technical meaning. Information in the technical sense is syntactic information rather than semantic information. The 'bit', the basic unit of information, is usually represented as either 0 or 1. To consider a bit's syntactic information is to consider it as an *uninterpreted symbol*. In a computer, when instantiated physically "a bit corresponds to one of two physical states such as either of two positions of a switch, two distinct voltage levels or what have you" (ibid).[28] Computation then "is just this transition from states that can be characterized [sic] as embodying an informational input via states that can be characterized [sic] as the embodiment of an algorithm into states that can be characterized [sic] as the output of the algorithm" (ibid, 468).

Now, the instantiation of information in computational processes is obviously and uncontroversially present in computers because we made them. However, as indicated, part of what systems biology involves is the analysis of living things along the same lines. It seems that an account of the rich generative potential of biological change and stability can be captured by

[28] This can perhaps most easily be expressed and explained through simple logic gates. Consider an AND logic gate. Here the AND-gate constitutes the process by which two inputs, as 0s or 1s, are turned into a single output, also represented as 0 or 1. If both inputs are 0, the output will be 0. If only one of either inputs is 1 and the other 0, the output will be 0. Only if both inputs are 1 will the output be 1. Physically instantiated in a computer, 0 could be an open circuit, and 1 a closed circuit, or 0 a low current and 1 a high current. For a physically instantiated AND-gate, only if the input is two instances of high current will the output also be a high current. The AND-gate therefore functions as a simple algorithm or process which generates a certain output from a given input according to a rule. In a computer, more complex algorithms can be (and are) built via multiple series of these gates to achieve a certain desired output. In this way, a causal pathway is created such that, given a certain input, the same output or range of outputs can be reliably produced.

a kind of computational model as systems biology attempts to do. The physical instantiation of algorithms or rules to change a certain input, an XX chromosome embryo, into a certain output, an adult female all things being equal, via a set of specific developmental modules, can be accounted for in computational terms. Rather than 0s and 1s or distinct voltage levels, genes are seen as being 'switched on' (active) or 'switched off' (inactive) leading to the formation of certain cells and their subsequent arrangement. Why though is this not sufficient for an account of the stability and dynamism we see in living things without any reference to form or matter or similar notions at all? Indeed, the computational modelling of nature could be seen as an argument against the hylomorphic vision of nature I supplied, precisely because the dynamism and stability it sought to explain is sufficiently accounted for in computational terms.[29]

However, Feser, using Searle's arguments against computational accounts of nature[30] and turning it on its head, shows that, in fact, form is presupposed in systems biology and computational analyses of nature more generally. The basic idea is that without form as a real mind-independent feature of nature, computational modes of analysis do not reveal anything about the world as it really is. Since however, computational modes of analysis do reveal something about the world as it really is, it must be the case that form is real. As Feser explains (ibid, 475), 0s and 1s only constitute syntactic information at all because we think of them as symbols. In fact, in order even to recognise a computer process, to recognise an input *as an input*, an output *as an output*, and an algorithm *as an algorithm*, we must count the 0s and 1s as symbols, even if uninterpreted ones. The point can be made even more starkly because it is only the case that 0s and 1s are recognised as inputs, outputs and processes because they have been made to be so by the computer programmer. The computer programmer, using 0s and 1s, creates rules which take certain inputs and produce certain outputs, each also expressed as 0s and 1s. The 0s and 1s have no meaning at all, either syntactically, or semantically, outside of the designs of the programmer. They are only recognised first as symbols then as rules, inputs and outputs by a third party because they have first been made to be so by the programmer.

[29] Rosenberg makes precisely this sort of argument (2006, 99-108).
[30] See Searle (1992, Chapter 9; 2008)

The status of something's being a 'symbol', at least within a computer, is entirely conventional or observer-relative. It is simply not an objective feature of the computer. That something is running an algorithm, or instantiating a rule, *is dependent on an observer and not an intrinsic feature of the computer*. That this is the case with computers of everyday experience is obviously true and indeed, hardly contestable. The electrical activity in a computer constitutes the processing of bits of information according to an algorithm "only because human designers and users of the machine *count* the electrical states as symbols, the transitions between states as the implementation of an algorithm, and so on" (ibid).

But if computation essentially involves the instantiation of symbols, and symbols are themselves essentially observer dependent, then for anything else in reality which can also be thought to be performing a kind of computation – mental states, the laws of physics, and in our case, the development and differentiation of the human species as two sexes – these things would also be observer dependent. In which case, *these computational patterns would not be discovered in reality, but rather assigned to it*. In the biological realm, the apparent causal pathways would consist in a gene being expressed or not expressed. In which case, if in systems biology, we think we really are discovering high degrees of causal connectivity among some molecules and not others, which appear to operate in some characteristic manner according to some rule along a developmental pathway, we must understand that what we are doing is at best a useful fiction and is not revealing anything about how reality is in itself.

Yet, Searle's argument is only successful on the assumption *that an Aristotelian conception of reality, including form-matter and finality, does not describe any real aspect of reality in the first instance* (ibid, 485). But if the Aristotelian is correct, and form is a real aspect of nature, then the computational order we appear to discover in nature really is an intelligible aspect of nature. As argued earlier in this chapter, if it were not the case that the order detected in nature and modelled in systems biology were really a part of nature, its success would be nothing short of miraculous. The fact is that the computational accounts of order discussed above do, at least in certain instances, behave *as if* they were true and *as if* the theoretical

constructs they posit actually exist. The idea that genes can be 'switched on' or 'switched off', are active or inactive, and can be modelled along computational lines in the manner indicated, is exactly what we should expect were the genes really to be active or inactive.

Furthermore, without some determinate conception of what a thing *is*, from a human organism to some process within that organism, in short, without some conception of form, it is not possible to distinguish between a feature and a bug within a system. We, know, for example, that trisomy-1 is a bug, rather than a feature of being human, only because we have a formal conception of what it means to be a human in the first instance, and this form, among other things, does not dictate that a human being only live for a number of days or weeks in utero before dying. In short, systems biology and other computational accounts of nature are possible and reveal some real aspect of reality precisely because there is a formal aspect to nature. Form, in other words, makes systems biology and computational analysis of nature possible.

An Aristotelian conception of nature therefore is defensible and indeed, able to make up for various deficiencies present in reductionist and dualist accounts of nature and the human person in particular. Here I have shown that essence, form and matter are all real things and can be usefully employed in the analysis of nature. In the next chapter, I will go into some detail about the roles these play in how we should understand sexual difference.

Chapter V – Substance and (inseparable) accidents

I) An alternative to 'contrariety' – accidents and powers

Where the last chapter offered a contemporary defence of Aristotelian hylomorphism as the first stage in my attempt to salvage an Aristotelian account of sexual difference, this chapter will focus more directly on the classification of sexual difference as part of the same salvage effort. If we recall Allen's challenge from Chapter III[1], to preserve an Aristotelian approach to sexual differentiation will not only involve extracting his faulty biology and certain misapplied metaphysical principles, and thereby remove "all the roots of gender polarity" (Allen 2002, 93), but also involve providing an alternative to his principle of contrariety which led ultimately to his norm-defect model of sexual difference. What then could such an alternative be? Rather than interpreting sexual difference as an instance of contrariety, I propose that the proper characterisation of sexual difference should be understood first, through an analysis of accidents, including how those accidents relate to the subject in which they inhere, and second, through making an important distinction between the male and female accidents of sex, and the power of generation.

This approach remains thoroughly Aristotelian and maintains his form-matter conception of essence defended in the last chapter, as well as his substance-accident distinction in this. Before that discussion however, it is worth being explicit about those aspects of Aristotle's account of sexual differentiation that I will jettison. Recall that, for Aristotle, part of the difficulty posed by sexual difference is the need to articulate precisely how the male and female were different without that difference amounting to a species-making difference. The difficulty was particularly acute, as he himself acknowledged (*Met.*, 1058a 29-34) because the difference between the male and female was the greatest possible difference, i.e. they were a contrariety. Just as in the genus 'animal' the difference between rational and non-rational animal is a

[1] "If all the roots of gender polarity are extracted from his philosophy, then some new principles will need to be articulated to offer a thorough explanation for sex and gender differentiation consistent with contemporary scientific evidence. What principle can replace the principle of contrariety that Aristotle uses to explain how a single seed in the human species becomes either a male or female child?" (Allen 2002, 93).

contrariety, within the same genus and specific difference, the difference between male and female is also a contrariety.

As I explained, Aristotle's answer to this conundrum is to find the difference between the male and female as arising from matter, which itself does not make a difference in species, rather than form, which would create a difference in species.[2] From here, in his biological works, he expands on the idea that the male and the female are contrarieties through his application of the division between matter and form, to the generative fluids produced by the male and the female, that is, to sperm which he identifies with form, and menstrual fluid, which he identifies with matter. Furthermore, he does not merely apply this division to the male and female generative fluids, but also to the male and female as such. All this, combined with the "doctrine of paternal agency" (Matthews 1986, 22) whereby it is the *male* form specifically which is passed on to the offspring, results in the norm-defect model.

So what must I retain and what can be jettisoned? Addressing the latter first, the norm-defect model itself should be jettisoned based as it is on a number of faulty premises. Most obviously, we can reject Aristotle's biological understanding of generation since it is not the case that generation takes place through mingling of sperm and menstrual fluid, and neither is it the case that the seminal fluid is hotter and more concentrated and therefore stored in the ureter. The same can be said for a number of his other claims about the mechanisms of reproduction and gamete production. Through modern empirical discovery and our understanding of anatomy, we know this is all false.

While I have defended and wish to retain the form-matter conception of the essences of material things, we can reject Aristotle's application of this division to the male and female and their role in generation. The male and female in fact both provide the necessary material for

[2] Phenomenologist Edith Stein is apparently unique among those working in a broadly Thomist tradition in that she maintains that men and women are different species. "I am convinced that the species humanity embraces the double species man and woman; that the essence of the complete human being is characterised by this duality; and that the entire structure of the essence demonstrates the specific character. There is a difference, not only in bodily structure and in particular physiological functions, but also in the entire corporeal life" (1987, 187). However, by 'species', Stein is clear that she means a permanent category that does not change (ibid, 173). This does not overlap with my use of the term species.

the generation of offspring which implies that it is both the form and matter of a sperm, as well as the form and matter of an egg, which are required for the generation. This also means we can jettison the 'doctrine of paternal agency' and the idea that the male and the female are contrarieties. Since they do not relate as form relates to matter, nor are they a contrariety in the same way as rational and non-rational among animals (where there can be no greater difference within the same genus), it is not clear how male and female are contrarieties either.

What then must I retain? In addition to the Aristotelian hylomorphic conception of nature I defended in the last chapter, I will defend the idea that the difference between the male and female of a species should be understood to arise from a difference in matter. However, the manner in which I characterise this will be considerably more detailed than Aristotle's own, and I will draw heavily from his medieval follower Thomas Aquinas, to assist me in doing so. In which case, in the following, I will first define and explain the meaning of accidents and substance in general. I will differentiate accidents from properties arguing that talk of 'properties' does not have the degree of specificity required for the task ahead. I will introduce the idea of different kinds of accidents, and the relations they can have to the substance in which they inhere. Second, I will explore in detail three broad divisions of accidents, namely, proper, separable and inseparable. Third, with these divisions of accidents in place, I will explore which kind of accident we should understand sex, or being male and female, to be. Here I will make a distinction between sex and the power of generation, arguing that the former is an inseparable accident, and the latter, a proper accident. Fourth, continuing this argument, I will show how sex is an inseparable accident situating this discussion within contemporary Thomist reflection on the subject. Finally, I will explore the manner in which the accident of sex is *sui generis* insofar as it is 'incomplete' in a manner in which other accidents are not.

Before proceeding, it should be noted that the following account of sexual difference applies primarily to the human species although it should have broad applicability to many other sexually dimorphic species. The application of my account of sexual difference to species

other than our own, as well as a number of other difficulties and points of clarification, will form the basis of discussion in the next chapter.

II) Substance, accidents and properties

One way to think about the difference between male and female is in terms of properties. What kind of property is 'being male' or 'being female'? Or what kind of properties do males have that females do not, and vice versa?[3] 'Property' here simply refers to a characteristic or attribute of a thing (Feser 2014, 230). Having 'red-hair' or being a 'red-head', wearing a beard, having dark or light skin or a smile. Each of these are properties in one way or another. We might then recognise that some properties are contingent, and that others are necessary. From this, we might suppose that being male and being female were also properties, and then go on to investigate whether or not they should be considered necessary or contingent. We could ask whether a thing might exist without a particular property in some possible world. If there is a possible world in which a particular property is not present in a particular thing, then that property is designated a contingent property. We might say that it is not essential to it, where essence is thought of in terms of a bundle of properties which comprises a thing in all possible worlds (ibid, 235-241; Oderberg 2007, 1-6).[4] Thinking about essence in this way is not Aristotelian or Thomistic since the various potencies of a thing, or the ways a thing can be, are grounded in what a thing *is* (Oderberg 2007, 4).

Importantly, under this conception of essence and properties, the idea of the difference between the essence of a thing and those properties which follow, or flow, from its essence and those which do not, is omitted. There are a few points to note here. First, for the Aristotelian, essence is not a property or a cluster of properties. Failing to distinguish between an essence and its properties results in the 'unity problem' whereby it becomes impossible to

[3] The phrasing of this question is an important matter. This second formulation could lend itself to neo-essentialist thinking, which I explored in the first chapter, whereby a property, or cluster of properties, is identified with the essence of a thing. I do not intend my formulation to be understood in such a manner. As I hope to have made clear, this is not Aristotelian essentialism.

[4] Oderberg offers us several reasons to reject a modal understanding of essence. He argues, for example, that a realist conception of possible worlds is circular because there must be some criterion for what counts as a possible world since there are no impossible worlds. But this means that we must have a prior conception of modality before we can use possible worlds to explain modality (2007, 2).

say what exactly makes a thing the thing it is. We can always ask, 'why is it that a thing has this set of properties and only this set of properties?', and without an appeal to essence, no answer can be given for the unity of these properties in a thing (ibid, 156-162). Second, as we shall see, the language of properties, even when divided among necessary and contingent, is not as precise as those captured by the Scholastic division among accidents. In which case, I will opt for the traditional language of accident rather than property.

To be sure, there is a certain overlap between 'accident' and 'property' since each does refer to some characteristic or attribute of a thing. But the contrast which sheds most light on the matter is not the property/accident distinction but the substance/accident distinction. What then is an accident? In his *Commentary on the Sentences of Peter Lombard*, Aquinas offers the following definition of accident: "a thing to which it is due to exist in another" (Sent. IV.D12.Q1.A1.qa1.Rep2). This might be otherwise formulated as: "A thing to which it belongs to be in something else" (Wippel 2000, 234). That is to say, whatever subsequent qualifications we make, an accident can only exist in something else. They are not 'free floating' entities with their own act of 'to be' independent of the act of 'to be' of the thing in which they subsist.[5] Rather their being consists in being in something else. The properties listed above, being red-headed, having light or dark skin etc., are all accidents in this sense. Anything which has being in something else and not in itself is an accident. For example, a smile is a kind of separable, that is to say, among other things, temporary, accident that belongs to the person doing the smiling. The smiling exists in that person's face, so to speak. *Pace* Lewis Carroll, it could not be the case that the Cheshire Cat's smile exists without the Cheshire Cat.[6] Accidents are not some esoteric aspect of reality, they are just one kind of being we commonly encounter in experience as these examples suffice to show.

[5] In the existential metaphysics of Thomas Aquinas, as Koren points out (1955a, 213), it is the case that accidents have their own 'to be'. "[I]n Socrates we place one being inasmuch as he is white, and another inasmuch as he is a man… [T]o be white is the being of Socrates, not as he is Socrates, but inasmuch as he is white. And there is no reason why this being should not be multiplied in one hypostasis or person; for the being whereby Socrates is white is distinct from the being whereby he is a musician" (ST. III. Q.17, A.2). My characterisation of accidents as lacking their own 'to be' is not opposed to Aquinas on this point since I merely intend to highlight their lack of 'to be' *independent* of the substance in which they inhere.

[6] On this point, Oderberg argues that because substances are not a bundle of accidents or identical with a particular privileged accident, they are metaphysically independent and therefore able to come apart at least in principle, even if not in the order of nature (2007, 155). This does not mean the accident can exist by itself for it must always exist in some substance even if not *this* substance.

The accident then is to be contrasted with substance which Aquinas defines as "a thing having whatness, for which being is acquired or due, not in another" (Sent. IV.D12.Q1.A1.qa1.Rep2).[7] It is worth noting also that these definitions of substance and accidents are really quasi-definitions because they cannot be expressed in terms of genus and specific difference. That is, because 'substance' is the highest genus, there is no further differentiation of something that does not also contain substance (Wippel, 234).[8] Now, there is a clear overlap between accidents and properties, but the former emphasises the inherence in something else whereas the latter does not. Precisely because accidents always exist in another, they are always of a particular kind depend upon how they relate to substance in which they inhere.

These are the basic contours of substance-accident ontology, and we are now in a position to explore further divisions among accidents. While the divisions are clear enough, which kind of accident any particular accident in fact is, is far more contentious. In particular, Aquinas' examples of various kinds of accident, while ostensibly clear, are frustratingly brief and apparently depend on contingent empirical facts i.e. it might turn out that with advances in scientific knowledge and technological ability, his examples of inseparable accidents might not be as inseparable as he in fact thought. This, we will see, will raise considerable difficulties in answering the question: 'what kind of accident is sex?'.

Given the above, it seems clear that whatever else sex is, that is, whatever else 'being male' and 'being female' is, it is something which has its 'to be' in something else.[9] Further, it is also

[7] The reason for this somewhat technical definition, Wippel explains, arises from Aquinas' concern to ensure that God does not fall under the definition of substance (2000, 231-234). The definition of substance implies a division between the essence of a thing (its 'whatness') and its existence (its being). Since in God his whatness and his being are not distinct or, to say the same thing, there is no difference between God's essence and God's existence as there is in everything else, God cannot be a substance. These theological concerns aside however, the important point is that a substance exists in its own right (even if that existence is ultimately given and sustained by God), and unlike an accident, not in something else. See Aquinas (*Q. D. de Potentia Dei*, Q.7, A.3).

[8] Koren suggests that essence and substance can be used interchangeably insofar as essence is limited to that of substantial beings. "By 'essence' we indicate *what* a reality is, whereas by 'substance' we indicate the *mode* of being of this reality" (1955a, 186).

[9] With Aristotle and Aquinas, I want to say that male and female belong to the same species or essence, and a thing's being male or female is a differentiation within that essence. Might it not be the case though, that male is one essence or species and female another, such that the correct classification is to group males together and females together, and 'being human' or 'being a horse' or 'being a squirrel' are lesser differentia? This would not be correct because the male and female within a particular species relate to one another through the generation of the species, indicating that the species is itself ontologically prior to the specification of an individual as either male or female. Male humans and male horses, however, are only related as male in relation to the analogical role they play in generation. See Chapters VII and VIII for a comparison between sexual differentiation in different species.

clear that sex is an accident of living things. Rocks or lumps of gold do not have sex in any real sense.[10] We do not encounter in the natural but non-animate world a division related to reproduction in rocks or lumps of gold or any non-animate thing. We do, however, encounter such a division in many living things. Furthermore, given my arguments in Chapters I and IV, it is clear that sex cannot be reduced to a single accident like the 'aspects of sex' I examined previously, such as gametic or chromosomal sex. As an accident, sex must be considered holistically as including and relating all of these aspects of sex, at least in ordinary cases, through their role in the generation of species.

III) Accidents: proper, inseparable and separable

From the perspective I have been advancing, substance has two constituent principles, form and matter, neither of which exist in themselves but only when joined do they form a complete substance with real existence. The relation of the accident to these constituent principles means we can discern a number of different accidents. While Aristotle does distinguish between essential and non-essential accidents at least implicitly (*An. Post*., 75a18-20), Aquinas' delineation and analysis of accidents takes us considerably beyond this basic division, and permits us far more precision in understanding what sex is through understanding how it relates to the living substance in which it inheres. He discusses the nature of accidents and their different kinds in a number of places which will be explored presently, but his clearest delineation of accidents comes in his *Disputed Questions on the Soul:*

> *"There are three genera of accidents: some are caused by the principles of the species, and are called proper accidents, for example, risibility in man; others are caused by the principles of the individual, and this class is spoken of [in two ways]: first, those that have a permanent cause in their subject, for example, masculine and feminine, and other things of this kind, and these are called inseparable accidents; secondly, those that do not have a permanent cause in their subject, such as to sit and to walk, and these are called separable accidents"* (A.12, R.7).

In the above passage Aquinas lists three kinds of accidents: proper accidents, inseparable

[10] I exclude here the contingencies of many languages where inanimate objects are gendered (see Chapter VII).

accidents, and separable accidents. In contemporary parlance, we might say that a proper accident is just a *necessary* property, not in the modal sense discussed above though, since it is possible that a particular accident may never manifest but still properly be called 'proper'. Rather they are necessary in the sense that they arise out of the essence of a thing in which they inhere. To say that proper accidents are 'caused by the principles of the species' means that they arise from our essence which is shared among all members of the species. The example given is risibility in man, that is, having a sense of humour. 'Having a sense of humour' is understood to be a proper accident (or necessary property) because 'having a sense of humour' presupposes understanding, which itself is part of our rational nature. 'Having a sense of humour' flows[11] or follows from out rational nature (Feser 2014, 234).

For the Aristotelian, the human essence is to be a 'rational animal'[12] and our having a sense of humour just is a proper accident that flows from our having the particular (rational) form we do in fact have. Animals without a rational nature, that is, all other animals as far as we know, do not have a sense of humour because they do not have a rational nature. In effect then, anything with a rational nature will also have a sense of humour as a proper accident. This is so whether or not this sense of humour is ever made manifest. Young children or adults with certain mental impairments, for example, remain human and, as such, have a rational nature, but due to immaturity or disability, the proper accident flowing from their nature may never be made manifest. The rational nature and its proper accidents remain however since they belong to the human person insofar as they are a rational animal, and to be human just is to be a 'rational animal'.

Other proper accidents which perhaps are not quite so clear in that they do not follow so straightforwardly on the definition of a human as a rational animal, could be 'having four limbs'. Without wishing to dwell on this point, since I will return to the difference between metaphysical (or philosophical) and biological species later, it seems possible that there be

[11] The idea of an accident "flowing" from an essence should be understood to mean being caused by and originating from the essence, where cause is understood as formal cause. "Just as a triangle has various [accidents] (e.g. angles adding up to 180°) by virtue of its form, so too do substances in general have the [accidents] they have by virtue of their essences acting as formal causes…" (Feser 2014, 234).

[12] I explore and explain this idea further in Chapter VII.

other 'rational animals' which have a radically different morphology to us.[13] Arguably, these would still be human, metaphysically speaking, even while not human biologically speaking. 'Having four limbs' then, would be part of the definition of our biological species once our 'animality' is fully spelled out.

The fact that proper accidents follow on the human substantial form give us a *prima facie* strong reason to think that 'being male' and 'being female' should not be regarded as proper accidents. If 'being male' were a proper accident, it would have to flow simply from our being rational animals. Like the proper accident of risibility, this would mean that all humans would be male, just in virtue of their being human, and vice versa for being female. In fact, unlike risibility and 'having four limbs', which, under some circumstances, may not be made manifest, but are nevertheless always present, following as they do on our essence, being male is not present at all in half the species, and being female is not present in the other half.

Aquinas identifies two further types of accidents, separable and inseparable, which "are caused by the principles of the individual" (*Q. D. de Anima*, A.12, R.7). That is to say, these accidents are *contingent*. They do not flow from the essence or form of a thing in the way that proper accidents do. Rather they belong to individual members of the species and cannot be predicated of the species as a whole. As I argued in Chapter IV, the individuating principle within a substance is known as its 'matter'. So while proper accidents can be universally predicated of a species because they flow from the essence and are therefore always present, even if never made manifest, inseparable and separable accidents, being contingent, belong to some members of the species but not to others at all.

Regarding the first kind of contingent accident, that is, inseparable accidents, Aquinas says that they "have a permanent cause in their subject" (*Q. D. de Anima*, A.12, R.7). Presumably this means that so long as the subject, that is, substance, in which the accident exists itself

[13] Oderberg argues that, metaphysically speaking, our rationality is what makes us human such that a creature with a radically different morphology, with "three heads full of liquid hydrogen, seventeen sensory organs, and twelve tentacles of varying lengths placed strategically around a spherical body of thixotropic clay…", would also be human if it were rational (2014, 219).

continues to exist, the inseparable accident will exist along with it. This interpretation is reinforced in his *De Potentia*, where he says that "[a]n inseparable accident is never actually separated from its subject," (*Q. D. de Potentia Dei*, Q.5, A.7), and he gives the example of heat being an inseparable accident of fire. Unfortunately, this example is not very helpful as we now know that fire itself is not a substance. That is, it is not the kind of thing which has its 'to be' not in another. Rather, it is the result of a chemical reaction between carbon and oxygen. It is an emanation from this reaction in the form of light and heat. The only other example Aquinas gives of an inseparable accident quoted above in the *Disputed Questions on the Soul*, is male and female themselves. With no point of comparison then, we are left in a slightly difficult situation.

Contemporary Thomist John Finley tentatively suggests other candidates for inseparable accidents such as "eye and skin colour, bone structure and vocal quality and even native temperament" (2015, 589). William Newton in his reply to Finley offers 'burning' as an inseparable accident of fire, and 'temperament' as an inseparable accident of a person "because, while temperament does not define the individual at the level of personhood, it is a characteristic that is always part of him" (2020, 199).[14] These accidents appear to fit the definition of being inseparable for they arise from the principles of the individual. In other words, they are not possessed by all members of the species since they do not arise from their form i.e. their being a rational animal. Further, they are the result of permanent causation in the sense that insofar as the individual continues to exist, these accidents continue to exist.[15]

As suggested above, some of these examples might not be as inseparable as they first appear. Consider eye and skin colour. It is currently possible to undergo surgery to permanently alter the colour of one's irises, and perhaps, at some point, it will be genuinely possible to

[14] Newton's characterisation of accidents is not the same as my own and appears to differ somewhat from Aquinas' insofar as he explicitly conflates 'proper' and 'inseparable' accidents (2020, 199). Gamble and Pruski also fail to make the necessary distinctions between proper and inseparable accidents and mistakenly argue that sex itself is a proper accident (2018, 180). Savage also makes this mistake (2015, 81). Bedford and Eberl, as well as Furton, correctly characterise sex as an inseparable accident but fail to properly contrast it with proper accidents or its relation to form and matter (2016, 20; 2016, 3).

[15] In fact, Aquinas' actual writings leave open the possibility that 'male' and 'female' are the *only* inseparable accidents of human beings (Finley 2015, 589).

change skin colour as well.[16] Equally, through surgery and various other bodily interventions it is already possible to change one's vocal quality and bone structure to some degree, and presumably further and more profound alterations will be possible in the future. Perhaps an accident's being inseparable is contingent on the technology available.

Aquinas, however, does give us additional tools which suggest these considerations miss the mark. In *On Being and Essence*, he sees accidents as capable of having one of four relations to the substance in which they inhere. First, there are some accidents that follow on from form sharing nothing in matter, such as an act of understanding, which does not take place through any bodily organ. Second, "some other of the accidents following on form are such that they do share something with matter; for example, to sense" (Bobik 1965, 104). Third, "some accidents follow on matter according to the ordering which it has to a special form" (ibid, 105) and Aquinas includes male and female in this category. And fourth, "[o]ther accidents follow on matter according to the ordering it has to a general form" (ibid).

This four-fold division can be combined with the three-fold division enumerated above in the following way. It seems that the first and second division in *On Being and Essence* are just ways in which different kinds of proper accidents can be distinguished among themselves. Being proper accidents, they follow from form and belong to every member of the species just because they are a member of the species e.g. risibility in the human species. Conversely, as Aquinas says, sense perception would be a proper accident also flowing from our rational animal nature but acting only mediately through our body.

The third and fourth division, it seems, can both be subsumed under the heading, inseparable accident. This is so because both arise from matter, the principle of individuation, and therefore do not characterise the species as a whole, as risibility and the power of sensation do. Aquinas' reference to "matter according to the ordering which it has to a special form" is not entirely clear but reading on his point is clarified. "Whence these accidents do not

[16] That is, a change that would constitute something more than becoming tanned or paler.

remain on the removal of the form of animal, except only equivocally" (ibid). This kind of accident is contrasted with the fourth more general kind which also follows on matter but remains in the matter even after the loss of the special form, and he gives the example of "blackness of an Ethiopian's skin" (ibid).

The male and female accidents, ordered as they are to form in a special way, end with the death of the individual, in the sense that a corpse is no longer a human individual but a collection of parts with no unifying essence as evidenced by the decomposition it undergoes. Properly speaking therefore, the corpse is neither male nor female because these accidents disappear with the death of the person. Only equivocally and loosely speaking do we call this corpse a 'male' corpse and that corpse a 'female' corpse. This is because, again strictly speaking, it is no longer a human substance, but a collection of substances only temporarily united as is revealed when it starts to rot. Where male and female as accidents end at precisely the same time as the individual ends, skin colour remains in the corpse, at least for a time. Whilst both accidents, sex and skin colour, arise from the principle of the individual, that is, their matter, they follow from the matter in a different way. It is only things capable of being dead or alive that could possibly have the accident of sex, however it is manifest. It seems however that the accident of colour belongs more generally to material objects. As such, even on the death of the individual, this accident remains throughout its parts.[17]

These then are the contours of Aquinas' division of accidents and his view that being male and being female are inseparable accidents of the individual arising from matter according to a special form. For the sake of completeness though, I should briefly mention a final kind of accident which is not a serious contender for the male and female accidents. These "do not have a permanent cause in their subject, such as to sit and to walk" (*Q. D. de Anima*, A.12, R.7). These are instances of accidents which 'come and go' so to speak in a manner in which sex does not. Whatever the accident of sex is, it does not attach to the individual in the same way that

[17] I explore this further in the next chapter in relation to Aristotle's 'principle of homonymy'.

an accident like sitting or walking does.[18]

IV) The power of generation

Is Aquinas' classification of being male and being female as an inseparable accident correct? These accidents cannot be plausibly thought of as separable, and the fact that we are not all the same sex indicates that male and female are not proper accidents. Risibility is taken to be a proper accident which all humans have just in virtue of being rational. It is not the case though that we are all the same sex just in virtue of our being human.

However, if we reflect briefly on generation in other species,[19] it seems that sex is indeed a proper accident. That is, for some animate things, all members of a given species are of the same sex. For instance, many plants do not have separate 'male' and 'female' members, but only 'male' and 'female' parts. Other animate things, like various kinds of bacteria, do not admit even this kind of division and appear to be all of the same sex. In which case, even though there is an apparent division in many higher animals, so to speak, sex does appear to be a proper accident which shares something in matter in at least some species.

This suggests then an important distinction between the 'power of generation' and 'sex'. Unlike sex, the power of generation is something that belongs to all living things just insofar as they are living. What though is a power? Powers are just a type of accident directed to a certain effect or range of effects (Wippel 2000, 268; Feser 2014, 42-43).[20] They have a causative role not present in all accidents. Hair 'being brown', for instance, is not directed towards anything insofar as it is brown and is therefore not a power. The power of generation though, like other fundamental powers possessed by all living things just insofar as they are alive, viz., the power

[18] That being said, perhaps on Butler's performance model of 'gender', 'sex' is a kind of separable accident (see Chapter II and Butler 1988). It is doubtful that this sort of argument could be made convincingly since her own ontology is so radically different from the Aristotelian-Thomistic one in which I am operating.

[19] A topic I explore further in Chapter VI.

[20] In Scholastic thought, powers are sometimes called 'operative potencies' (Koren 1955b, 56-70). They can be known to exist because a cause is not always bringing about its characteristic effect. I have the power to write this thesis, but I am not always actually writing it (Feser 2014, 42).

of nutrition and the power of growth, is directed towards the good of the living thing.[21] However, generation, or reproduction, considered as a power, does not exist in itself but exists in a living substance. It flows from the form of that substance as a living thing, that is, from its soul. It is a holistic accident, manifest through various bodily organs and behaviour, and is exercised for the sake of the living thing, that is, for its own good – the good of the continuation of the species. On this understanding, the power of generation is a proper accident which belongs to all things just insofar as they are alive. It is a proper accident because it arises from the form of the species, and is equally possessed by every member, whether those members are male, female or neither.

Sex, though included in the power of generation, can be distinguished from it. Sex remains a power given its causal role in generation, but it is not present in the same manner in every member of every living thing. Properly speaking, among living things it seems that the generative power can be manifest in three ways: as the female accident or power of sex, the male accident or power of sex, and a generic accident or power of sex which belong to individual members of the species. We can say therefore, that sex is a proper accident only insofar as it is considered as the power of generation. As the power of generation flows from the form of the species. In animals which are sexually differentiated, such as humans, the power is manifest concretely as male or female, which are themselves accidents, and in species in which there is no sexual differentiation, the power is manifest concretely in a generic way.

Now, for the Aristotelian essentialist, "[w]hen we look for essences we look not just for distinctions, but distinctions that make a difference" (Oderberg 2007, 202). This is why a human with a sixth sense not at all possessed by the other members of the species, such as the ability to echolocate, would indicate the presence of a distinct species (Finley 2015, 601). This, as we have seen, is a difficulty for Aristotle and Aristotelians because it does seem, in regard to

[21] For a more complete discussion of living powers, see Chapter VII. The most basic level of living things, i.e. things with a vegetative soul, possess the powers of nutrition (or metabolism), growth, and generation. Each of these powers manifests the distinctive kind of causation enjoyed by living things but not non-living things, that is, immanent causation. Immanent causation involves causation beginning in the agent, ending in the agent, and crucially, for the sake of the agent, that is, for its own good. Nutrition, growth and generation are all types of causation for the sake of the agent engaged in the causation itself (Koren 1955b, 16-19; Feser 2019, 375-376; 391-400).

generation, that males and females, in the human species at least, really do have distinct powers, which would indicate distinct species. In the human case, males and females have different organs and body plan associated with generation. That is, while the male and the female are both directed towards generation, the manner of the directedness of their bodies towards this end, is markedly different. In the former case, through impregnation and fatherhood, in the latter case, through pregnancy and motherhood. These different powers are reason to think that males and females have a different form, and therefore a different species. As I argued in Chapter III, Aristotle accounts for the apparent difference in powers through his conception of the male as the norm of the species and the female as the defect. This model permits him to recognise difference without making males and females a different species.

Within my schema though, the distinction between the power of generation possessed by all living things just insofar as they are alive, and the particular manifestation of that power as the female accident of sex, the male accident of sex, or a generic accident of sex, enables me to provide an alternative answer to this difficulty. Males and females, insofar as they are human, each possess the power of generation which is a proper accident of the species. It is generic and belongs to all members of the species. At the same time however, this proper accident is made concrete through the particular male or female accident of sex in sexually differentiated species. In this way, the male and female accidents can manifest different powers directed towards different proximate ends – the uniquely male aspects of generation and the uniquely female aspects of generation – whilst retaining their orientation to the same ultimate end – offspring – through their being manifestations of the generic power of generation. In which case, an apparent difference in powers does not, at least in this instance, indicate a difference in form or species. The power of generation then is a proper accident flowing from the form of a living thing, but male and female themselves are a difference within a species and thus inseparable accidents arising from matter in the manner described.

V) Contemporary disagreements

With the distinction between the generic power of generation and the specific accident of sex in mind, it seems that the only accident we are left with is 'inseparable'. It would seem therefore that Aquinas' characterisation of sex is broadly correct. Contemporary Thomists John Finley (2015) and William Newton (2020) agree on as much though they disagree as to how precisely to characterise the relationship between the three relevant elements: sex (as an inseparable accident), form and matter. Furthermore, they do not adopt that same framework which contrasts the power of generation with the accident of sex. The debate, though somewhat esoteric, is informative as regards my own position.

In opposition to Aquinas' and my own position, Finley (2015) argues that the inseparable accident of sex[22] follows more from (substantial) form then matter. His ultimate reason for rejecting Aquinas lies in his view that matter in this instance cannot perform the role in sexual difference that Thomists think it can. He says:

> *"Given distinct proximate objects and activities of the male and female organs, pointing in turn to distinct powers as cogenerative in each case, the anatomical structures and living activities of male and female indicate that one's gender follows from one's soul, or substantial form, since matter is not the kind of principle that can arrange itself in a determinate structure for a particular purpose"* (ibid, 597-598).

It is certainly true that matter is not self-configuring, but rather passive and that which is to be determined. However, as Newton rightly points out, the matter into which the soul is infused is already under some form (2020, 201). The idea seems to be that when a sperm and egg combine and take on a substantial rational form, the prior configuration of the matter of the sperm and the egg is not destroyed but the specific potentials of the matter are actualised. Newton explains: "One might say that the matter has information in it already, and the new substantial form—or more exactly an accidental form of the soul, namely, the generative power—reads this information and builds the generative organ that is encoded in the matter" (ibid).

[22] Finley uses the term 'gender' but is explicit that 'gender' is not supposed coincide with the sex/gender distinction as used in much contemporary discourse. Rather, gender is used to refer to the "biological, sexual structures, and capacities in virtue of which humans have been traditionally referred to as male or female" (2015, 586). In other words, gender is used interchangeably with sex.

This characterisation does not imply that matter is self-organising. Instead, the actualisation of the matter (in the emergence of a sex-specific organ) is an effect of the soul (via the generative power), but it is the matter itself which determines whether the resulting organ is male or female (ibid). We might make the point by saying that just as matter individualises form through limiting it, it is matter that limits the expression of form to the male or female individual. In this way, matter is the primary determinant in making an individual male or female.

In addition to giving a positive reason why male and female arise primarily from form and not from matter, Finley also has to explain why sex stemming from form does not compromise the unity of the human species. In other words, he has to explain why this does not make the male and the female different species. Finley is aware that his characterisation of sex is not the same as Aquinas' and recognises the difficulty he has created for himself (2015, 599-602). The key to solving this difficulty lies in his designation of sex not simply as a generative power but a 'co-generative' power. Using this designation, he is able to distinguish between the multiple goals of the generative power. From the perspective of sex being a *'generative'* power, the power in both the male and female has the same ultimate object, namely, the generation of another of the same species i.e. children. From the perspective of the power of generation in the male and the female being *co*-powers, their proximate objects differ by way of involving distinct sexual organs and activities, which mutually imply each other (ibid, 597-598). That is, male reproductive anatomy, including sperm and external genitalia, are directed to female reproductive anatomy, including eggs or ova and external genitalia, and vice versa. The distinct proximate objects imply that each is a distinct power. And this indicates that sex follows from one's form since matter is not the kind of principle that can arrange itself in a determinate structure for a particular purpose. This however does not constitute a difference in species, Finley assures us, because "[sex] posits no further power in virtue of which the animal's essence is determined; rather, it concerns precisely the maintenance of the essence that the other powers constitute" (ibid, 601).

However, while he is right to distinguish between the ultimate and proximate ends in generation, it is not clear that this distinction does the work that Finley needs it to do. Unlike a sixth sense, which he recognises would be a power which determines a different essence (ibid), Finley asserts that sex does not determine an animal's essence but concerns the maintenance of the essence. This is true in the sense that unlike other powers, sex is concerned with the maintenance of the whole species, and, as he argues, being "orientated toward the species itself [the co-generative powers] cannot in themselves constitute new species" (ibid). It seems though that this merely reinforces the idea that the male and female are indeed not a different species, but he has not really shown *why* these differing powers, arising as they do from form, do not indicate the presence of a different species.

Furthermore, Finley's focus of the generative power being co-generative ,and the fact that these powers mutually imply one another, is susceptible of the same challenge. It is indeed true that "[u]nlike other powers that exclude their contraries in being and in account (thus winged excludes four-legged, and feathered excludes scaled), [sex's] nature presupposes one like itself and thus depends on its contrary in being and in account" (ibid). Yet this does not tell us *why* the difference in power does not constitute a difference in form and therefore a difference in species. We can agree that male and female are indeed not different species, but if we are going to affirm that these powers arise from form in the manner that Finley stipulates, a reason needs to be given *why* this difference in powers does not constitute a difference in form.

As far as Newton is concerned, the fact of having distinct proximate objects is sufficient to indicate different powers and therefore a different species:

> *"The fact that these activities are further ordered to bring about something more than each power alone achieves (i.e., the zygote) does not change things. By way of comparison the telos of the power of sight and the power of hearing are united in a percept by the power of common sense, yet each (sight and hearing) has its proper (and specifying) object on account of the respective proximate goal of each power"* (2020, 203).

The comparison to the powers of sight and hearing are especially helpful, as the proximate end of each of these is different, that is, light and sound, but their ultimate end is the same, that is, to provide us knowledge of the world around. The same ultimate end does not establish that they are the same power after all.

As a separate point, Finley also takes aim at Aristotle and Aquinas, and *ipso facto*, me, for the claim that there is one reproductive power manifested in two ways. On this view "being male or female stems rather from matter than from form, or soul" (2015, 602). This is one way to articulate Aristotle's view in which there exists a single reproductive power more (male) or less (female) perfectly realised. It is also what I have attempted to do above through my distinction between the generic power of generation and the particular accidents of sex. Finley maintains that if the power of generation arises from form (as I argue it does) then this power "would have to be a 'generic' reproductive power, either abstracting from both male and female, or including both" (ibid, 603).

Finley argues that abstracting from male and female is not coherent within a Thomistic metaphysics since "powers are only intelligible in light of the particular acts through which the powers reach their fulfillment [sic], and no act corresponds to an abstract reproductive power" (ibid). In regard to the latter possibility, that the generative power includes the male and the female, Finley suggests that this would entail that "an entire set of the soul's powers would be in principle denied the possibility of fulfillment [sic]. Each human would naturally possess built-in frustrations on the metaphysical level…" (ibid). This, he says, is opposed to Aquinas' thought, and human experience.

Finley is correct in his critique of an abstract reproductive power, but his second point is not right. The generative power being realised in one human, say female, rather than another, male, is not a frustration of a whole set of the soul's powers. It is not like being born without eyes where a certain power is permanently frustrated. For the manifestation of the power of generation as either male or female still permits the fulfilment of the end of the power, i.e.

generation, even while the male and female achieve this end in different ways. As Finley has emphasised, the power is really a co-power and so is always "frustrated" in the sense that it requires another power for its completion. But this "frustration" is manifestly not like the "frustration" being born without eyes. As Newton argues, the "generative power is no more frustrated in being determined (by matter) to be male (rather than female) than my soul is frustrated when (at conception) it became the form that constitutes my body and not the matter that constitutes yours" (2020, 203).

Finley then due to his failure to distinguish between the power of generation and the accident of sex, has not put forward a convincing case that the inseparable accident of sex should be thought of as arising from form. He has not been able to overcome the difficulty of explaining why, if maleness and femaleness arise from form, male and female do not constitute a different species. I continue to maintain therefore that sex is an inseparable accident of the individual.

VI) An incomplete power

The idea of a *co*-power raises a possibility not considered by either Finley or Newton, a possibility which Aquinas enumerates but does not apply to the inseparable accidents male and female. In *On Being and Essence* Aquinas argues there are incomplete accidents, which he calls 'aptitudes'.

> *"Sometimes the essential principles [form and matter] cause accidents in a state of perfect actuality, as heat in the cause of fire which is always hot. But sometimes they cause accidents which are only aptitudes, their completion being received from an exterior agent; for example, transparency in the air, which is completed by some exterior light-emitting body. And in such things the aptitude is an inseparable accident, but the completion, which comes from some principle which is outside the essence of the thing, or which does not enter the constitution of the thing, is separable; for example, being moved and things of this sort"*

(Bobik 1965, 107).

Unfortunately, the example Aquinas provides is far from transparent since it treats air as a single substance with 'transparency' as an accident, 'completed by some exterior light-emitting body'. It is not obvious though that this is how air should be characterised at all. Aside from this quibble, the idea of an accident as an aptitude needing 'completion' opens up interesting possibilities in regard to my own concerns. Aptitudes are a kind of incomplete inseparable accident, awaiting their completion from some external principle 'which does not enter into the constitution of the thing'. Aquinas is, once again, frustratingly brief on the matter. His statement that aptitudes are inseparable accidents is also difficult to analyse in the light of the fact that there are no other explicit instances of inseparable accidents as explained above. Equally the contrast between accidents which are incomplete (aptitudes) and those which are 'in a state of perfect actuality' is also difficult to envisage at least in part because of what is meant by 'completeness'. I want to use this material though, to explore the idea of the male and female accidents of sex as being 'incomplete'.

Now, regarding accidents, it seems that they can be 'complete' or 'incomplete' in a number of ways.[23] The first way in which an accident might be said to be incomplete and in need of completion is in terms of what I shall call '*completion in operation'*. In general, any accident whatever, whether proper, inseparable or separable, could be said to be 'incomplete' insofar as it is directed towards some external object, that is, some object outside itself. In other words, any accident which is also a power or active potency, is incomplete in regard to its object. Powers, as argued, are simply a subspecies of accident which have the capacity to bring about some effect or are directed to some end. So, for example, the power of nutrition is incomplete insofar as its object i.e. food, does not belong to the accident itself. Insofar as an accident is an active potency or power though, it is an active potency *for* something. A power is never complete in operation without its object. In the case of sight for instance, it is only 'completed' in the presence of light. So, the external agent, in this case light, functions as that which

[23] The following enumeration is not intended to be exhaustive and is my own.

completes the power of sight in operation. In this sense then, a power is always incomplete without its object of operation.

Other accidents which have no object, such as the colour of one's irises, are always 'complete in operation', because they have no object of operation, and because they are always actually blue, for example. In regard to their being the colour they are, they are fully actual or in a state of perfect actuality. They are like the fire in Aquinas' example, which is always actually hot. In essence then, only accidents which are also powers and therefore operate in some way other, could be said to be 'incomplete in operation' and in need of completion by their appropriate object.[24]

In addition to powers being 'incomplete in operation' without the object to which they are directed, they can said be to need completion in their operation in a unified subject or substance. I shall call this, *'completion in substance'*. Such powers are 'completed' internally, that is, within the subject, or substance, itself and for the sake of the substance itself. This is so because within a substance, powers do not operate in isolation, but operate together for the sake of the whole substance. There is nothing about the power of sight as such which also implies the power of hearing. But from the perspective of the individual human with these powers, each power is brought to 'completion in substance' within that substance for the sake of that substance. Sight, hearing, growth and metabolism are all completed in substance through their mutual operation for the good of the substance in which they inhere.

Consider external sense powers which exist for the sake of the subject with those powers, to give him data about the external world from which he is able to abstract knowledge. For a complete picture of external reality, or as complete as is possible given the kind of beings we are, the data supplied by individual senses must be combined within the same substance. The powers are incomplete then in regard to the ultimate end they hold for the subject. The knowledge we have of external reality is provided by the senses working in unison and are only

[24] Arguably, the intellectual power is also complete in a limited way because it is capable of being at once a power and its own object. That is to say, it is capable of reflecting on itself, and so its object is not external to itself.

'completed' when they come together, so to speak, within the substance, and for the sake of the substance. This might be done by some further unifying power or might be done by the substance itself.[25] The powers are 'completed' internally within one and the same substance for the sake of the substance.

With these two senses of completeness in mind, it can be seen that the power of generation, at least in sexually dimorphic beings, is quite different. Like the power of sight, the power of generation is incomplete in operation. Like the power of sight, the power of generation is incomplete in substance. However, due to its manifestation as either the male accident of sex or the female accident of sex, the manner of the power of generation's incompleteness is not the same. First, unlike the power of sight, it is the only power which requires another external power, that is, a power outside of the substance itself, for its completion in *operation*. Second, unlike the power of sight, in sexually dimorphic beings, the power of generation is the only power intrinsically incapable of completion in substance within one and the same substance. Rather, it requires another particular kind of external substance, for its completion in substance. Its object is another power which is not present in the substance itself.

Taking these points in turn then, first, the power of generation is incomplete in operation in sexually dimorphic beings. As I argued in humans and other similar creatures, the proper accident of the power of generation contains both the male and the female. In the concrete individual, this power is realised as either male or female. The active potency for generation is only completed in operation in the presence of another external power made manifest in a certain set of organs and gametes such that generation can result. This means that the male accident of sex is completed in operation by the female accident of sex in operation, and vice versa, in sexual intercourse. These accidents mutually imply one another and are each other's own object. These accidents are powers that are only complete in operation by another power. We might say, with Finley, that they are co-powers, each awaiting completion by its 'co' co-

[25] Aquinas, for example, clearly differentiates the soul from its powers, and sees the operations of the soul taking place through its powers. Henry of Ghent, on the other hand, assigns this operation to the soul itself (Wippel 2000, 275).

power. By contrast, the powers of sight, hearing, touch are not co-powers. Instead they have as their objects, respectively, light (as reflected off surfaces), sound and physical surfaces. These are not powers themselves, but emanations or other accidents. Light, as such, is not directed towards being seen, though it can be seen; sound, as such, is not directed to 'being heard', though it can be heard; and physical objects are not directed towards 'being touched', though they can be touched. There is no mutual directedness as there in the male and female.

Second, the powers of generation in the male and in the female, taken separately, are also incomplete in substance. As has been said though, the same could be said for the power of sight. It is incomplete in requiring its being unified internally in the seeing subject i.e. the substance, in order to gain knowledge of the external world. The male and the female generative powers, however, taken in isolation, are intrinsically incapable of completion in substance, because their completion in substance is only possible through another substance *external* to the substance itself. Unlike all other powers, its completion in substance is not internal to the substance itself. The substance does not have within itself a unifying power to complete the power of generation, again, at least for sexually dimorphic beings. The power can only be completed in another substance with the same but opposite power. Considered as 'aptitudes' it is as if the male and the female accidents of sex are, in themselves, only partial powers with an essential missing element making them incomplete in substance. In fact, the male generative power and the female generative power are anomalous in their incompleteness because the object required for their completion in operation i.e. each other, is also the missing element that is required for the completion in substance.

The accident of sex is unlike other accidents in this regard. Consider, for example, a blind man who is lacking the power of sight, and so unable to form a full percept[26] of any external object. He can still touch that object and hear it, but he would have no idea of its colour, and presumably, if he was blind from birth, would not know what colour is. His knowledge would therefore be incomplete. Now, his use of another person's power of sight would not 'complete'

[26] A kind of mental image that can accompany the concept of a material thing.

his percept in anything but an equivocal manner. Presumably, while this would be of great benefit to the person lacking the power of sight, the power of sight of an external agent would only be *his* power of sight in an equivocal and extended manner, that is, the other could describe what he sees and assist the blind person in forming a mental image (insofar as this is even possible) to accompany whatever ideas he has before his mind. Using the data supplied by the other, his intellect will attempt to make up for the deficiencies that result from his lacking the power of sight. But his use of the power of sight of another is only done so analogically.

The power of generation in the male i.e. the inseparable accident of sex, however, is, in a sense, completed by the power of generation in the female i.e. the inseparable accident of sex, such that the power of generation in the female can be said to be, in a sense, *his* own power, and through the same operation, the power of generation in the male can also be said to be, in a sense, *her* own power. Unlike blindness where the power of sight is essentially borrowed by another and not really possessed by the subject lacking the power of sight, the male substance does not borrow the power of generation in the female substance, and vice versa. Rather her power really becomes his power, and his power really becomes her power such that in the two substances, male and female, with their incomplete powers, become a single substance through their completion in operation, and their completion in substance, which can only take place externally through another substance.

This implies then a kind of radical incompleteness, seemingly not possessed by any other power. We could say therefore that the generative power in its expressions as male and female is incomplete *per se*. Bearing in mind the distinction drawn above between a power and its operation, we have seen how a power is always incomplete insofar as the object of its operation is external to it. Powers in themselves however, insofar as they are possessed by their subject, are complete even if their exercise in operation is hindered or never made manifest. The eye, for instance, needs no other power to exercise sight. The power of generation in the male and the power of generation in the female are unique in this regard though. They are not only incomplete in operation and in substance in the extraordinary ways

indicated above, but they are each incomplete *in themselves*, or to say the same thing, these powers are incomplete *per se*.

This can be seen clearly once we recognise the obvious point that individually, the male power of generation and the female power of generation are utterly unintelligible. To understand the inseparable male and female accidents of sex as *generative* entails, at least for the human species, understanding that, individually, they are incomplete *per se*. This is not so for any other power. Again, sight, touch and sound, are all perfectly intelligible in their own terms and do not imply the existence of any other powers needed for their completion. That is, they are complete *per se*. The power of sight arguably implies that there is something to see, but it does not imply that there is any such thing as sound or imply the existence of another power of hearing. The power to walk implies that there are surfaces on which to walk, but it does not imply that these surfaces have any colour or imply the power of sight. In other words, these powers imply their object, but they do not imply any other power and are intelligible without reference to any other power. The generative power in the human species, however, implies another object, and only one other object, and that object is its equal and opposite generative power in another.

Compared with other powers then, including those other powers possessed by all living things just insofar as they are alive, i.e. nutrition or metabolism and growth, the power of generation is unique. This is even more so the case in sexually dimorphic species where the power is unique not only because it is directed towards the good of the species considered as a whole, rather than primarily for the good of the individual, but also because it is radically incomplete in the manner I have described.

VII) Aristotle rehabilitated

In this chapter then, while rejecting Aristotle's mistaken biology and his mistaken application of his metaphysics, I have attempted to articulate and defend an understanding of

male and female within the Aristotelian tradition which remains consistent with his form-matter and substance-accident conception of reality. I have done so through an analysis of accidents arguing that male and female are inseparable accidents of the individual arising from matter. Despite Finley's argument to the contrary, this must be the case because if male and female as male and female arise from form, male and female would have to belong to different species.

I have undertaken this argument primarily using Aquinas' delineation of accidents as building on Aristotle's own delineation. I have argued that power of generation should be distinguished from the accident of sex, where the latter, as male or female, should be understood to be a manifestation of the form. The power of generation, considered in a generic manner as including both male and female is a proper accident arising from form and belonging to all living things just insofar as they are alive. The male and female accidents of sex are a manifestation of this same power in the individual as an inseparable accident. Additionally, I have defended and expanded upon Finley's notion of co-powers, arguing that these powers, male and female, are unique among powers due to the manner in which they are incomplete.

I have discussed the 'being' of male and female at length then, but in concrete terms, what is it that makes these accidents different? As has been a constant refrain throughout this thesis, the accident of sex cannot be reduced to any single part of the individual as some philosophers attempted in the opening chapter. Rather sex belongs to the whole male or the whole female and is expressed in various parts. These various parts then are united so that we can intelligibly speak of male and female, through their directedness towards offspring. Their difference consists in the radically different manner in which the male and the female are directed towards offspring. This radical difference is made manifest in varying body plans and bodily organs, both directed towards offspring in the unique ways they are.

In colloquial terms we do not speak about inseparable accidents or male and female accidents or generative powers. We speak simply about male and female, and their difference consists in what I have just identified. Genital organs, gametes, sex hormones, sex

chromosomes, genetics and body morphology are all united through their directedness towards offspring in the unique ways they are in males and females. These aspects of sex are united and directed towards offspring in a species-specific manner such that the role played by the male and female in each species can vary considerably.

In the next chapter, I will clear up a number of loose threads including how my account of sexual difference applies in other species, the role of finality, where DSD enter into my account and finally, and I will also consider the question of whether or not a change in sex is possible, and, if it were, what it would mean for my understanding of sexual difference.

Chapter VI – Solutions to some difficulties

I) Questions and clarifications

In the last chapter I made my case for understanding sex, within an Aristotelian metaphysic, as an inseparable accident which arises from matter. This inseparable accident is a manifestation of the power of generation which all living things possess insofar as they are alive. This account raises a number of questions and requires clarification. Foremost, my discussion has more or less assumed an Aristotelian conception of final cause or teleology as a real feature of the world outside of the human mind. Additionally, there are three related topics in need of discussion, namely, how my account of sexual difference applies to other species, where disorders of sexual development (DSD) fit into my account of sexual difference and how we should understand the possibility of a sex change within the framework I have provided.

Accordingly I will explain and defend an Aristotelian-Thomistic conception of final causation and argue that it has the determining role in sexual differentiation. I will explain how it relates to efficient causation, and why we might think of it as a given of experience. Second, I will explore how my account of sexual difference applies to other species, including those which have male and female parts in the same individual of the species as well as those which change sex throughout their lives. I will argue that the power of generation does not always manifest as a male or female inseparable accident and that these sexed based terms are used analogously. Third I will explain where DSD fit into my account. I will argue that the majority of cases of DSD create no difficulty for my account of sexual differentiation since the sex of individuals with these conditions remains, in general, perfectly clear. Rare cases which create genuine sexual ambiguity raise serious epistemological rather than ontological difficulties. Finally, while we know some species can and do change sex, I will raise the question of whether this is possible in the human case. Here I will attempt to articulate what it would actually mean for an individual human male or female to become another sex. I will suggest the radical nature of this change

indicates that it is not possible in practice, and even in principle, the relation between the accident of sex and the substance in which it inheres suggests such a change is not possible. The disanalogy between sex and other inseparable accidents such as ethnicity, gives further weight to this position.

These difficulties addressed, I will be in a position to explore the manner in which sexual difference in the human species is different to sexual difference in every other species.

II) Final cause and the determination of sex

As Aristotle describes it in the *Physics*, the final cause or the teleological cause is the "end or 'that for the sake of which' a thing is done" (194b32-34) and he gives the example of walking for the sake of health. Elsewhere, in the *Parts of Animals*, in the context of discussing how natural things come to be, Aristotle wants to know which cause comes first, "the cause for the sake of which" (the final cause), or "the cause when the beginning of motion comes" (the efficient cause) (PA, 639b12-14). He says: "Plainly… that cause is the first which we call that for the sake of which. For this is the [reason for the existence] of the thing, and the [reason for the existence of things] forms the starting-point, alike in the works of art and in the works of nature" (ibid, 639b14-16).[1] In relation to the 'works of art', craftmanship or intentional activity in general, Aristotle's point is clear enough. In building a house, I have the idea of the house present in my mind in some way before I start on the construction. The construction is construction towards a certain end and once the house is built, the end that was in my mind is now manifest. Understanding how the house came to be in other words, cannot be made intelligible without reference to 'that for the sake of which' it is built.

Without wishing to enter into complicated discussion in the philosophy of mind concerning how this intentionality is possible, the notion of 'end' in relation to the human mind is at least somewhat intelligible even while its explanation might remain mysterious. However,

[1] While I have used Ogle's translation of Aristotle's *Parts of Animals* throughout, here I insert Gilson's "reason for the existence" for the sake of clarity (1984, 10).

understanding how the notion of 'end' could be said to exist in the 'works of nature' is less clear. As Gilson phrases the difficulty: "One asks oneself how it could be that something which does not yet exist could direct and determine that which already is, though it be only to conduct its operations or direct its growth" (1984, 10-11). While the mind operates as a kind of explanation for the concept of 'end' at the human level, if there are 'ends' in nature, it is not clear "in what mind these ends are first conceived" (ibid, 11). Again though, the difficulty of accounting for some thing within a given ontology is not reason in itself to reject that thing. Indeed, for Aristotle, *that* teleology was a real aspect of nature was not so much a result of a process of reasoning as a matter of fact which itself served as the basis to explain order in nature (ibid, 10). It is important therefore to distinguish between the question of whether finality exists in some thing or other, and what the ultimate source of that teleology is (Feser 2014, 89).[2] If teleology is a given of experience, then the question of its source can be bracketed off, as it were.

Why though might we think that teleology *is* a given of experience? As Aquinas succinctly puts the matter: "Every agent [efficient cause] acts for an end: otherwise one thing would not follow more than another from the action of the agent…" (ST. I, Q.44, A.1). The basic idea is that the order evident in nature is only explicable if final cause is a real aspect of reality. The ice cube tends to melt at room temperature rather than solidifying further. The acorn, under the right conditions, tends to grow into an oak tree rather than a fern or a baby or do nothing at all. These things have a range of effects and not others. As Feser explains, that these things have the specific effects they do

> "*rather than some others or none at all – or counterfactually, that they would have had those specific effects had they not been impeded – is in Aquinas's view explicable only if we suppose that there is something in them that is directed at or points to precisely those outcomes rather than others, as to an end or goal*" (2014, 92).

One way to view Aristotle's and Aquinas' idea about finality is as a modus tollens to Hume's famous modus ponens. We can reconstruct Hume's sceptical argument against causation in the

[2] Aquinas famously finds the ultimate source of final cause in the divine intellect. See Footnote 8.

following way: if there is no "necessary connexion" that "binds the effect to the cause", then events are "loose and separate"; there is no "necessary connexion" that "binds the effect to the cause"; therefore events are "loose and separate" (1777, VII). As the argument indicates, if there is no real connection between cause and effect, outside of the human mind that is, it is not clear that it is even intelligible to speak about cause and effect. Rather as Hume infamously argued, "[o]ne event follows another; but we never can observe any tie between them. They seem conjoined, but never connected" (ibid). An Aristotelian perspective on finality turns this argument on its head though. We can accept the conditional but affirm that events are *not* "loose and separate". In which case, there must be some "necessary connexion" that binds cause and effect. So now the argument runs as follows: if there is no "necessary connexion" that "binds the effect to the cause", then events are "loose and separate"; events are not "loose and separate"; therefore there is some "necessary connexion" that "binds the effect to the cause".

First, it should be noted that Aristotelians do not typically discuss "necessary connexions", but they do, as we saw above, discuss tendencies, or causes being *directed to* or *pointing to* certain events. Second, there is no *aporia* – "a puzzle arising from the existence of apparently equally strong arguments for two or more inconsistent claims" (Feser 2016, 485). The arguments for and against order or causation are not equally strong. For the Aristotelian, or the realist more generally, the fact that events are *not* "loose and separate", that reality is, for the most part, orderly, is taken to be a given of experience, and this given is only explicable if final cause is a real feature of reality. The Humean empiricist must deny this order as only apparent due to his inability to perceive any "necessary connexion" between cause and effect. This position though, as well as starting in the wrong place, ends in absurdity where reality becomes unintelligible. In fact, for the Aristotelian, the best way to view Hume's argument is a *reductio ad absurdum* against the idea that form and finality are not real aspects of reality.[3]

[3] The Humean alternative of "constant conjunction" (1777, passim) can only ever *describe* relations or what actually happens but is incapable of explaining *why* those relations and only those relations or range of relations result. If the opponent of teleology really does want to explain the relations between the ice cube and melting, and the phosphorus and burning, he can either appeal to something intrinsic or extrinsic to the cause and effect. If extrinsic, he could appeal to God to explain why it is that A tends towards B. But this occasionalist position is itself clearly teleological. Alternatively, he could appeal to 'laws of nature' to explain the apparent regularity of cause and effect. It is not clear though that this explains anything for this simply raises the question of what those laws are and why they hold at all. If the laws themselves are just a

While there has been a moderate revival of interest in these ideas,[4] it seems that part of the reason for their continued unpopularity arises from the historical association between teleology and theology. As Gilson puts the matter: "The mixture of theology and philosophy of nature has exercised a disturbing influence on the history of teleology" (1984, 143). In the early modern period, thinkers like Boyle and Newton thought an appeal to extrinsic teleology was an essential aspect of an orderly universe and later these ideas were developed and given especially influential articulation in Paley's design argument for the existence of God (Feser 2015, 30). There are of course further challenges arising from Darwinian evolution,[5] but even if these challenges are correct, they only apply to teleology narrowly conceived. There are, rather, at least five levels at which teleology might be said to exist, at least two of which have nothing to do with evolution: *basic causal regularities*; *complex inorganic processes*; *basic biological phenomena*; *distinctively animal life*; and in *human thought and action* (ibid, 36-40). In terms of *basic causal regularities*, teleology is exhibited when I drop a stone into water and it sinks rather than floats, or causes the water to boil or explode or whatever. There is a tendency in the stone, given the kind of thing it is (its essence) and the properties (or powers) it has, to sink in water, which has its own essence and properties. In terms of *complex inorganic processes*, consider the water cycle where each stage is directed towards some outcome, or range of outcomes, and not others i.e. condensation to precipitation to collection to evaporation, and back to condensation (ibid, 38). This process cannot be made sense of without reference to ends or to one stage being directed to another, for there are all sorts of other

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shorthand for a kind of regularity, then nothing has been explained since we have turned to one regularity to explain another. But regularity itself is what needs explanation so an appeal to it results in a kind of circularity (Feser 2014, 95-96). A different conception of 'laws of nature' sees them as irreducibly theological, "a shorthand for the idea that God has set the world up so as to behave in the resulted way described by the laws" (ibid, 20). This option, however, is unlikely to appeal to the Humean. Against these extrinsic relations between cause and effect, intrinsic relations are possible, but it is hard to see how these relations could be described in non-teleological terms. Oderberg argues, for example, that "*laws of nature are laws of natures*" (2007, 144). Natures are just the essences of things, and this includes their potencies for some ends and not others. Laws of natures, in other words, are teleological because essences (as characterised by Aristotle) are teleological.

[4] Although philosophers within this 'revival' do not use language of 'finality' or 'final cause', some do speak of powers or dispositions as 'pointing' or 'directed' towards their characteristic manifestations. See, for example, Molnar (2003, Ch.3) who speaks of "physical intentionality"; Heil (2003, 221-222) who discusses "natural intentionality"; Place (1996) who views dispositions being "intentional states". Other examples of philosophers sympathetic to the reintroduction of teleology, include Hawthorne and Nolan in their paper 'What Would Teleological Causation Be?' (2006) and Thomas Nagel in his book *Mind and Cosmos* (2012).

[5] Even if evolutionary theory poses a problem for some kinds of biological explanation, there is a difference between 'functional biology' and 'evolutionary biology'. The former is concerned with the structure of an organism, the function of its parts, the process of formation of those parts and their genetic basis (Feser 2019, 400). Even if evolutionary theory banishes teleology in the process of the formation of species, how a species operates here and now in terms of the operations of its parts cannot be understood outside of a teleological analysis. See also Feser (ibid, 406-420), for an argument that evolution presupposes teleology.

effects which we rightly regard as not part of the water cycle as such. For example, as a result of the water cycle, someone dying of thirst in the desert might have his life saved. There is no way of saying whether this causal outcome is relevant to the water cycle, in the sense that it should not be understood to be a part of the water cycle, unless we understand the cycle teleologically.

The last three levels of teleology correspond to the three forms of life identified by Aristotle[6] and discussed in the next two chapters. At the level of *basic biological phenomena*, teleology can be seen, for example, when the acorn grows into the oak tree rather than something else, and other similar processes. In the case of *animal life*, in the desire that a dog has for food, and at the level of *human thought and action*, teleology is most evident in the intentional workings of the human mind. While alternative explanations of the order in each of these processes can be offered, [7] the point here is that the apparent omnipresence of teleology is a good reason to think that teleology should be seen as a given of experience, even if its origin remains ultimately mysterious.[8]

With all this in mind, we are in a position to see how teleology ties my account of sexual differentiation together. The genetic mechanisms of the male and female development, sexual differentiation, the formation of organs and body morphology are all partial manifestations of the power of generation as inseparable male and female accidents. Collectively, these accidents manifest the power of generation as male and female. These accidents are united through their shared directedness towards offspring. These accidents can be identified as related to one another because of their *unity through teleology*. Just as we can identify what is and what is not

[6] *De Anima* (414a29-414b2, 414b16-18).

[7] See Chapter IV, where I discuss computational accounts of order. These accounts of order attempt to make it intelligible without teleology. However, as I argue, they in fact presuppose teleology rather than jettison it.

[8] On this point, Feser once again helpfully distinguishes between five different views regarding teleology and its origin (2015, 32-36). *Platonic teleological realism* "holds that the irreducible teleology manifest in nature is extrinsic, entirely derivative from an outside source" (ibid, 34). Anaxagoras, Plato, Newton and Paley are considered representatives of this view (ibid, 34-35), and advocates of occasionalism, as discussed in Footnote 3, also have this extrinsic conception of teleology. *Aristotelian teleological realism* holds that teleology is "intrinsic to natural substances and does not derive from any divine source" (ibid, 35). *Scholastic teleological realism* sees finality as "immanent… to natural substances… [which] must *ultimately* be explained in terms of the divine intellect" (ibid). This kind of teleology is the subject of Aquinas' Fifth Way (ST. I. Q.2, A.3). Finally there are two anti-realist teleological views: *teleological eliminativism* which claims there is "no genuine teleology in the natural world" (ibid, 33) and *teleological reductionism*, "the view that there is a sense in which teleology exists in nature, but that it is entirely reducible to non-teleological phenomena" (ibid).

part of the water cycle *qua* water cycle, we can identify what is a manifestation of the power of generation *qua* power of generation. Lungs and pancreas for example, are rightly not included in an account of sexual differentiation because they are not directed towards offspring. Male, understood as a holistic accident including internal and external genitalia, morphology, genetics and hormones, is inherently directed to the next generation "in another", and, female, also understood as a holistic accident including internal and external genitalia, morphology, genetics and hormones, is inherently directed to generation "in itself" (GA, 716a 13-14). The inseparable accident of male or female, understood in this holistic and teleological manner determines the sex of the individual rather than any one constituent of it.

Now, in this regard, there is an important distinction between two senses of determination, which correspond to the efficient[9] and final cause of being male or being female. There is a sense in which we can say that sex is 'determined' by chromosomes and genetics etc., in that, "always or for the most part" (*Met.*, 1065a5), these aspects of sex act as the *efficient* cause for an individual's 'being male' or 'being female'. An individual possessing XY chromosomes, a functional SRY gene, being directed towards the production of small gametes, and other relevant factors outlined in Chapter I, will be determined to be male insofar as these parts are the *efficient cause* of his being male. Likewise, an individual possessing XX chromosomes, lacking a SRY gene, being directed towards the production of large gametes, and other relevant factors outlined in Chapter I, will be determined to be female insofar as these parts are the efficient cause of her being female. As a matter of epistemology, in those rare cases where there is any doubt, an examination of these factors will assist in sexual determination.[10]

There is however another important sense in which sex is determined, not by its efficient cause, but, more fundamentally, sex is determined by its *final cause*. It is the final cause that 'makes it the case' that this individual is female, and that individual is male. The final cause of the power of generation is the generation of offspring, and males and females do this in unique

[9] As I stated in the opening chapter, efficient cause refers to where a thing comes from or how a thing came to be. As Aristotle puts it in the *Physics*: efficient cause is "the primary source of change or coming to rest; e.g. the man who gave advice is a cause, the father is cause of a child, and generally what makes of what is made and what causes change of what is changed" (194b29-32).

[10] I discuss a number of these cases later in this chapter.

ways, the former, “in another” and the latter “in itself”. The inseparable accidents that manifest the power of generation are differentiated for the sake of generation and in the different manner in which males and females together achieve the end of generating offspring. For mammalian species in general, the intrinsic potency to become pregnant and give birth is what makes a female a female, and the intrinsic potency to impregnate another is what makes a male a male. This end is what determines an individual as a particular sex.

As I explained above, Aristotle rightly regards the final cause as prior in order of explanation to the efficient cause, and Aquinas explains the same idea in the following way:

> “*Moreover, it must be noted that, even though the end is the last thing to come into being in some cases, it is always prior in causality. Hence it is called the ‘cause of causes’, because it is the cause of the causality of all causes. For it is the cause of efficient causality, as has already been pointed out…; and the efficient cause is the cause of the causality of both the matter and the form, because by its motion it causes matter to be receptive of form and makes form exist in matter. Therefore the final cause is also the cause of the causality of both the matter and the form. Hence in those cases in which something is done for an end (as occurs in the realm of natural things, in that of moral matters, and in that of art), the most forceful demonstrations are derived from the final cause”* (Commentary on the Metaphysics, Bk. 5, L.3).

He makes the same point even more starkly in *De principiis naturae*: “[T]he end is not the cause of that which is the efficient cause, but it is the cause of the efficient cause being an efficient cause” (PN, 29). In other words, even though the efficient cause (and the formal and material cause) of a thing may come prior in the temporal order, in the order of causality, that is, ontologically speaking, the final cause is always prior.

In relation to sexual differentiation, the SRY gene, and the Y chromosome, if they are present, are present from conception, the beginning of a new human life (Sadler 2015, 42). They exist prior to gametes, hormones, internal or external sex organs or any other sexually differentiating criteria, and each of these aspects of sex exists temporarily prior to the final cause too. But even existing prior in the order of time, they are only the efficient cause of the male accident of sex because of their being a final cause for that accident. In other words, to

say that an individual human is a male *because* he has an SRY gene or Y chromosomes or small gametes or whatever, is to put the cart before the horse. Rather, it is the case that an individual has an SRY gene or Y chromosome or small gametes or whatever, *because he is male*. His being male, as I have described it – as an inseparable, incomplete and holistic accident of the individual, which unites the aspects of sex towards their final end of the generation of offspring in the unique way that males do – makes it the case that these aspects of sex are aspects of sex *of a male* and play the role in sexual differentiation that they do. The SRY gene and the Y chromosomes therefore are not the ultimate determiner of sex, in the sense of making an individual the sex that they are. It is the unique way of achieving the final cause of generation that determines an individual to be male or to be female.

All the aspects of sex that I examined in the first chapter as possible candidates for a reductionist account of sex, are part of the efficient cause of sexual difference, but this cause is subordinate to the final cause. As I argued in the first chapter, we could only know that gametes or chromosomes or any such thing were relevant to sexual differentiation in the first place, rather than hair colour or body habitus for example, because we already have a conception of what male and female are, and we know what male and female are, because we grasp their final cause. As important as discoveries about the mechanism of sexual differentiation and its various efficient causes are, these should not alter our understanding of sexual difference as such. Sexual difference as male and female is something we immediately grasp and indeed one of the first things we learn about the world, and what we grasp is primarily a final cause.

III) Sexual difference in other species

How then does my account of sexual differentiation apply to other species? More specifically, can sexual differentiation be characterised in the same way for all species? In short, no it cannot. Although my characterisation of the power of generation and its manifestation through the inseparable male and female accident should apply to other mammalian species, it

does not apply in precisely the same way in all species.[11] Here I want to explore how my characterisation of sexual difference applies to species which have male and female parts within the same individual, as well as those species which are capable of changing sex.

While I maintain, with Aristotle, that all living things possess the power of generation (DA, 415a23-415b1), a proper accident which arises from their form as a living thing and which applies to all members of the species, species which reproduce asexually do not (typically) have the accident of the male or female sex.[12] Due to the fact that in some species two different gametes are not required for reproduction and individuals within a species are not divided in relation to their role in reproduction, the power of generation is not manifest as inseparable male and female accidents. Bacteria, archaea, many plants and fungi, and some animals reproduce in this way. The metaphysical classification of sexual difference I have offered would need to be adapted to each of these cases depending upon the manner of generation and sexual differentiation. Perhaps it would be better to say in cases without male and female that the power of generation manifests itself directly, not through any intermediate individuating accident.

To be sure, even among species which do require two different gametes for reproductive purposes and in which sexual differentiation is present, it is difficult to provide a completely general classification for the accident of sex. There are a number of common variations which indicate that sex should not be viewed as an inseparable male or female accident in those species. In many plants, the rose for instance, male and female parts are present in one and the same flower in the same individual within the species. In others, such as the cucumber, there are separate male and female flowers, and in others again, such as the kiwi plant, individual members are entirely sexually differentiated, where some members produce pollen exclusively

[11] Precisely because my account is so general, it does not provide any specific mechanism for *how* generation, that is, reproduction, actually occurs within distinct species. Such is the job of the biological sciences and not a metaphysical analysis of sexual difference.

[12] There are various kinds of asexual reproduction including binary fission, budding, vegetative propagation, spore formation (sporogenesis), fragmentation, parthenogenesis, and apomixis. In each case though, there is no union of gametes i.e. sperm and egg. See 'Asexual Reproduction'. Komodo dragons are capable of sexual and asexual reproduction through a process called parthenogenesis – self-impregnation resulting in the production of a zygote from an unfertilized egg. Such species are sexually differentiated and engage in parthenogenesis when there are no males available for breeding. See 'Parthenogenesis'.

and others, ovules exclusively.[13] Perhaps in this last case, because the members of the species are sexually differentiated in a similar manner to sexual differentiation in our species, the classification of sex as an inseparable, incomplete and holistic accident of the individual still applies. However, in the other cases, my model of sexual differentiation does not apply in the same way.

Regarding these plants which have male and female aspects, either present in the same flower (rose), or in different flowers within the same individual (cucumber), how should sex be classified? While we can say that the power of generation is present, as a proper accident flowing from the form of the species, and even that the male accident of sex and the female accident of sex are present *in some way*, these accidents do not seem to be holistic inseparable accidents arising from matter as we find in the human species. This is so for at least two reasons, both of which shed light on the inseparable sexual accident in the human species.

First, in the human species and other mammals, the male and female accident have an *exclusivity* among individual members that is not present in many plants. In the rose and cucumber for example, there is an admixture of male and female parts within one and the same individual that is not present in mammals.[14] As I have argued, sexual difference cannot be reduced to one particular aspect of the body, whether that be a chromosomal structure or a gamete. Part of the reason for this is that such a view presupposes that we already have some notion of sexual difference in order to know that it is females who produce eggs and have XX chromosomes (in general) and males that produce sperm and have XY chromosomes (in general). Instead, sex is a holistic accident which encompasses and unites all the various aspects of sex, and directs them towards offspring in the characteristic way that males as males are directed towards offspring and the characteristic way that females as females are directed towards offspring. But precisely because the male and the female accidents of sex are holistic, that is, apply to the whole individual substance, they are also *exclusive* and, as such, there can be no admixture of male and female in the human species. In the rose, male and female belong

[13] See 'Do Plants Have Sexes?'

[14] Perhaps something similar could be said to happen in cases of persons with DSD. I discuss this possibility in the next section.

instead to parts within the same individual and are therefore not exclusive and individuating in the manner in which they are in our own species.

The male accident of sex directs the individual human substance to fatherhood (the specifically male way of procreating) and the female accident of sex directs the whole substance to motherhood (the specifically female way of procreating). These are the two fundamentally different and mutually exclusive ways in which the power of generation is made manifest. There is no such mutual exclusivity among these roses and cucumbers however since each has male and female parts within the same individual. In which case they are directed towards a kind of generic parenthood, as it were, rather than anything with the exclusivity of motherhood and fatherhood.

Why then do we use the terms "male" and "female" in reference to both the human species and these various plants when it is not at all obvious what they have in common? Why is it that within the flower, we refer to the stamen as the male part of the flower and the pistil as the female part of the flower? The reason is because the stamen participates in the production and distribution of pollen, and the pistil produces ovules which are ultimately fertilised by the pollen. This though merely pushes the question back a stage. Why is it that the production of pollen is 'male' and the production of ovules is 'female'? Clearly there is a kind of analogy between male and female in the human species and male and female within the flower as two constituent parts needed for generation. But why again is it that the pollen producing parts are male, and the ovule producing parts are female rather than the other way around? In the biological sciences, the answer is concerned with gamete size which functions as one of the efficient causes of sexual differentiation. The smaller gamete is referred to as 'male' and the larger gamete is referred to as 'female'. This appears to be the only universally shared aspect of 'male' and 'female' across all species.[15]

[15] This designation does result in a bizarre situation in seahorses in which those that give birth are designated 'male' as opposed to 'female'. Their designation as 'male' is based on their small gamete size. (See 'New research uncovers the unique way seahorse fathers give birth'). While I do not wish to say that this is incorrect as such, I do wish to highlight the fact that this designation arises from the privileging of gamete size over all other factors. In particular, it involves privileging gamete size over morphology and the manner in which the animal generates its offspring. I want to suggest alternatively that we grasp the final cause of male and female in relation to childbirth (and morphology) more readily than gamete size. That is to say, before the discovery of gamete size, presumably we would have designated the seahorses which give

The second reason that sex should not be thought of as an inseparable accident of the individual in plants in which male and female elements are present in the same member a particular species, arises from the fact that these elements are present in all members of the species in the same way. Unlike the human species and other mammalian species which have clearly sexually differentiated members among their ranks, there are sexually differentiated flowers *within the same individual* among cucumbers, and there are sexually differentiated parts *within the same flowers within the same individual* among roses. As I suggested above, this seems to indicate that the power of generation is made manifest in a more immediate manner, not through any intermediate inseparable accident. Unlike humans, the power of generation in cucumbers and roses does not manifest as two distinct holistic accidents present in some members but not others. Rather, the power of generation includes 'male' and 'female' in each individual.

Part of the reason for this brief analysis of sexual differentiation among plants is to emphasise the analogous meaning of 'sex' and its primary correlates 'male' and 'female' in different species. Male and female as applied to our species do not mean precisely the same thing when applied to other species.[16] On the contrary, having the accident of 'black hair' for instance, does apply to our species in the same way that it does for other species – the meaning is univocal. In which case, even though my analysis of sex as an inseparable accident can apply to other mammals, its application and the meaning of male and female is quite different, as I will show in the next chapter. In short, the meaning of the terms male and female, and the kind of accidents they are, is highly species dependent.

What about those cases of sexual hermaphroditism? Where do these enter into my account of sexual difference? According to my argument in the last chapter, following Aquinas, I argued

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birth as female by the very fact that they gave birth, and the other non-giving birth seahorses would have been labelled as male by default. With the arbitrary privileging of gamete size though, these seahorses are now called 'male'. It is not clear why gamete size should be thought of as the deciding factor except for its conforming to our contemporary prejudice which seeks to reduce, or give explanatory priority to parts over wholes, as explained in Chapter I.

[16] A point that should come out clearly in the next chapter.

that 'being male' and 'being female' should be regarded as inseparable accidents arising from matter with a 'special' relation to form. Aquinas implies that this 'special' relation to form means that the inseparable accident is no longer present after death (Bobik 1965, 105). On the one hand, in cases of sequential hermaphrodites such as the blue-head wrasse,[17] and crocodiles which have temperature-dependent sex determination (Gilbert 2000), it seems it must be the case that the accident of sex is an inseparable accident with a special relation to form since the accident (male or female) still ceases to be with the death of these animals. On the other hand, recall that, for Aquinas, part of what it meant to be an inseparable accident was having "a permanent cause in their subject" (*Q. D. de Anima*, A.12, R.7). I argued that this meant that so long as a substance existed, the accident also existed. In cases of sequential hermaphrodites though, the accident male or female *does* cease to exist, by changing from one to the other, even while the substance in which it inheres persists. The solution to this difficulty it seems, is to recognise that while the male accident ceases to be and is replaced by the female, it remains the case that the power of generation must express itself through one of these two accidents and no other. Perhaps therefore I can say that the proper accident which is the power of generation, can manifest as the inseparable accident male or the inseparable accident female, but their having a permanent cause in their subject does not entail the fixity that it does in the human species. The mutability of sex in these creatures arises from their essence.

As with my analysis of sexual differentiation in plants, while sexual differentiation fundamentally relates to the generation of offspring in all cases, how it is manifest is highly species dependent. Furthermore, the analysis of sexual differentiation as a process of metaphysical reflection must be informed by the actual data of the biological sciences. Investigating the mechanisms of differentiation and the manner of change between male and female in these species will shed light on how the accident is understood.

[17] Among the coral reef fish, there are individuals who begin life as males and remain so; there are individuals who begin as females and become males; and there are females who remain females. They change from one sex to the other, but this is not merely a change in gamete production, but also in the morphology of these fish, where the sex-changed males are significantly larger than the non-sex-changed males (Roughgarden 2013, 31-33).

IV) Disorders of sexual development

What about disorders of sexual development (DSD)? Where do people with such conditions fit into my account of sexual differentiation? People with DSD – sometimes called 'intersex' – can have non-standard sex chromosomes such as X0 (Turners syndrome) and XXY (Klinefelter's syndrome), or conditions such as congenital adrenal hyperplasia (CAH) and androgen insensitivity syndrome (AIS) which can result in sexual ambiguity of one kind or another (Sadler 2015, 273). The aspects of sex which I have identified, that is, genetic, chromosomal, hormonal, gametic, morphological as well as internal and external genitalia, are not all consistently 'male' or 'female' in the way that they would usually be identified.[18] As I discussed in Chapter I, the existence of people with such conditions is advanced as a challenge to the notion that there are only two sexes, since, it is alleged, people with such conditions are not clearly male or females. While this might be a serious challenge to some accounts of sexual differentiation, it is not a challenge to mine. Rather, such conditions are in fact an indirect confirmation of my account of sexual differentiation because these conditions can only be understood as disorders due to the role of final cause in sexual differentiation. We can see this by returning to the challenge, examined in the opening chapter, that instances of DSD imply a third sex.

As I showed, there are a number of authors who suggest that people with DSD should be understood as instances of a 'third sex', or even show that there are many more sexes. But is this right? It seems we can understand the notion of a 'third sex' in two ways, as something other than male or female, or as some combination of the two.

Consider first understanding a 'third sex' as something neither male nor female, nor a combination of the two. In the human case, this is not intelligible. As I argued in the last chapter, the male accident of sex and the female accident of sex are incomplete *per se*, which is to say, as manifestations of the power of generation, they cannot achieve the end of generation

[18] That is to say, the aspects of sex usually come in a cluster such that the male has larger amounts of testosterone, has a penis and testicles, produces sperm and has an XY chromosome with a functional SRY, and the female produces lower amounts of testosterone has a vagina and ovaries, produces eggs and has an XX chromosome. In people with DSD there can be ambiguous differentiation between testicles and ovaries for example, or an apparent mismatch between these various aspects of sex which tend to appear together.

in isolation from one another. But their completion *per se* needs nothing other than the male and female accidents, there is no room for a third in the generation of offspring since it would have no role to play. In other words, there could not be a third sex or forth sex or any other number of sexes, since such sexes would have no role to play in the generation of species *qua* irreplaceable parts needed for the completion of the power of generation. Male and female is necessary and sufficient for the task.

The existence of a third sex, *per impossible* given the kind of beings we actually are, would imply the existence of individuals who have no manner of realising the power of generation not just as a contingent matter, but in principle. Unlike individuals who suffer with infertility for whatever reason, where the infertility can be understood as a kind of defect such that the power of generation cannot come to completion as a contingent matter, this third sex, in our species, would be intrinsically incapable of the generation of offspring. On the account I have provided such a thing would have no power of generation, but this is not possible since that is just part of what it is to be a living thing.[19]

Clearly then there cannot be a third sex in the human species so understood. What about the second option where a third sex is understood as an individual with some combination of male and female characteristics? The 'third sex' in this case would be an amalgam of male and female. While persons with DSD would not be a true third sex, is it nevertheless correct to say that they are neither male nor female but an amalgam of the two? As said, sexual ambiguity where there is the presence of both male and female characteristics in the same individual can be caused, for example, by variations of the sex chromosomes, or by congenital adrenal hyperplasia (CAH) and androgen insensitivity syndrome (AIS). Now, on the account I have provided, the final cause of the accident of sex is the determiner of sex, that is, the

[19] It seems perfectly possible that we might encounter some species on our planet or elsewhere that *does* need a third sex (or more) for the completion of the power of generation. That is to say, insofar as a thing is living it must possess the power of generation which has the production of offspring as its final cause, and it is possible that a being needs three or more sexes as accidents differentiating individuals within a species, or as accidents expressed in one and the same individual within a species, to achieve this end. The former would be a sexually trimorphic (or tetramorphic etc.) species, and the latter might be more like roses with the presence of *three* separate elements and accompanying gametes, instead of just two. In each of these cases, for the existence of a third sex, each sex would have to play an essential role in the generation of offspring such that is would not be possible to generate offspring without the genetic involvement of all three. Just as in our species, a male or female alone is not sufficient to reproduce, for a sexually trimorphic species, two of the three sexes would not be sufficient to reproduce. This is not the case for any species as far as we know, but there is no a priori reason to think it is not possible.

directedness towards generation in the unique ways in which males and females do. In which case, in order to discern the sex of the individual with CAH, or AIS, or any other DSD, the question to ask is: 'is this individual able to become pregnant, at least in principle if not in practice, or is this individual able to impregnate another, at least in principle if not in practice?'

It is clear that, whatever the details of an individual's chromosomes, hormones or other aspects of sex, if an individual can become pregnant and give birth, that individual is a female. The presence of XX chromosomes, the absence of a SRY gene and the rest of the story, is usually part of the efficient cause of this end. However, as some instances of DSD show, they are not strictly necessary efficient causes for that particular end.[20] There are other chromosomal variations, X0 for example, which can still be the efficient cause of the final cause of being able to become pregnant and give birth. Since the final cause is the determiner of sex in the sense of making an individual the sex that they are, the particular efficient causes, so long as they are directed towards that final cause, are secondary.

The difficulty arises in those cases where individuals with DSD cannot either become pregnant or make another pregnant, and the relevant organs for pregnancy or insemination are either present, but not fully differentiated or developed, or not present at all but other factors, such as chromosomes, indicate that they should be. Such cases can create genuine epistemological ambiguity. That is, it might be the case that we never know whether an individual so described is male or female, whilst nevertheless maintaining that they are one or the other.[21] To explore each different of disorder would go beyond the scope of this chapter, so I offer three examples to illustrate how DSD should be understood within the framework I have provided.

A woman with an apparently normal SRY gene who gave birth: Nicanor Austriaco makes reference to a report "describing an individual who developed as a normal woman and was

[20] As explained in Chapter IV, this would be an instance of a living organism displaying the property of 'robustness' whereby a system, in the case, the sexual system is able to "tolerate much error and variation without collapsing" (Austriaco 2002, 669).
[21] Gamble and Pruski suggest this might be the case for individuals with XX–XY mosaics/chimeras which, they assert, are the most difficult to assign to a single sex (2018, 179).

capable of conceiving and giving birth to a daughter, despite having a Y chromosome and a normal Sry gene..." (2013, 702). On the account of sexual differentiation I have offered, and, I submit, on any account of sexual differentiation which does not unduly prioritise genetics above all other considerations, there is no ambiguity in this case at all. The individual described is unambiguously a female precisely because she is able to give birth. What this case clearly shows is that the final cause determines the sex of the individual and that there can be more than one causal pathway which leads to the same end.[22] In other words, a different cluster of efficient causes can be driven by the same final cause and result in the same end. The mechanics of how this unusual situation resulted in a female able to gestate and give birth to a baby is unclear, but the actual sex of this individual, the specific inseparable accident that this individual has, is perfectly clear – she is female.

Congenital adrenal hyperplasia: *Langman's Medical Embryology*, describes males and females with CAH as follows:

> "*Females with this condition can have a range of sexual characteristics varying from partial masculinization with a large clitoris to virilization and a male appearance. In a rarer form of CAH, there is a 17alpha-hydroxylase deficiency resulting in females having female internal and external anatomy at birth but failure of secondary sex characteristics to appear at puberty due to an inability of the adrenals or ovaries to produce sex hormones. Consequently, there is no breast development or growth of pubic hair. In males with 17alpha-hydroxylase deficiency, virilization is inhibited"* (Sadler 2015, 273).

In cases of individuals with CAH, it is clear enough whether an individual is male or female. As the text indicates, despite virilizaiton – where females develop characteristics of males[23] – females with CAH are clearly female. Why? Because the accident of sex remains directed towards generation in the characteristic female way. This remains the case, even when such individuals have fertility issues. The accident is unable to fully manifest, but it remains directed to its final cause. In males with CAH, virilization is inhibited, but they remain males due to their

[22] I explained in Chapter IV how a systems perspective is able to account for this. We could say this is a "system-nondisruptive mutation" which allows the overall trajectory of the molecular network towards 'being female' to remain intact (Austriaco 2002, 669-670).

[23] This can include thick, dark facial hair in the beard or moustache area, male-pattern baldness, loss of female fat distribution, decreased breast size, enlargement of the clitoris, deepening of the voice (see 'Virilization').

directedness towards generation in the characteristic male way.

Ovotesticular Disorder of Sex Development: There is a certain discrepancy in the literature over the description of this condition, sometimes equated with 'true hermaphroditism' (Bouvattier 2010), and sometimes contrasted with it (Sadler 2015, 273). In either case, it occurs in individuals who have both testicular and ovarian tissue, sometimes as a combined gonad, an ovotestes on one side but not the other, and sometimes on both; sometimes a testicle on one side and an ovary on the other; or sometimes where there is insufficient differentiation to determine what type of gonad is present. Importantly, there are no cases of such individuals, who may appear typically male or typically female, being able to impregnate themselves. This is significant because the final cause, the particular manner in which such individuals are directed towards reproduction determines whether they are male or female, and remains the test in each case. An individual is known with certainty as male or female in their generation of offspring, but when this is not possible, other markers indicate the directedness of the body towards offspring in the male or the female way, although they do not do so infallibly. This is because, as I argued, the final cause makes an individual the sex that he or she is, and it is the final cause which cannot be discerned. In such cases, there might be genuine epistemological ambiguity, but this does not imply ontological ambiguity.

An additional consideration implicit in the above as to why DSD should not be thought to constitute a challenge to the account of sexual differentiation I have presented, arises from the very fact that these conditions are *disorders* and are often accompanied by various deleterious effects on the individual with the condition. Chief among these deleterious effects of course are problems with fertility, but there are numerous effects depending on the specific DSD. Gamble and Pruski helpfully compare embryological DSD to heart defects, arguing there is "no spectrum of orientations… for the human heart… [only] a spectrum of pathologies that can alter the heart's ability to fulfil its purpose" (2020, 2). The same holds true for DSD.[24]

[24] It seems that one significant difference between DSD and other pathologies, relates to the social and relational importance of sexual difference which DSD potentially disrupt for the individual in a manner that heart and other pathologies do not.

In sum then, DSD do not constitute a challenge to the model of sexual differentiation I have provided because they do not and cannot change the power of generation. In the human species, this power is made manifest as the male or female accident which together constitute a complete power in operation, in substance, and *per se*. Individuals with DSD have conditions which can make the exercise of the power of generation through the male or female accident impossible. Since the manner of the exercise of the power of generation is the ultimate determiner of sex, it might be the case that it is impossible to discern the sex of a person as male or female even after investigation. Under certain circumstances, it might be the case that after examining the aspects of sex of an individual, it is possible to know that that individual is a female whose accident was unable to properly manifest itself, and vice versa in the male case. As argued though, there may be cases of genuine epistemological ambiguity.

V) Is sex change possible in the human species?

How should we understand the notion of a change of sex within the model I have offered? Here, I am concerned only with whether or not something like a sex change is possible, and to do that, we need an explicit understanding of what a sex change would actually be, and, with this in mind, what *kind* of change a change in sex would be. That is, would it be substantial change, an accidental change, or something else? Following this discussion, I will emphasise the disanalogy between the accident of sex and other inseparable accidents such as ethnicity to show that it might be possible to change the latter while not being able to change the former.

Now, as discussed, there are some species which are capable of changing sex, the blue headed wrasse, for instance, but many molluscs and worms are capable of changing sex throughout their lives too. Additionally, among molluscs, many have both male and female sex organs, produce male and female gametes and are capable, in certain circumstances, of self-fertilisation. It is not clear though that this proves anything about the human species or indeed any other species apart from those listed. As I argued above, the classification of sex as an inseparable accident of the individual does not apply to these species in precisely the way as it

does in the human case, due to the fact sex in these animals does not appear to have the kind of fixity present in the human species.

What then would a change of sex in the human species look like? I have already argued that sex cannot be reduced to a single part or a single aspect of sex, or even a cluster of parts, but must be understood holistically and include reference to its final cause. This implies, starting with the most superficial, that sex cannot be changed through a change of clothing, the wearing of make-up or the way in which one wears one's hair. It also implies that taking large doses of hormones associated with a particular sex and the suppression of hormones of the sex that one currently is, would not be sufficient to constitute a sex change. The taking of large amounts of testosterone as a female for instance, will create a degree of virilization, in the sense that that female will likely develop a typically male hair pattern, including facial hair, deepening of voice, different body fat distribution and muscle gain, among other effects. However, on my model, the holistic and inseparable accident of sex remains in such an individual, who is no less directed towards offspring in the uniquely female manner than she was before the taking of such hormones. This can be shown to be the case as soon as external hormones are removed. The body will attempt to manifest the power of generation in a typically female manner once more, instead of the male manner which the introduction of adventitious hormones artificially induced.

More radical changes, such as removal and attempted reconstruction of internal and external genitalia, would also not constitute a genuine sex change for the same reason. The body "views" as it were, the removal and reconstruction of internal and external genitals as a wound to be healed indicating its continued natural orientation to the sex it actually is, rather than towards the other sex. That is, the female body will attempt to heal *qua* female, and the male body will attempt to heal *qua* male. In fact, a genuine sex change, in say a change from female to male, would involve a total reorientation or redirection of the accident of sex towards its final cause, the generation offspring. This would involve a massive change in at least a sufficient number of the accident's aspects of sex, as efficient causes, so that the final cause

of generation could be achieved in a characteristic male way.

Furthermore, since the individual aspects of sex, hormones, genetics, genitalia etc., are not themselves sufficient to constitute sex, they cannot be changed piecemeal but must, in some manner, happen all at once. Imagine a scenario in which a uterus is inserted into a male in order that he may reproduce in a female way. He would still not be female because a uterus is only a uterus relative to its role in reproduction. The uterus is directed towards receiving male gametes from an external source, female gametes from an ovary, and their combing to produce a new individual who is then capable of developing in the uterus to birth. The male who has a uterus inserted would still be a male for his body remains directed towards producing offspring in the way that males do. It would still be directed towards producing sperm and impregnating another rather than being impregnated. That is, he remains directed towards biological fatherhood. His body *qua* his body is not directed towards motherhood. Rather, it would be the case that an artificial womb, and female gametes and the various mechanisms needed to maintain a developing individual in a uterus, would arise adventitiously. In no sense would this male have become female. The inseparable male accident of sex would still be present, awaiting completion from the female accident of sex. The uterus would be a kind of artefact that existed in his body, but is not part of his body and thus, not one of his aspects of sex. Because the accident in holistic, it must change in a holistic manner so that the whole individual is directed towards, in this case, biological motherhood rather than fatherhood.

These transhumanist fantasies aside, could not many of these difficulties be removed if we think about the idea of a sex change at the zygotic or embryological stage, where sexual differentiation does exist, but is not yet manifest in the various aspects of sex such as specific organs and morphology? Redirecting the zygote to achieve generation in a characteristically male rather than female way might be possible precisely because sexual differentiation is not yet fully manifest through the various aspects of sex. The accident of the female sex perhaps can be changed to the accident of the male sex at this stage. That is, a zygote with XY which, in general, is directed towards further male development, might have the Y removed and

substituted with an X, which, in general, would indicate the direction of the zygote towards further female development. Would this not constitute a change in sex? If it would constitute a change in sex, would the individual that was XY be the *same individual* that is now XX, or would the first individual have ceased to be and been *replaced* by a new individual?

Would a change in a zygote from XX to XY, or vice versa, constitute a sex change? As I have argued, it is not chromosomes as such that make it the case that some individual is male rather than female, and vice versa. Rather, it is the final cause, in this case, the manner of generation, that makes it the case that some individual is male rather than female, and vice versa. In which case, the change in a zygote from XY to XX is not sufficient to change the sex of an individual. There is, so far as we know, at least one case of a woman with XY chromosomes and a functional SRY after all.[25] However, precisely because XY is almost always directed towards the male, and XX is almost always directed towards the female, it does seem that a change from XX to XY, and XY to XX, really would constitute a sex change. If such a change were to take place though, would this involve the creation of a new individual and the annihilation of the old one? One reason for thinking that it might create a new individual arises from the manner in which we know that sex relates to form.

It would seem that a change in an embryo from an XX to an XY chromosome or vice versa would be an accidental change, rather than a substantial change, for, after the change, the human embryo remains. It would be altered rather than annihilated. However, I want to suggest because of the manner in which the sexual accident relates to the human form, this would really be a substantial change from one individual into a different individual.

To see this, recall my argument that the male and female accidents relate to form in a way peculiar to them, in a way that other inseparable accidents like ethnicity do not relate to form. This is the distinction between “accidents [which] follow on matter according to the ordering which it has [sic] to a special form” and “accidents [which] follow on matter according to the

[25] See Chapter I.

ordering it has [sic] to a general form" (Bobik 1965, 105). As I argued, male and female belong to the former type of accidents, and ethnicity belongs to the latter. The former type of accident ceases to be when the individual in which they inhere ceases to be, i.e. at death, whereas the latter type of accident, persists after death. As Aquinas says: "[T]he blackness of an Ethiopian's skin is from the mixture of the elements and not from his soul; and this is why it remains in him after death" (ibid).

To see what Aquinas is getting at and understand why it is relevant to the point I am making, consider a 'Caucasian male' corpse. This corpse used to be Jim. Jim died, and now we have a Caucasian male corpse. Jim was, properly speaking, a Caucasian male, the corpse however, properly speaking, is not a Caucasian male. 'Caucasian' applies to Jim and the corpse. 'Male' applies only to Jim. This is because of the ordering of the male accident to a "special form", as Aquinas puts it. We can say that the accident 'male' applies to Jim in his entirety. Every part of Jim is male. The accident does not attach to, nor is inherent in, any particular part of Jim. The whole of Jim is male. 'Male' (or 'female') is a holistic accident. It is not the case that any particular organ, bodily shape or even chromosome, is what makes Jim have the accident 'male'. Being a manifestation of the power of generation, it applies to him just insofar as he is a living thing.

The corpse however, which comes into being after the matter-form composite that is Jim disintegrates, is not a whole and complete being but a conglomeration of parts, temporarily united as evidenced by its tendency to rot, and this is why the accident 'male' applies to Jim, but not the corpse. The essential unity that is required for this accident, the unity that is provided by the directedness of the various mechanisms, hormones, genetics and phenotypical traits, is not present in the corpse, because the corpse lacks any intrinsic unity, or expressed tautologically, because the corpse is dead.

This analysis does not apply to the accident of 'ethnicity' because there is no intrinsic unity among the various features and characteristics that constitute ethnicity. Ethnicity is an umbrella

term which applies to a number of characteristics of humans which have no essential relation to one another. The accident of ethnicity therefore is a kind of shorthand that more or less arbitrarily groups these unrelated features together. In other words, it is not a true accident at all, but a conglomeration of accidents. The only unity these accidents have arises from the fact that they happen to appear together in many individuals. There is no teleological unity as there is in the accident of sex. This is why, as a conglomeration of accidents without any essential unity among them, 'ethnicity' can continue to exist in a corpse. The skin colour present in Jim, the degree of flatness of his nasal bridge, his lack of epicanthal folds, all continue to have their being in the corpse, at least for a time. Lacking any intrinsic unity among the parts that make 'ethnicity', no intrinsic unity is required in the substance in which they inhere for their continued being. Jim's skin tone is still present in the corpse and applies to just that part of the corpse, its skin. Jim's nasal bridge is still present in the corpse, and it applies to only that part of the corpse. 'Ethnicity' is nothing more than a collection of these accidents which are not intrinsically related to one another. When the substantial unity between matter and form in Jim breaks down i.e. when he dies, not being reliant on that unity before death, the accidents of ethnicity are not reliant on that unity after death. The corpse can therefore properly be called Caucasian but cannot properly speaking be 'male'.

I reintroduce this distinction to illustrate the disanalogy between ethnicity and sex. Because of the relation between the accident of sex and form, that is, because sex is a manifestation of the power of generation which arises directly out of form, the accident of sex continues to be so long as the individual continues to be. There could not be a living thing that was intrinsically incapable of generation precisely because that just is part of what it is to be a living thing. Since then, the power of generation is manifest in the human species in one of two forms, male or female, one must always be present in the sense that the body is always realising, or attempting to realise, this power through either the male or the female accident, for that is just part of what it is to be a living body. There is no alternative. In which case, changing sex would have to be instantaneous because otherwise there would be sometime during which the living thing was not realising or attempting to realise the power of generation at all, for that is just

part of what it means to possess the power of generation. And if a living thing does not possess the power of generation, it is not a living thing. This means to attempt to change the accident of sex in the zygote in the manner described would result in the death of one individual and the creation of a new individual.

I take the above to be an instance of Aristotle's 'homonymy principle' "according to which when, for instance, a fox dies, what remains is not the body, or matter of the fox" (Austin 2020, 116). Aristotle held this principle, Austin argues, because there exists nothing in the corpse "which has the capacity for foxiness, nothing which is potentially foxing" (ibid). There is, in other words, nothing which is maintaining the organismal unity by which the life of a fox is carried out. Aristotle himself states the idea with reference to a dead hand: "For it is not a hand in any and every state that is a part of man, but only when it can fulfil its work and therefore only when it is alive; if it is not alive, it is not a part" (Met., 30-32).[26] The dead hand in other words, is neither the form nor the matter of the man "precisely because it is no longer engaging in 'man-activities'" (Austin 2020, 120).

Applying this to the matter at hand, paraphrasing Kosman, we could say that 'there is nothing that we should describe as having the ability to be a man or woman that is not actively being so' (2013, 178). As the dead hand is not really a hand, "except only equivocally" (Bobik 1965, 105), so the dead male or female is not really a male or female, because the corpse is unable to exercise its capacity for male-ness or female-ness in any way.

Putting all this together, it seems that at the zygotic stage, in a change from a XX to a XY chromosome, an individual would cease to be a female because that individual would be unable to exercise its capacity for femaleness. But in the destruction of its capacity to exercise femaleness, it seems that that individual as a living human being, would cease to be, since to be human just is to be female or male. The total removal of the ability to exercise its capacity for femaleness would mean that it ceases to be female, but if it ceased to be female it would not

[26] For expressions of the principle see the *Metaphysics* (1035b10–26); *On the Generation of Animals* (734b24–27); *On the Parts of Animals* (640b34–641a34); and *On the Soul* (412b12–13; 412b21–23).

automatically become male. Rather, it would simply cease to be human entirely because humanity is always manifest as female or male. If it were to manifest as neither, if it were alive at all, it would not be human. If then, in the non-female, non-male, non-human state, a Y chromosome were to be inserted and whatever else is needed for the zygote to exercise a capacity for maleness, a new human male would come into being. In this sense a change in sex would have happened, but only by the annihilation of one individual and the creation of a new one.

Of course this could never be definitively proved to be the case one way or another. It is somewhat analogous to the case of twinning where it is not clear when a single embryo becomes two, whether a new human arises out of an existing human which persists through the change, or whether a single human dies in the change and two new human beings arise out of what was present before. However, I hope to have made clear that the holism and teleological nature of the accident of sex entails that a genuine sex change in the human species would, at the very least, be exceedingly difficult.

As with DSD and sexual differentiation in other species, this analysis is highly species specific. As I will show in the next two chapters, sexual difference is highly species dependent not only in the biological sense, but the metaphysical or philosophical sense as well, and to accomplish this task, I will turn to Aristotle's hierarchy of living things.

Chapter VII – Gender and the hierarchy of being

I) Gender as distinct but not separate from sex

How then is sexual difference in the human species different to sexual difference in other species? I have already explored the difference that is 'sexual difference'. That is, I have argued that the power of generation is possessed by all living things insofar as they are alive and is a proper accident of living things. Sexual difference though is a particular and contingent manifestation of this proper accident, as male or female, which, in mammalian species at least, should be understood as inseparable and incomplete accidents of individuals directed towards the generation of offspring.

Here though I want to explore the difference that sex makes in the human species in particular. There are all sorts of differences between individuals within a given species, from skin pigment to hair colour and length, but sexual difference makes a difference in a way that those differences do not. As indicated in the last chapter, the difference that sexual difference makes is highly species dependent. The difference that sexual difference makes for humans will not be the same as it is for frogs, or moose, or any number of other animals. I want to argue though, that while the difference that sexual difference makes is species dependent, the difference it makes in the human species is different to the difference it makes in other species in two ways – insofar as we are a different animal, and insofar as we are rational. Because we are rational, we are also, unlike other species of which we know, gendered.

I have tried throughout this thesis to avoid using the term 'gender' and associated concepts like 'men' and 'women' except in those cases in which other authors have used such terms. I have done so primarily in the interests of clarity. Given the contention which exists around the terms 'man' and 'woman' as explored in Chapter II, I have instead opted for the terms 'male' and 'female' which continue to retain a specific and (relatively) uncontentious content that the former terms do not. Additionally, I wanted to emphasise that the power of generation, which

must remain at the heart of any discussion of sexual differentiation, is something shared by all living things just insofar as they are alive. While sexual differentiation then is not something peculiar to the human species, I do want to suggest that gender, and gender differentiation, *is* something peculiar to the human species and the term 'gender' can be helpfully employed in this context.

As I have shown, other authors writing in an Aristotelian-Thomistic tradition have offered similar arguments similar to my own about the nature of sexual differentiation in terms of proper and inseparable accidents. However, contemporary writers in this tradition have tended to conflate sex and gender or ignored the possibility that the two might be helpfully distinguished within an Aristotelian-Thomistic context.[1] In contrast, I will argue that the two can and should be distinguished without being separated. With a notable exception,[2] contemporary Aristotelian-Thomistic reflection on gender has tended to ignore the application of Aristotle's hierarchical biology to the question of sexual differentiation. Yet this remains an important aspect of the Aristotelian philosophy of nature defended by contemporary Thomists[3] and which, I hope to show, can be helpfully applied to sexual differentiation, particularly within the human species.

As said, the aspect of sexual differentiation that makes a difference in the human species is our rationality. The kind of difference rationality makes for us will form the lynchpin for my entire argument since rationality will be what makes sex 'gender' in the human species. In order to explain what precisely I mean by gender and how it makes sexual difference in the human species different from sexual difference in other species, I will first explain how we

[1] Austriaco, in his Thomistic analysis of sexual difference, uses the dual term 'sex/gender' throughout his penetrating discussion (2013). Finley explicitly states: "I here use the term 'gender' to refer to the biological, sexual structures, and capacities in virtue of which humans have been traditionally referred to as male or female. Although the field of gender studies has often invoked the 'sex/gender' distinction, I do not intend my use of the term 'gender' to coincide with this distinction's notion of gender as subjectively or culturally constituted personal identity, distinct from biological structure" (2015, 586). Finley's critic, Newton, states: "In this essay, I will use the word 'sex' more than 'gender', but *I take them to be synonyms*" (2020, 204 [emphasis added]). Other contemporary writers such as Carrasquillo and de Romero (2013) and Savage (2015) do not differentiate between sex and gender explicitly. Hartel (1996) and Gamble and Pruski (2018) make no reference to 'gender' at all. Bedford and Eberl do differentiate sex and gender (2016, 21-22) but not along the lines I do. Of course, Aristotle and Aquinas themselves make no explicit reference to gender in any of their writings.

[2] In his blogpost, 'Byrne on why sex is not a social construct' (2018a), Edward Feser introduces a comparison between 'gender' and 'cuisine' that has served as the inspiration for much of my thought on the matter. Although he does not develop the point (it being a blogpost), it seems he implicitly makes use of the idea of a hierarchy among living things in regard to sexual differentiation.

[3] See Oderberg (2007, 177-260); Feser (2019, 391-400); Koren (1955b, passim); Klubertanz (1953, passim).

should conceive differences between different sorts of living things in the most general terms possible. This involves making a distinction between *philosophical* species and *biological* species. I will argue that while Aristotle and Aquinas understood this in terms of different types of souls, one need not be committed to their philosophy of nature in all its details to recognise real and objective differences among living things. While trying to avoid challenging questions in the philosophy of mind, I will argue that our being rational affects every aspect of our being – rationality is not simply one power among others but ensures that our *doing* the things that other living things do, such as reproduction, is done in a transformative and elevated manner.

Secondly, I will illustrate how the elevation of powers through reason or rationality operates. Focusing on the power of nutrition, I will show how it is transformed and elevated among different living things, beginning with plants, then living things capable of sensation and desire (animals), and culminating in living things with reason (humans). I will use the power of nutrition because it is does not share the same preconceptions or controversy as the power of generation. I will argue that the power of nutrition should be understood broadly and is made manifest in at least four ways corresponding, more or less, to Aristotle's four causes. At each stage within the hierarchy among living things, the four ways in which the power of nutrition is manifest include that which was present at the 'lower' level, whilst also elevating it so that it becomes 'more than' that which was present at the lower level. In this way, 'food', for plants, can become a 'meal' for animals, and 'cuisine' for humans. Importantly, because we are rational, we are capable of combining concepts in a manner in which no other species of which we know is capable. This ensures that the range of that which might fall under the label 'cuisine' is potentially extremely large. Importantly, I will argue that this power is limited by its relation to the nutritive function of food.

Third, I will explain how the power of generation is elevated to become gender in the human species. The argument will run in parallel to that of the previous section concerning the power of nutrition. As with nutrition, due to our rational abilities, the expression of gender, as expressed through body (form and matter), behaviour (efficient cause) and ends (final cause),

can be extremely varied as each aspect of gender can be associated with different, and sometimes entirely unrelated, concepts. Where plants produce the next generation and animals produce offspring, humans (rational animals) produce children, and this is a gendered activity. Just as cuisine is limited by its relation to the nutritive function of food, so gender is also limited by its relation to generation and offspring.

II) Rationality – The difference that makes a difference

The basic idea of a hierarchy among living things is fairly straightforward. In outline, Aristotle[4] and his contemporary defenders are committed to the idea that, among *living things*, there are three general classes. These classes of living things are something discovered in reality and not assigned to it. These three classes of entity can be referred to a *philosophical* species (as opposed of biological species) and are highly general in nature. As Koren explains:

> "*In the strict sense of the term, a philosophical species is a class of individuals belonging to the same metaphysical level of being. These levels are at least four in number, viz., inanimate, vegetative, sensitive and rational. Therefore, at least man, animal, plant and inanimate matter may be considered to be philosophical species*" (1955b, 300).

Using the traditional Aristotelian terminology, we can say there are living things which are made alive by a *vegetative* soul, other living things made alive by a *sentient* soul and finally living things made alive by a *rational* soul.[5]

Each kind of living thing characterised by one of these souls is irreducible to something else. A thing with a vegetative soul cannot be reduced to something non-living in the sense of being entirely explained by that which is non-living. A thing with the sentient soul cannot be reduced to something with a vegetative soul, and a thing with a rational soul cannot be reduced to a

[4] Aristotle explains his understanding of the soul and the three different kinds of souls which living things can have in Book II of his *De Anima*. "Of the [powers of the soul]… some kinds of living thing… possess all, some less than all, others one only. Those we have mentioned are the nutritive, the appetitive, the sensory, the locomotive, and the power of thinking. Plants have none but the first, the nutritive, while another order of living things has this *plus* the sensory. If any order of living things has the sensory, it must also have the appetitive… Certain kinds of animals possess in addition the power of locomotion, and still others, i.e. man and possibility another order like man or superior to him, the power of thinking and thought" (414a29-414b2; 414b16-18).

[5] See Chapters III-V, in which I explain that the soul is the form of a living body.

thing with either a sentient or vegetative soul. Living things with these types of soul each belong to a different philosophical species. The term 'soul' should not be a barrier to understanding this idea. It is possible to think about different *kinds* or *types* of living things in general terms without making reference to 'souls' (Feser 2019, 40-41; 391).

All of these three kinds of living thing have at least three characteristic powers (or operative potencies): namely the powers of growth, nutrition and generation (Feser 2019, ibid; Koren 1955b, 16-18[6]; Klubertanz 1953, 44-46; Oderberg 2007, 177). As argued in Chapter V, for the Aristotelian, each of these powers should be understood as proper accidents which belong to the living thing, or "flow" from its essence, just insofar as it is alive (Feser 2014, 191; 230-235; Feser 2019, 378-380; Oderberg ibid, 156-157). They are also powers since they are directed to certain objects. Each of these powers should be understood broadly such that the power of growth should be understood as that proper accident directed towards maturity and healing of an organism, and the various mechanisms that that involves (Oderberg ibid, 177). Nutrition (or metabolism) includes the synthesis of the organic and inorganic into components of the living thing (ibid). It typically involves such processes as ingestion, digestion, respiration and the excretion of waste material. Koren simply defines the power of nutrition as "a process by which living matter changes non-living matter into living matter" (1955b, 16). Generation (or reproduction) is the process by which an organism is capable of creating "new, distinct individuals of the same kind as themselves" (Feser 2019, 393).

Now, it is clear that there are at least *some* things that carry out these functions. A tree for example, grows, metabolises and reproduces. That a tree can do these things and rocks cannot, is a good reason to think that trees and other things which can do these things, are a different kind of thing to rocks (ibid, 391). In traditional Aristotelian parlance, this is just part of what it means to have a vegetative soul. Importantly, living things which are capable of carrying out these basic functions are not limited to plants or vegetables but can include fungi and perhaps

[6] Koren also lists "irritability" as an activity of living things, which he characterises as "the way [living bodies] react to stimulation arising from changes in their surroundings" (1955b, 17). Interestingly, this activity is not listed by other contemporary defenders of a hierarchy of living things.

various kinds of bacteria, as well as other living things. For the sake of concision however, I will use the term 'plant' to cover any living thing with the powers of generation, metabolism or nutrition and growth, but no additional fundamental powers. It is also the case that whether something is a vegetative kind of living thing, at least in some cases, is a matter of dispute (as I discuss in the following).

In addition to the powers of growth, nutrition and generation, some living things have additional abilities not possessed by plants. They are capable of *sentience*, by which I mean conscious awareness of stimuli; *appetite* (or desire) which is the capacity to seek or avoid stimuli of which they are aware; and *locomotion* (Feser ibid, Oderberg 2007, 184; Koren 1955b, 151-152). Where cabbages are capable of growth, generation and nutrition, cats are capable of these three as well as conscious awareness of their environment, desire made possible because of their conscious awareness of their environment, and are capable of moving themselves towards or away from an object of their appetite.

Finally, at the highest level, there are animals capable of all of the above as well as having the power of reason or intellect which involves the grasping of concepts. Living things of this sort are said to be rational animals, and, so far as we know, humans are the only living things capable of this (Feser ibid, 396-398; Oderberg ibid, 252-255).

There are various objections that can be raised against this account of the metaphysical division of different kinds of living things. David Oderberg, for instance, raises a number of difficulties against his own position including instances of borderline cases where it is not clear whether a particular living thing ought to be classified as having a vegetative or sensitive soul, or is even alive at all (2007, 190-193). That is, there are certain things which are not easily recognisable as belonging to one philosophical species rather than another, and there are borderline cases of entities which may or may not be alive at all, such as viruses.[7] Part of the answer to these difficulties can be discovered through empirical investigation rather than

[7] Oderberg discusses a number of instances of micro-organisms about which there is dispute over whether they are vegetative or sentient living things (2007, 183-193).

armchair speculation (ibid, 203). In addition, as Feser notes, it would be "fallacious to infer, from the existence of a handful of examples that are difficult to interpret, the conclusion that in the vast majority of cases where we clearly and distinctly appear to have [a particular philosophical species], this appearance is illusory" (2019, 392). Even acknowledging these borderline cases, it is clear that there are at least *some* kinds of living things capable of activities that other living things simply are not, and this is all that is needed for my purposes. A cabbage, carrot or cauliflower does not possess sentience, or appetite. A cat does possess these but not intellect in the sense that it does not have the ability to grasp concepts, or, at the very least, we have no evidence that cats have such an ability. Each of these abilities makes it the case that these things belong to different philosophical species, and each is a distinction that makes a difference.

Of course, as noted, this conception of species is not like a modern biological conception of species at all, and even plays no role in biologists' account of species. But this is no reason to reject the philosophical species concept I have employed. First biologists use numerous species concepts[8] which do not necessarily cohere with one another, and the existence of different concepts does not entail that any one of them is not the correct species concept (Oderberg 2007, 209). Second, and more importantly, the philosophical species concept, as a mode of classification, is far more general than any biological species concept. The philosophical species concept is based upon fundamental, and fundamentally different, powers or properties which indicate a different kind of being. Biological classification however is based on evolutionary lineage or morphology or whatever. In terms of philosophical species though, certain kinds of bacteria and parasites can be grouped into the same category as plants. Further cats, cassowaries, fish and frogs can all be grouped together even though they are very different in important ways and belong to different biological species. It is also the case that some animal, yet to be discovered, might be metaphysically human or belong to the philosophical species

[8] Oderberg lists the "biological species concept, where interbreeding is critical; the ecological species concept, where the crucial role is played by the ecological niche; the phenetic species concept, emphasizing overall similarity; the mate-recognition species concept; the cladistic species concept, where genealogy and common descent are decisive; and many other species concepts" (2007, 209).

'human', that is, be a rational animal, and yet be a different biological species to us.[9]

Perhaps the most significant objection to this hierarchical understanding of living things arises out of evolutionary theory and the accompanying idea that there exists a continuum among living things.[10] While no one doubts that there are all kinds of differences between humans and other animals in terms of our physiology, just as there are all sorts of differences between cats and cassowaries in terms of their physiology, it may be doubtful that there is a single all-pervading difference. That is, it may be doubtful that there is a difference between human beings and other animals, and other animals and plants, at a more fundamental level. It may be doubtful, that is, that humans are different *qua* rational, and animals are different to vegetative things *qua* possessing desire. The traditional distinction between plants, animals and humans which I have just outlined would not be a difference in degree, but a difference in kind, and this is something the idea of a continuum among living things appears to rule out. Focusing on the human/animal difference, philosopher Matthew Boyle explains:

> "*[The] philosopher of mind seeks not primarily to characterize the human mind's distinctiveness but to show how our minds fit into the natural world, and the demand that human mentality be conceived as fundamentally continuous with the mentality of other animals looks to many like just a piece of naturalistic common sense. For whatever we mean by calling our minds rational, surely this must be compatible with a recognition that the human mind is a species of animal mind which has arisen through the same sorts of evolutionary processes that also produced the minds we call nonrational*" (Forthcoming, 1-2).

The idea can be summed up in Darwin's dictum, borrowed from Leibniz, that "*natura non facit saltum*" (Adler 1967, 69).[11] In this context, the idea is that just as there is a difference of degree between a 10cm stick and a 20cm stick, so between living things, in terms of their cognitive or mental capacity, for instance, there is also a difference of degree, even if that difference of degree is extremely large. There is more or less of the same, rather than a

[9] Oderberg (2014) argues in favour of the idea that living things which are radically morphologically different to us belong to the same philosophical species as us and should therefore be classified as human insofar as they are rational.

[10] It should be noted in this context that the continuum under discussion is a vertical continuum between humans, animals and other living things. This should not be confused with the idea of a horizontal continuum between male and female, or man and woman.

[11] 'Nature does not make jumps.'

difference in kind between rational and non-rational. If human beings are at the higher end, perhaps dolphins and chimpanzees come next, then horses and pigs, then fish and aphids and cabbages and so on down the continuum.

A number of contemporary philosophers have addressed this arguing that evolutionary theory and the continuum between species is, in principle, compatible with an Aristotelian hierarchy of living things, even suggesting that the irreducibility of philosophical species within the hierarchy gives us reason to question the idea of a continuum (Feser 2019, 420-432; Koren 1955b, 302-304; Oderberg 2007, 206). A full-blown exploration of this topic along Aristotelian-Thomistic lines, and especially an exploration of the difference in kind that the rational/non-rational distinction traditionally purports to be, would take us too far afield and require a deep dive into the philosophy of mind which I will not do here.[12] Whether the difference between the rational human mind and the non-rational animal mind is an unbridgeable divide or whether the difference exists on a continuum need not be settled here. Instead, for my purposes, all that needs to be shown is that human beings are capable of doing things that other animals are not, and also that animals are capable of doing certain things that plants cannot. This point, I think, is clear enough and not really contestable. Whether the fact that humans can do the things that we can do, like write a thesis on sexual differentiation, which a carrot cannot, is due to a difference in degree or a difference in kind is a separate question.[13] That our minds allow us to do things that other animals cannot, so far as we know, is sufficient for my argument. For instance, our ability to reason, form concepts, make judgements and arguments, enables us to do such things as celebrate a birthday, form a political party and ask

[12] Typically, Aristotelians, old and new, defend the immateriality of the rational intellect in the human person. The rational intellect, and its immateriality, is not something which other living things in the hierarchy possess. So they are committed to the idea that nature does in fact make at least one jump. See, for example, Feser (2015c); Ross (1992); Oderberg (2007, Ch. 10).

[13] Adler complicates matters somewhat through his distinction between 'difference in degree', 'superficial difference in kind' and 'radical difference in kind' (1967, 20-39). The first kind of difference is one with which we are familiar. If two objects are different in degree only, they have a shared characteristic of which one has more and the other has less, and it is always possible that there be an intermediate. In the case of objects which are superficially different in kind, "an observable or manifest difference in kind may be based on and explained by an underlying difference in degree, in which one degree is above and the other below a *critical threshold* in a continuum of degrees" (ibid, 24). Consider the difference here, for example, between water and ice. This is a superficial difference in kind because at the critical threshold of 0°C there is a manifest difference in kind at which water becomes ice, but this is based on an underlying difference of degree. Finally, a radical difference in kind involves having "a factor or element in its constitution that is totally absent from the constitution of the other; in consequence of which the two things, with respect to their fundamental constitution or make-up, can also be said to differ in kind" (ibid, 25). It is not clear that the addition of superficial difference in kind is a useful tool though since Adler fails to differentiate essence and proper accidents which flow from essence. As I explain, the difference between human and animals, on the traditional Aristotelian view, is holistic, our being rational belongs to our essence or what it means to be a human.

questions about the nature of gender. Whether these activities are possible as a result of a difference in degree or a difference in kind between humans and other animals is not our primary concern. All that is needed is a recognition that we can do these things and that other animals cannot. This is sufficient to indicate an important difference, which I call rational.

At the same time though, since I am presenting a contemporary *Aristotelian* account of sexual difference, I remain committed to the *irreducibility* of philosophical species. In which case, while I cannot settle the question of difference of degree or kind here, something more needs to be said in its defence if only in general terms. I propose to do this through a clarification of the characterisation of rationality in the human species so that it is clear what kind of difference the rational/non-rational distinction is. Secondarily, the argument of this chapter, that gender is the rational (or human) expression of sexual difference which we share with other animals, itself counts as an argument in favour of the hierarchical conception of living things and the irreducibility of philosophical species.

Regarding the former point, rationality, is not *merely* an additional power humans possess but which animals do not. It also ensures that the manner of our doing things is different in important ways from the manner in which animals do the same thing. As Boyle explains, our being rational does not primarily differentiate us from other living things because only we have that trait, but because being rational "belongs, rather, to a characterization of our essence, which is to say, to an account of what our existing as particular individuals comes to… [I]t does not specify a particular characteristic that we exhibit but our distinctive manner of having characteristics" (Forthcoming, 17).

The kind of difference in question can be seen if we consider a parallel kind of difference between an oak tree and a squirrel. Explanations of the kind of things that plants do are entirely generic in nature. The answer to the question of why a particular oak tree does such and such will ultimately be 'because that is the kind of thing oak trees do.' In the case of the squirrel though, there is a need to look at the particular, for what the squirrel does will be informed by

facts about the experience of this particular squirrel. As Boyle explains: “It is not merely that animals can do things that plants cannot; it is that the whole language of ‘doing’ takes on a new significance, a new logical character, when we turn from plants to animals” (ibid, 20).

Similarly, in the human case, the rational/non-rational divide “marks this sort of difference” (ibid, 21). The rational/non-rational divide differentiates “their whole manner of having characteristics, the form that predications of being, having and doing take for them.” (ibid). The difference, then, that the hierarchical understanding of living beings gets at is *holistic*. Our being rational is not simply one extra power or ability that we have that other animals do not have, rather, it characterises our entire being so that even those powers or abilities we share with other living things are done in a rational and therefore importantly different way. This point will come to the fore in the next section on nutrition.

Before closing this section on the difference that makes a difference, it should be noted that ‘rational’ in the sense in which I am using the term does not mean ‘in accord with reason’ or ‘in accord with right reason’. That is to say, when I say that reason elevates some power or other and is expressed in some way or other, I mean only to say that the power is an expression of intellect and will, and in some way, manifests our ability to grasp concepts. Any specifically human activity is rational by definition whether or not the grasping of concepts is accurate and regardless of the ends to which these concepts are then put to use. It is precisely because human action is an expression of our rationality that it is subject to moral appraisal and judgement in the first instance.

Among living things then, the idea that there is a kind of hierarchy, even if the boundaries are not always clear, and even if there is a vertical continuum between those at the lower and higher ends, is a straightforward enough idea. Going up the scale of philosophical species with the human species at the pinnacle, each philosophical species can perform all the basic operations, or has all the same powers, as the species below, but can do more, or can do things which other lower species cannot. They can do the same things but in a new and elevated way.

To see how this works, I will focus on the power of nutrition and explain how the power is transformed and elevated in the hierarchy of being.

III) The power of nutrition: food, meal and cuisine.

Rather than immediately discussing the power of generation, I propose instead to introduce the idea of the elevation and transformation of our living powers by means of the power of nutrition. The preconceptions we have about 'gender' and sexual difference can make analysis difficult, but this is not the case in regard to the elevation of the power of nutrition into cuisine and associated concepts. Again, the basic idea is straightforward. That is, it seems that while all living things are capable of nutrition or metabolism in their own peculiar manner, the power is experienced and expressed in a fundamentally different way depending upon the philosophical species in question. While the vegetative living thing (plants) passively and continually exercises the power of nutrition depending on appropriate environmental conditions, the sensitive living thing (animals), through their additional powers (of sensation and appetite), can actively pursue and enjoy a *meal*, and the rational living things (humans), through their additional (rational) power, can create cuisine.[14] The additional powers of sensation and appetite, as possessed by animals, elevate the power of nutrition so that, even while remaining the same power, it is experienced and expressed in a radically different way. This is even more the case with the addition of rationality as I will show.

As explained in Chapter V, the power of nutrition is a proper accident of a living thing. All living things have this accident which flows from their being a living thing. It belongs to every member of every living species, philosophical and biological, just insofar as it is alive. Its ultimate object is the maintenance and continued sustenance of a living thing so that it can

[14] Feser (2018a) should be credited with providing this important insight about the elevation of food to cuisine. Interestingly, Gayle Rubin, in her discussion of sex and gender, also employs 'cuisine' to make a slightly different point: "Human organisms with human brains are necessary for human cultures, but no examination of the body or its parts can explain the nature and variety of human social systems. The belly's hunger gives no clues as to the complexities of *cuisine*" (1984, 149 [emphasis added]). Rubin makes an important point, but from the perspective of the elevation of powers in the human person, while it is true that the belly's hunger does not provide any clues as to the complexity of cuisine, it does, due to its nature as a *human* belly, mean that some things are fit to satiate that hunger, while other things are not. This is a significant point which Rubin misses. In addition, philosopher Charlotte Witt makes a comparison between food and dining, and reproduction and "engendering" (2011, 37-39). I return to her comments towards the end of this chapter.

continue to live. The power should be broadly understood. It includes various processes and components within a living thing, its physiology, and involves the synthesis of the organic and inorganic into components of the living thing and also typically involves such processes as ingestion, digestion, respiration and the excretion of waste material. All of this is done for the benefit of the living thing. At the lowest level of living things, plants do not really ingest and digest substances in the way that panthers do, but use sunlight to synthesise sugars from carbon dioxide and water. These substances are then subject to the process of respiration whereby energy is released and utilised by the plant for the benefit of the plant.

The various *processes*, including but not limited to photosynthesis and respiration, and *components*, including but not limited to leaves, xylem and phloem and other organs, that constitute the power of nutrition are not the whole story. Part of the power of nutrition must also include food. This is the *object* of the power of nutrition or that to which it is directed. Indeed, food is only food precisely because it is the object of the power of generation of some living thing. A particular thing is food to some living thing and not another depending upon the specific constitution of the living thing. Grass is not food for humans, but it is for horses given the kinds of living things that they are. The power is also manifest in the *behaviour* of the living things. Precisely because of their being at a lower level of philosophical species, 'behaviour' is used analogously. Plants do not admit of conscious behaviour in the way in which animals do. 'Behaviour' in animals, as shaped by sensation and desire, is quite different from the internal and external processes, such as the turning of leaves towards the sun, of a plant. Rather, this 'behaviour' should be understood as a kind of mechanical, non-conscious behaviour, like the manner in which mercury in a thermometer moves as the temperature increases (Oderberg 2007, 186-187). Importantly though, this is also an analogous comparison because there is no sense in which the mercury acts in this way for the benefit of itself or the thermometer.

All these aspects of the power of nutrition then can be understood through the Aristotelian terminology of four causes or modes of explanation. The organised physiology of a plant directed towards food for the sake of the maintenance of the living organism manifests the

form of the living thing, as that which unites and organises the *matter* which allows for diversity and change.[15] The behaviour acts as the *efficient* cause of the power of nutrition because it directs the plant to achieve its *final* cause, which, in this case, is the synthesis of sugar and its incorporation into the plant. There is a conceptual distinction between the power and its object, but in reality, the two are very closely related since, in Aristotelian terminology, they relate to each other as efficient to final cause. This relation, though, is a two-way street depending on the perspective adopted (Feser 2014, 91). That is, both the organism with the power, and the object which is the substance that is the food, are each efficient and final causes to one another.

To see this, consider the substance glucose. From the perspective of the glucose considered in itself, it is its own substance. It has a certain chemical structure and various properties. The glucose only becomes food insofar as, for example, the grass is directed at it, that is, insofar as the glucose is the proximate final cause of the power of nutrition in the grass, or the glucose is the *object* of the power of nutrition in the grass. It is food precisely by being the final cause of the power of nutrition in the grass. At the same time, the grass acting upon the glucose, synthesising and using it for respiration, is the efficient cause of the glucose's being food. Without the grass as efficient cause, it remains glucose and is not food.

However, from the perspective of the grass which seeks to sustain its own life, the glucose acts as the efficient cause of the power of nutrition, and as that which supplies the energy for the grass to continue living. The grass' continued living, therefore, is the final cause of the glucose. Furthermore, the grass' continued living is the final cause of the whole power of nutrition and explains the process and behaviour of the plant in synthesising and respiring the glucose in the first place. The final cause, in other words, remains the cause of causes as explained in the last chapter.

Now, the reason for this somewhat involved breakdown of the power of nutrition arises

[15] Form is closely tied to finality as indicated in Chapter VI.

from the need to show that, as we go up the hierarchy of philosophical species, every aspect of the power of nutrition is elevated and transformed by other powers (as already suggested when I explained the behaviour of plants above). Moving from plants to animals, the additional powers of sensation, appetite and locomotion elevate every aspect of the power of nutrition (and other powers too). The *physiology* of the power of nutrition in a cow, as well as behaviour and even the object of the power are all elevated and transformed. The internal processes that make up the power of nutrition in the cow are able to do *more than* they did in the grass due to the powers of sensation, appetite and locomotion. However, this doing *more than*, also involves elevating the entire manner in which the animal does the same thing as the plant. The passive process of nutrition from glucose in the grass becomes an active process (in addition to the passive process of nutrition that takes place within the body of the cow) in which the cow, due to its sensation and appetite, can *taste and take pleasure* in its food. The physiology is elevated so that the difference between the grass and the cow is not just more complicated internal and external organs and parts. Even in those animals without a sense of taste, there can be a sense of satiation, 'being-full' or having had enough, which is not present in a plant.

The *behaviour* is also transformed since the animal can seek its food. Rather than turning towards a source of light in a mechanical fashion, for instance, the cow is able to seek and detect the grass through its senses of eyesight and smell. The elevation of the power is manifest in its grazing. Other living things with a sensitive soul elevate the power of nutrition by hunting for their food or scavenging. Excitement at the prospect of food present in the dog wagging its tail as well as the evident delight it takes in eating it, is an instance of the elevation of the power of nutrition. Hunting, scavenging, migrating, grazing and other like activities are only possible due to the powers of sensation, appetite and locomotion which allow these living things to live a life quite different to the grass or the daisy. These different activities imply different powers giving rise to them which, in turn, implies that the grass and the cow are not just different biological species, but also different philosophical species.

Furthermore, the power can take on a social significance and resulting behaviour in animals

that cannot be found in plants. For example, the power of nutrition can be expressed through hierarchies among individuals of the same biological species. This can be present in hunting, scavenging, migrating and all the many different kinds of activities mentioned above. In some species the biggest and strongest will always eat first and other members only get their chance once the largest has had its fill. In other species, a paucity of food can result in parents investing the food and their time and energy in the strongest and healthiest offspring.

Finally, the food itself, the proximate final cause of the power of nutrition, can become a meal, rather than a totally passive process that just happens for the plant when the conditions are appropriate. The difference between the meal for the animal and the food for the plant can be understood in terms of discrete and specific instances of nutrition. In the plant and animal various aspects of nutrition happen continually and passively, but only in the animal are there discrete instances of ingesting food, that is, only the animal can have a meal, the plant cannot. A possible counterexample to this might concern those carnivorous plants such as the Venus flytrap which does appear to have 'meals' in a similar way to the animal (Feser 2019, 394). However, this does not seem right in the sense that the plant, once again, acts entirely passively and mechanically. There is no evidence of conscious awareness or detection of the fly which the flytrap subsequently consumes. In short, there is no evidence of sensation and desire.

This is all unremarkable animal behaviour, but its philosophical significance can be easily missed. The same nutritive power becomes *more than* merely nutrition as experienced by the plant, but it does so without losing that essential nutritive directedness towards food. While the power of nutrition in the animal becomes more than the power of nutrition in the plant due to the power of sensation, appetite and locomotion, it remains a nutritive power directed towards turning non-living matter into the living matter of the living thing for its benefit.

At the highest level, the human level, the power of nutrition is further elevated and transformed. The physiology, behaviour and object of the power are all elevated through our

ability to grasp concepts (and make choices). Our physiology which permits taste, becomes transformed and elevated by our being rational. Not only, like animals, can we take pleasure in food from our tasting it, but taste can become associated with, and expressive of, culture. This can involve association and expression of peoples and places, events, which can be celebratory (birthdays and Christmas) or sorrowful in nature, or simply commemorative in general. Commemorating an event, or even recognising an event as an event, is itself a product of reason and involves, among other things, the transformation and elevation of memory itself.[16]

In terms of behaviour, while hunting, scavenging, migration and the like are all possible for rational living things, each becomes *more than* they were for animals. Hunting can incorporate ideas about machismo or be a form of sport. Scavenging could arise because of poverty or even 'being-cheap'. These are all instances of the power of nutrition being made manifest in behaviour, behaviour which we share with sensitive living things, but which is transformed and elevated by our being rational. As indicated, 'rational' here does not mean in accord with right reason and no comment is made about the 'manliness' of hunting, for instance, only that our understanding of concepts and their association with these behaviours, means these behaviours are *more than* they were at lower levels in the hierarchy of philosophical species.

As with other animals, there is a social aspect to the power of nutrition, but this is also transformed by rationality. The pleasure we can take in food and the types of food available indicate social position, as does etiquette, and traditions and customs associated with eating different kinds of food at different times and under different circumstances. Furthermore, our being rational permits us to discriminate among foods and combine them in ways we recognise as pleasing. It allows the mixing of flavours and the idea that some foods can complement others. In other words, our being rational permits us to prepare our food in unique ways which are simply not available to other non-rational animals.

This means of course, that the object of the power of nutrition, food, is no longer merely

[16] Understood as the pictorial representation of reality, which, presumably, all kinds of animals are capable of doing.

food, nor even merely a meal, though it is at least both those things. It becomes cuisine. Cuisine is more than a pleasurable source of food although of course it always remains these things as well.[17] Cuisine involves the infusion of rationality into our food and has no parallel among other living things. As said, certain meals can be used to commemorate an event. They can be an expression of national pride and the handing on of tradition. Celebrations and commemorations of events involve the marking of time, the ideas of events being significant for a culture as well as for the individual, and the concept of a celebration itself. None of these elements are, or can be, part of an animal's experience of a meal. Our rational powers of intellect and will elevate the power of nutrition which becomes *more than* the taking in of food as a fuel source.

We can understand how 'cuisine' is more than food and more than a meal, by thinking about how it is experienced by different living things, that is, by thinking about the elevation of food in reverse, so to speak. The same plate of Bolognese is not equally 'cuisine' in all cases. 'Cuisine' does not merely refer to the plate of spaghetti Bolognese *qua* source of nutrition, as it would do for the bacteria if it ended up on the compost heap. Further, cuisine does not refer only to the spaghetti Bolognese *qua* pleasurable meal as it might for a dog. 'Cuisine' refers to the spaghetti Bolognese *qua* a cultural meal and activity. That is to say, cuisine refers to the spaghetti Bolognese insofar as it is the product of rational human activity and manifests our rationality, even if only implicitly as surely it does most of the time. The same pile of food has a radically different meaning depending on the being which is ingesting it.

Now, this exploration of the power of nutrition in the rational living thing is only intended to illustrate some of the many possible ways in which the power is expressed in a rational being. The power of nutrition as manifest in our physiology (form and matter), behaviour (efficient cause) and object of the power (final cause) are all elevated by our rationality to become more than they were at lower levels in the metaphysical hierarchy. However, the transformation of

[17] Perhaps it will be objected that cuisine need not always be pleasurable. This is true. There are certain customs associated with religious rituals in which the cuisine is intended to be unpleasant (to remind the participants of a religiously significant event). But it need not be pleasurable for the 'elevation' of the power to hold. In fact, the very fact that the meal is designed to be unpleasant indicates its precise nature as a kind of cuisine. It is food which has had a rational mind work upon it to make it signify something beyond itself as a source of nourishment.

the power through rationality creates a potentially extremely large expression profile. That is to say, it would appear, from the account given, that the power of nutrition could be expressed in any number of ways by its association with just about any concept. By what principle or principles then, is the expression of nutrition limited in a rational being? Is the baking and eating, as well as accompanying celebration, of a birthday cake for instance, equally a manifestation of the power of generation as a food fight or the Cooper's Hill Cheese-Rolling and Wake in which participants chase a roll of Double Gloucester down a steep hill? The difficulty does not arise in other species for their physiology, behaviour and object of power is restricted by the kinds of beings they are. Our behaviour and object of a particular power, however, is not restricted in the same way. This issue will become especially important in terms of our understanding of the power of generation and gender.

I propose that the limiting principle of nutrition in the rational being is that the object of the power must retain its nutritive function. The power of nutrition in the rational being, despite being far broader than it for other animals, must remain directed towards its proper end to remain the power of nutrition. That is, it must be directed towards taking in external substances and incorporating them into the living substance for the sake of the living substance. Both the properties of substances and our physiology limit that which is potentially food for creatures like us, and therefore restrict that which is potentially cuisine for us. Grass, insofar as it remains grass, cannot be a possible object of cuisine because it is not food for us and, therefore, cannot be elevated to cuisine. Pica, a condition which involves the swallowing of non-edible substances such as stones, also cannot be made cuisine given the properties of stones and our constitution (Feser, 2018b). Similarly, a concrete eating competition would not be an instance of cuisine, although it would be a rational activity in the sense in which I use the term since, competition and sport, in general, are only possible for rational beings. More contentious examples such as chewing gum and chewing tobacco also would not be instances of the rational expression of the power of nutrition since these substances are not potentially food for humans.

Certain behaviours which might seem to involve the elevation of the power of nutrition also cannot be expressions of the power of nutrition unless they are directed towards, at least in part, the nutritive function of a substance. For instance, a food fight is not a rational expression of the power of nutrition, and neither is the Cheese rolling since, in both instances, while an essential component of the behaviour is food, it does not rise to the level of cuisine since the nutritive function of the food is completely incidental to the behaviour. They are indeed activities which are infused with rationality, but neither is an instance of the power of nutrition. There are apparent borderline instances of the elevation of the power of nutrition in, for example, the making of a cup of tea not, primarily, to satisfy the thirst of an individual but to address his melancholy in a peculiarly British way. The difference in this case though is that the nutritive quality of the cup of tea, though not the primary aim of the making of the tea, does remain an essential part of the behaviour or making a cup of tea in a way that the nutritive quality of the roll of cheese in the Cooper's Hill Cheese-Rolling and Wake does not.[18]

Other behaviour like hunting as an expression of masculinity also remains an instance of the elevation of the power of nutrition insofar as the hunting is, at least partially, directed at the making of a meal. In short, for something to be an instance of the manifestation of the power of nutrition in a rational being, its nutritive potential must be present in other lower forms of life minus the presence of rationality.

In sum, going up the metaphysical hierarchy, the physiology of nutrition in vegetative things is elevated to permit taste and pleasure in sensitive things, and at the highest level, taste and pleasure are combined with concepts to produce a culture associated with taste and pleasure. As the behaviour is elevated from a passive act to permit hunting, scavenging and whatever other activities that constitute seeking food, in the rational living thing, these activities become more than they were, and cooking becomes possible. Where food becomes a meal for the animal, it becomes cuisine for the rational animal. The power of nutrition then as expressed in our physiology, behaviour and object is elevated and made *more than* it is in other

[18] In this case, the cheese was in fact replaced by a foam replica for safety concerns in 2013, much to the dismay of participants! See 'Cheese-rolling returns with real wheel of Gloucester'.

philosophical species in the metaphysical hierarchy. Our rational powers transform the nutritive power, which, despite its transformation and elevation, remains the same power. As I will argue, a similar, though undoubtedly more controversial, story can be told about the power of generation and how it becomes gender.

IV) The power of generation: offspring and children

As with the power of nutrition, it is rationality that explains how sexual differentiation in the human species is different to sexual differentiation in other species. Our ability to grasp concepts elevates the power of generation, a power which we share with all other living things, so that, while remaining the same power, it becomes something *more than* it does in other living things. This, I have already suggested, is where the term gender and associated concepts, have an important role to play.

To see this, it is important to remember the classification of sex for which I argued in the preceding two chapters. I argued the power of generation is a proper accident of all living species, but that in some species, including our own, it is expressed in one of two different ways, male or female. The manner of expression of male and female is not uniform however and, as I argued, appears to be an inseparable accident in some species, such as our own, but not in others. Now, the elevation of the power of generation in sexually dimorphic species means the elevation of sex, male and female.

So, as with the power of nutrition, every aspect of the power of generation is transformed by our rational abilities. Being male and being female, as expressed in *physiology*, *behaviour* and *directedness* towards the next generation, is elevated and transformed through reason. At the lowest level in the metaphysical hierarchy of living things, in plants, generation, at least in sexually dimorphic ones, involves the creation of gametes through the use of various internal organs, and some means of seeing that those gametes are fertilised by a different gamete. This might be through the creation of flowers and nectar to attract insects and ensure pollination. It

also involves a means of ensuring that the next generation, as seeds, has a chance to develop in a suitable environment. The various internal and external processes and behaviour of the plant to achieve this end, as with nutrition, are carried out passively and happen only when the circumstances are suitable. As explained, explanations of what a particular plant is doing in generation are generic. Lacking conscious awareness, plants cannot actively pursue changing their environment to make it suitable, but only react under suitable conditions so that generation happens. As explained in the last chapter, male and female can exist in different parts of the same plant, different parts of the same flower or in different individuals within the same biological species. In each case though, the role performed by these parts and individuals is done in a non-conscious, passive manner.

In animals, sensation and appetite elevate the power of generation. The physiology is elevated so that an animal can feel and, in some cases, take pleasure in the expression of the power of generation. In terms of behaviour, a different kind of conscious behaviour is possible in which desiring and seeking a mate can take many different forms and, importantly, often involves highly sexually differentiated roles. Courtship might involve the male defeating a rival, building a shelter, performing a dance or whatever, and the female might have to discriminate among the most desirable male. The discrimination might be based on location, hierarchies among members of the species, size, strength or otherwise desirable species dependent qualities. Each of these would be a manifestation of the power of generation through behaviour. Generation in the life of a vegetative living thing, with no powers of sensation, appetite or locomotion, is completely indiscriminate and there can be no sense of ‘seeking a mate’. Generation cannot involve preference for one state of affairs in terms of fertilisation of gametes, rather than another. But this is possible for creatures with the powers of sensation and desire.

Most importantly, the object of generation, the next generation, becomes offspring. Of course, plants also produce the next generation, but what it means for the plant to produce the next generation is not the same thing as it is for the animal to produce the next generation. Due

to the additional powers of sensation and appetite, living things with a sensitive soul are capable of actively searching for an appropriate environment for their offspring, rather than leaving that task to the wind or another animal or forces otherwise entirely outside of their control. In many animals the generation of offspring involves not only the creation of gametes, and some means of their coming together, but also an active nurturing and protection of offspring. But this relation, between parent and offspring, is only possible in a living thing with the powers of sensation, appetite and locomotion.

Now, the relation between parent and offspring varies considerably among different biological species, but as a philosophical species with conscious awareness, a kind of relation is possible that is not possible for living things without sensitive souls. For example, the suffering that one animal might put itself through for the sake of its offspring, is only possible because it is of a philosophical species which permits this. Plants cannot suffer or sacrifice for the next generation because they cannot suffer. Equally, plants cannot migrate or otherwise move to seek conditions appropriate for the next generation. Importantly, in many animals the nurture and protection of offspring has distinct parental male and female roles, a topic to which I return below.

At the highest level, the human level, the physiology, behaviour and object or end of generation, is transformed and elevated too, so that these things manifest our rationality. The power of generation in the rational being, as expressed through our physiology, behaviour and object or end, can properly be referred to as ‘gender’. Now, the physiology, behaviour and object of generation do not occur in isolation but are manifestations of the activity of a living thing, in this case, a human being. But, as argued, human beings come in one of two varieties determined by their particular directedness towards the generation of the species, that is, male and female, which we properly refer to as ‘men’ and ‘women’. These gendered terms then, on the schema I have provided, include our being human which, in turn, includes our being rational. The primary meaning of gender then, is men and women themselves. In other words, being men and women means, among other things, being part of the philosophical species

'rational animal'.[19]

As with the power of nutrition, our rational nature elevates the male and the female to be 'man' and 'woman'. These are terms which do not apply to other species. There are no 'man' and 'woman' or 'boy' and 'girl' cows or horses, even while there are male and female cows and horses, and even while we have special names for them. The recognition that male and female humans are properly speaking 'men' and 'women', and male and female in the human species alone have 'gender', indicates that we are distinct, or *more than* other animals, in important ways.[20] As discussed above, while there is a real distinction between the physiological, behavioural and teleological (object) of the power of generation, since they are related to one another as form, matter, efficient and final cause, the relation between them is very close. In which case, while attempting to keep each manifestation of the power of generation separate for the sake of clarity, there will inevitably be a certain overlap since they cannot really be understood independently of one another.

First, our physiology is not only elevated in the manner specified above through the presence of sensation, appetite and locomotion, but further elevated through our being rational. A man and woman can experience sexual pleasure through sexual intercourse as, presumably, at least some animals can, but no animal is capable of drawing attention to aspects of the body considered attractive via means of artefacts such as lingerie. Lingerie, appropriated to the human body, exists, at least in part, for the sake of seduction and sexual pleasure, in the sense of creating a certain anticipation and excitement. The physiological aspects of the male and female body associated with generation are accentuated so that our generative physiology is elevated. The use of lingerie appeals, in large part, to our rationality because the observer understands what is being concealed and what they are being encouraged to think about. Such a transformation or elevation of our physiology is also achieved, in general, through sex specific

[19] Aristotle never explicitly uses this phrase. See Chapter III, Footnote 17

[20] To be sure, some authors do maintain that animals have gender. Joan Roughgarden (2013), for example, maintains that animals and even plants have gender. To accomplish this however, the author defines gender in such as way so as to make it blur any sharp divide between humans and non-human animals. Roughgarden says gender is the "appearance, behaviour, and life history of a sexed body" (ibid, 27). This definition is far from my own and fails to properly distinguish humans from other animals.

clothing, a feature which seems to be more or less ubiquitous across time and culture to one degree or another, except in those where it is actively undermined or opposed (i.e. in Maoist China).[21] Further, gender specific clothing is associated with culture, memory and events of significance. During a formal ball, for instance, it is expected that men dress in a certain way and that women dress in another way. Men might style their hair in a certain way and women another. All of these can be physiological expressions of gender, that is, the rational expression of the power of generation. Of course, clothing is an expression of rationality in general, because the making of clothing, when and where to wear it, all involve the grasping of concepts. But while generic non-gendered clothing does exist, gender specific clothing exists as an elevation of the power of generation expressed physiologically.

It is not only clothing which elevates our physiology to be rational and therefore an expression of gender. Cultural ideas about gender differences can also be expressed physiologically. In regard to the power of generation, these ideas might be an *inner state or mood* that a man or woman wishes to communicate to the other gender. These might be seduction, flirtation or otherwise expressing a sexual interest or any number of other ideas related to generation that a man or woman might want to communicate through their physiology or otherwise unspoken communication. Both men and women can express this through the presentation of their bodies, including clothing and hairstyle for instance, and even posture and other forms of non-verbal communication.

Second, our generative physiology and associated behaviour are also elevated in a rational way in the sense that the same generative act, or potentially generative act, can have radically different meanings attached to it, and in that sense, be a radically different act. For example, the generation of offspring in the human species could be the result of an amorous Saturday morning on honeymoon which then becomes a treasured memory. The generation of offspring could also be the result of a brief consensual encounter at a party, which may or may not be remembered fondly. It could even result from a sexual assault in which case, the generation of

[21] See: 'Dress In Communist China'

offspring becomes a highly traumatic event. Once again, all of these are expressive of rationality not insofar as they are in accord with right reason, but in the sense that each is expressive of a rational mind capable of understanding. The circumstances, the concepts or ideas going through the heads of the participants all affect the generative act itself so that, even while remaining generative, it is a rational act which can take a number of different forms. Furthermore, due to our ability to grasp concepts, we are capable of moral reflection and discernment, which allows us to recognise that some generative acts are conducive to human flourishing and others are not. It is for this reason that there cannot be anything like a loving act of generation, a casual 'fling', or rape among non-human animals. Such notions presuppose ideas about commitment, responsibility, our duty towards others, violation and integrity, among other things.

In terms of behaviour I ascribed to non-human animals, such as 'seeking a mate', this too is elevated by our being rational. 'Seeking a mate' in the human species becomes a form of courtship through the addition of our rational faculties. This can take a myriad of different expressions and, in traditional societies, culminates in marriage. Even in cultures, such as our own, with a diminished role for marriage, gender is expressed through behaviour such as cohabitation and other arrangements which are understood to contain therein certain obligations between the individuals involved. These are all elevations of animal behaviour because of the implicit or explicit duties these relations contain. Relations, that is, not only between the men and women involved but also between any children that arise from the union.

Finally, on this last point, the object or end of the power of generation in the human species, is not, properly speaking, offspring, but *children*. Again, as with gender, I want to suggest that other species do not have children because they do not have reason, and if we do speak about them as having children, we are speaking loosely. Our rationality elevates the object of the power of generation so while remaining generically the same, i.e. the next generation, children are *more than* offspring. Generation in a rational species, involves the

generation of another rational individual of the same species. Inherent in having children, for a rational species, is the notion of education and the nourishment of a new rational being (Sent. IV. D33. Q1. A1.). To fail to educate a child, at least some extent, would be to fail to treat that child as a rational being. That is to say, because of the kind of beings we are, that is, rational beings, the relation between parent and child comes with certain obligations and expectations, which ought to be fulfilled, so far as possible, and this includes the passing on of culture or tradition. To be sure, animals of various kinds nurture their offspring and teach them various skills necessary for ordinary living. However, they do not *educate* their offspring since there is no rational mind to educate. Education, as I conceive it here, involves the transmission of concepts, and among animals, there cannot be the transmission of concepts such as politics, place, history, mathematics, or traditions like marriage, music, chess, language, and religion which may carry the implication that boys should behave in some way and girls in another.[22]

I will have more to say about education as a gendered activity in the next chapter, especially in the thought of Aquinas on this matter. For the time being though, we should consider the question I asked of the power of nutrition. To wit: what is its limiting principle? I argued that the limiting principle in the case of cuisine was that its object must retain its nutritive function. That is, the object of cuisine must in fact be edible and be nourishing to the eater as member of the biological species, homo sapiens, and member of the philosophical species, rational animal. In which case, the parallel limiting principle proposes itself: the object of gender must retain its directedness towards generation.

In this respect, it is worth looking Charlotte Witt's analysis of gender in *The Metaphysics of Gender* where she offers a similar comparison between gender (or engendering) and 'dining', and also sees the "material conditions" of each as placing limits on their manifestation (2011, 37-39). However, while my discussion is framed within the context of the hierarchy of philosophical species, Witt has no such context. As a result, the limits she places on gender or engendering turn out to be quite different to the ones I place on it.

[22] I do not mean to express approval or disapproval for any of these in this context, I only mean to illustrate that educating children involves passing on some concepts or other, not necessarily these particular concepts though.

To see this, consider Witt's slogan that "engendering is to reproduction as dining is to feeding" (ibid, 38). For Witt, 'engendering' is "socially mediated reproduct[ion]" (ibid, 18), which just means that engendering is reproduction as practiced and interpreted through a particular cultural (or human) lens including the social expectations and opprobrium which accompanies it. There is, Witt says, "a vast gulf between the elaborate and diverse social norms governing engendering and its relatively meagre set of material conditions or requirements" (ibid, 37). Like socially mediated reproduction, "[d]ining is a socially mediated form of feeding… [it] is connected intimately to biology and to bodies and their organs. The many elaborate social norms that govern dining are just like the many elaborate social norms that govern engendering" (ibid). Witt goes on to say that dining and engendering are constrained by "material conditions". In other words, as I have argued that cuisine is limited by its object having nutritive value for us, Witt is placing a similar limit on dining (or cuisine). That which is being consumed and the physiology of that which is doing the consuming i.e. humans, constitute the material conditions under which dining can take place. Given this, it seems she would agree with my examples of chewing gum and concrete eating as activities that cannot constitute cuisine or dining since such activities do not fulfil the material conditions necessary for something like dining to occur.

Again, in a similar way to my own argument, gender (or engendering) is constrained by material conditions which "do create some limits on the flexibility and range of activities that can be successful" (ibid, 38). Aside from gestation and the creation of sperm and ova, she says, "there is room for a lot of variation…" (ibid). So far then this comparison between engendering and dining, and my own comparison between gender and cuisine is in fact very similar. However, Witt does not frame her idea of socially mediated reproduction, and reproduction simpliciter, in terms of a hierarchy among philosophical species as I do. She is clear that she is engaging in a "'debunking' project" to show the "gulf between social normativity and natural or biological normativity" (ibid). In other words, by the comparison between engendering and dining, she wants to illustrate that social norms cannot be "read off" natural norms (ibid, 37),

and ensure that natural or biological norms do not have any undue influence on the expression of socially mediated reproduction. The division between the social and the natural though is reminiscent of the divide I explored in Chapter II, between the individual and the species in de Beauvoir (1949, 60-62; 66), and, as such, susceptible of the same sort of challenges. Namely, once the divide between biological and social normativity is established, it is no longer clear how they are related.

Now, for Witt, it is the "material conditions" that relates the biological and the social. Importantly though, these material conditions that make dining (cuisine) and engendering (gender) possible are subject to change. She is in fact explicit that the material conditions upon which engendering (socially mediated reproduction) rests are contingent. "In a different social world engendering might be replaced by cloning and in the 'cloning' world social individuals would have a different principle of normative unity" (2011, 105), and she invokes Firestone's idea that material conditions can and should be changed to accord with justice (ibid, 39).[23]

At this point then, not employing a hierarchical understanding of living things, Witt's comparison and mine diverge considerably. For Witt, the material conditions which limit dining and engendering are only limiting in a contingent manner, and if they were altered, by artificial reproduction or some other means, they would cease to be a limit on dining or engendering, at least in the way they currently are. The explicit reference to Firestone indicates certain materialist assumptions about the human person being a conglomeration of parts which we are free to remake in whatever ways we see fit and insofar as our technology permits. This conception of the human person is susceptible of the same objections I levelled in Chapter II, where the parts that constitute being a man or a woman cannot be accounted for in a non-arbitrary manner.

I contend then that, unlike my own approach, Witt has failed to take full account of our nature as animals, and the reality of our bodies. In my own analysis, the physiology, behaviour

[23] See also Firestone (1970, 11).

and ends of the power of nutrition and generation, are fixed by our being the biological species we are and limit cuisine and gender precisely because we are the kind of beings we are. That is, cuisine must be limited by its object still being food for us, and gender must be limited by its object still being related to the generation of the species. Just because we are animals, one of the fundamental powers of living things is nutrition and another is generation, and both of these powers are expressed in all living things in accordance with their philosophical species and the limits imposed by their biological species. In the case of cuisine, the substance 'concrete' in a 'concrete eating competition', would have to be so radically different so as not to be concrete at all for it to be a possible object of the power of nutrition for us, or else our physiology would have to be so radically different so as not to be the physiology of a member of the biological species '*homo sapiens*' at all. In a parallel manner, an event like a car crash or an attitude like a 'disdain for the poor', as discussed in Chapter II in relation to Butler's account of gender, could not be an instance of gender because of their lack of relation to the generation of children.

Other actions, such as paedophilia directed towards pre-pubescent children, are a kind of behaviour which would also not be a manifestation of gender since such activities are not related to the generation of children in any way. Again, concrete eating, or pica in general, is illustrative. Concrete eating makes use of the same physiological features i.e. mouth and digestive system, and could involve the same sort of behaviour i.e. it could be performed in an elaborate dining ceremony using cutlery, crockery and "preparation", as making a birthday cake, but this does not make concrete eating a form of cuisine because the end cannot be nutritive. Similarly, paedophilia might make use of the same physiological features i.e. genitals, and similar behaviour i.e. intercourse, but this also is not sufficient to be an expression of gender because the end cannot even potentially be the generation of children. If a certain kind of behaviour, involving a certain aspect of our physiology, i.e. our digestive system in a concrete eating competition, is not done for the end of nutrition, it is not sufficient to rise to the level of cuisine. This is because, given our constitution and that of concrete, concrete can never be food for us. The mere use of our digestive system and the ingestion of concrete, though superficially

similar in form to cuisine, is not cuisine at all due to its radically different end. In a similar fashion, the superficially similar use of one's genitals in a paedophilic act is not an expression of gender, due to its radically different end.

Importantly, to close this section, it is worth nothing that something's being expressive of gender or cuisine for that matter is not the same as its being morally right. All it means is that it is a rational elevation of the same sort of living power that other living things possess. Something like chewing gum would not be a genuine instance of cuisine because chewing gum is not a kind of food, but that does not thereby mean that it should never be done. Conversely, something like non-paedophilic rape might be an expression of gender because it could be directed at the generation of children, but that does not make it morally acceptable. Undoubtedly acts like rape and paedophilia are morally repugnant but their being so does not arise directly from their being expressions of gender (or not). As mentioned previously, an activity being rational, in this context, does not mean in accord with right reason. It merely means that an activity, in some way, manifests our ability to grasp concepts.

V) Conclusion

What are we to conclude from this discussion? Perhaps I can borrow Witt's slogan above and sum up the argument by saying that "gender is to sex as cuisine is to nutrition". Cuisine, broadly understood, encompasses our physiology, behaviour and end, and while other living things engage in all three of these to attain their nutritive end, each is elevated through our rationality. Similarly, gender, broadly understood as encompassing its own physiology, behaviour and end which we share with other living things, is the elevation of sex. There is an analogy between nutrition and sex in the animal case and cuisine and gender in the human case. Our physiology and behaviour as directed towards their nutritive and generative ends, are more than they are in the animal case.

While I have argued that the nutritive end of the power of nutrition and the generative end

of the power of generation place limits on the expression of cuisine and gender respectively, I have avoided being overly determinate and recognise that there is room for legitimate disagreement over these limits. For example, while it seems clear that chewing gum and pica cannot be considered instances of cuisine in the manner in which I have characterised it, it remains unclear whether something like wine tasting might be considered cuisine. In an analogous fashion to the chewing gum, wine tasting usually does not involve the wine actually being consumed. The wine retains its nutritive function but the behaviour of wine tasting is not actually directed towards this nutritive function in any direct manner.

I leave this particular matter unresolved because, as I have already discussed in a different context, a handful of borderline cases which are otherwise difficult to interpret, do not indicate, by themselves, that the comparison I have drawn between cuisine and gender is illegitimate. Instead in my concluding chapter, I want to draw attention to a number of advantages the hierarchical framing of gender difference has over its reductionist and constructivist competitors. I will also attempt to draw out some of the specific reasons for making the division between men and women in the first place, and finally, I will show how the seeds of this hierarchical account of gender are already present in Aristotle and Aquinas.

Chapter VIII – Gender: An integrated Aristotelian approach

I) Rationality and animality

In this final chapter I want to work out some of the advantages of my hierarchical account of gender in contrast to alternative accounts of gender explained in previous chapters. The advantages flow from my attempt to take full account of our rationality or humanity *and* our animality. My account recognises our animality and our bodies without reducing us to something less than fully human. Our animality ensures that gender has certain determinate content and is limited by its being a *generative* power. At the same time though, our animality is elevated by our being rational, and so the manner of our being limited is not like it is among other animals.

I call my account 'integrated' first because I wish to indicate that it takes account of our animality without reducing us to it or denying its existence entirely, and second to contrast it with the adversarial accounts of gender explored in Chapters I and II, which fail to take adequate account of our dual nature, as rational and animal. Here I want to explain how our being rational and animal makes up for deficiencies in other accounts of gender and sexual difference. First, through safeguarding the unity of the individual, my account avoids reducing human sexual difference to something less than fully human while also acknowledging our relatedness to other living things.

Second, safeguarding the unity of the individual also avoids the opposite reactionary pitfall of denying our biology, or the role of our biology in sexual difference in the human species, in an effort to avoid reductionism. I will argue that the adversarial approach to gender present in this reaction, though insightful in a number of ways, should not be the starting point for our reflection on gender difference. This is partly because the underlying anthropology is implausible as explained in Chapter II, but also because it makes gender differentiation arbitrary. Rather, I attempt to elevate our biology without erasing it. As a corollary my account

can act as a kind of counter to the hyper-liberalism and alienation from our own bodies implied in the idealistic or adversarial accounts of gender I explored in Chapter II. These accounts imply that bodily limits are an assault on my freedom or my fully realising my humanity. Third, my approach to gender differentiation provides an answer to the question of why we differentiate by gender in the first place. That is, the reason why gender, as opposed to baldness or race or other such characteristics, is the first and fundamental division among humans lies in the fact that it is uniquely relational and, at the same time, individuating. Finally, to ensure that my contemporary account of gender is Aristotelian, I will examine certain key texts from Aristotle and Aquinas on the question of the division between sex and gender. While neither make this division explicit in their corpus, the hierarchical account of gender as I understand it is nascent in their work especially as it pertains to marriage and the rearing of children.

II) Gender integration vs gender reduction

The hylomorphic and hierarchical account of the person is a safeguard for the unity of the individual.[1] It is a way to explain the different tendencies and powers we have. It is, in part, an attempt to explain what is truly human about us, as in, what makes us different to other living things, whilst also insisting on various important commonalities we have with other living things. As I argued in the opening chapter, there is nothing wrong with the search for sexual difference in the different parts of the body at different levels, from the chromosomal to the anatomical. What matters in the specification of sexual and gender difference lies in the metaphysical lens through which this data is interpreted. As I argued in Chapter IV, it is not only possible to interpret the empirical data of the biological sciences through an Aristotelian-Thomistic hylomorphic lens, it is in fact preferable. Systems biology and its holistic approach to understanding order in a living thing, is, as I argued, a thoroughly Aristotelian endeavour which refuses to reduce a system or process to any particular object. Rather, the holism and orderly

[1] The unity of the individual is also a major concern for Aquinas. The unity of the individual person is a major reason why there cannot be three souls corresponding to the three forms of living things in one and the same person. “If, therefore, man were 'living' by one form, the vegetative soul, and 'animal' by another form, the sensitive soul, and "man" by another form, the intellectual soul, it would follow that man is not absolutely one” (ST, I. Q.76, A.3). The issue of the person being divided into material parts is not the major concern but rather the possibility that the soul itself might be thought of as divided. But the soul is that which unites the parts so it cannot be the source of division. See Koren (1955a, 42-43).

perspective is far more compatible with a form-matter, efficient-final cause approach than the reductionist perspectives I explored in Chapter I.

Interpreting the data of the biological sciences in a reductionist manner whereby sexual difference is nothing other than the creation of a small gamete in the case of a male, and a large gamete in the case of a female[2], is a mistake since this approach smuggles in pre-existing ideas about what it means to be male and female in the first place. Otherwise, in the search for the hidden essence of male and female, there would be no starting point. In addition to this fundamental error, this approach risks ignoring that which makes us human and implying that, adjusting for difference in biological species, sexual difference in the human species is the same as sexual difference among other animals. As I argued in the last chapter though, this is not the correct way to understand living things.

My integrated and hierarchical approach therefore has the distinct advantage of taking *full account of our animality without sacrificing our humanity.* That is, we are still exceptional because of our reason, but evolutionary theory or the general idea that we share much in common with other animals in the reproductive realm as elsewhere, need not be denied. From my integrated Aristotelian perspective, it is possible to acknowledge that chromosomes and gamete size, and other bodily or animal aspects of our being sexed, are indeed *part* of the story of our being men and women. They are part of the material, formal and efficient cause of our being men and women. But, at the same time, they are only part of the story because of their being directed towards the end to which they are in fact directed i.e. generation, and this end should be understood as belonging to the whole man or woman as integral to their being a man or a woman. Chromosomal arrangements and gamete size are part of the inseparable and incomplete accident of sex, which is a concrete manifestation of the proper accident of the power of generation as explained in Chapter V.

At the same time though, our rationality ensures, not only that we can do all sorts of things

[2] See, for example, Stock (2021, 46); Wright (2021); and Byrne (2018a).

that other animals cannot, but also that we can do them in a unique and radically different way. In which case, 'being a woman' and 'being a man' includes 'being human' which includes 'being rational'. From this, humans are capable of living a kind of life utterly unavailable to other living things (Boyle Forthcoming). This includes a kind of freedom or a lack of determinacy about the life as lived as male and as female.

As I discussed in Chapter VI, sexual differentiation among plants is not uniform, but to the extent that it is present, it is completely determined by the nature of the plant. The male or female plant, or the male or female part of the plant, is utterly determined in its behaviour, physiology and ends, and all explanation in regard to its behaviour, physiology and ends is generic. That is, in explaining these things, reference to entirely generic features of both the plants biological and philosophical species is sufficient. Outside of the particular environment, no reference need be made to the individual plant. In short, being male and female is entirely determined by the biological and philosophical species.

Among sensitive living things though, there is a clear elevation of the power of generation where the male and female act through the powers of sensation, appetite and locomotion. The physiology, behaviour and end of the male and female of species with a sensitive soul varies considerably, but there is often a more clearly defined and separate role for the male and the female compared with vegetative living things. Because of the variation though it is only with specific knowledge of the *biological* species of an animal are we in a position to know anything about how an individual's being male or female affects the life of that creature. Once again, empirical investigation is required and not mere armchair reflection (Oderberg 2007, 203). Importantly, because they are a higher philosophical species, their being individuals, and therefore their being male and female, is also elevated, and the particular behaviour, physiology and end of generation (as well as other powers) is influenced by the particular experience of the individual animal. That is, unlike with plants, exclusive reference to entirely generic facts about the species, both philosophical and biological, is insufficient. Being of a philosophical species capable of consciousness and desire, the experience of the individual

becomes explanatorily relevant. Nevertheless, within a given biological species, males and females tend to have prescribed and differentiated roles.[3] Being male or female in the case of non-rational animal species then, despite permitting a limited variation between males or females of a given species, remains highly determined.

In terms of a diagnosis, it seems to me that the failure to recognise that humans are a different philosophical species to other animals is the source of legitimate concerns about being reduced to something less than human. The failure to recognise this distinction is part of the reason that much reflection on gender in the 20th century tends to eschew the biological as such. However, the hierarchical conception of being means that we can affirm the truth and importance of our biological differences without us being reduced to and determined by them as other philosophical species are.

III) Gender integration vs gender adversarialism

Holding our rational and animal aspects in tandem also has the advantage of *avoiding the pitfall of overemphasising our rationality at the expense of our animality or biology*. This indeed could be said to be the entire point of the "liberationist paradigm" I discussed in Chapter II, whereby, over the 20th century, authors writing on gender, tended towards the minimisation, if not outright rejection, of the body as the means to human liberation. Of course, the authors I examined in Chapter II who themselves were instrumental in the creation of this paradigm, would not have seen this negatively. Where I see the detaching of gender from the body as a risk which could cause those terms to lose any real meaning, Butler, as the apotheosis of the "liberationist paradigm", sees the detachment of gender from biology as a thoroughly good thing since the very defining of a woman in relation to her body, or indeed in any other way, is

[3] The experience of maleness and femaleness varies radically among animals. Male and female animals typically play a different role in seeking a mate, and females usually, though not always, bear a reproductive burden which the males do not. This is especially so for mammals, but also many egg laying reptiles and birds. However, among other (biological) species, the situation is quite different. Consider the life of the male and female angler fish. The female is far larger, and the much smaller male attaches to the female's body in such a way that their tissues fuse and their circulatory systems unite. The male, in a sense, becomes a sperm-producing-organ of the female and is incapable of independent existence (Roughgarden 2013, 43-44). In each case though, the life of the male of the species *qua* male, is different from the life of the female of the species *qua* female. The life each leads remains determined by its philosophical and biological species including its sex specific role in generation.

a kind of "violence" against her (1993, 11; 2004, 206).

This same adversarial perspective between the self and the body as a natural given from which at least some even minimal natural norms can be derived, is also present in de Beauvoir and Firestone. The juxtapositions between the human and the animal (1949, 66-67); the individual and the species (ibid, 60-62; 66); the biological and the historical (ibid, 68; 70-72; 848); and transcendence and facticity (ibid, 37), in de Beauvoir and the natural and the human in Firestone (1970, 9-10), create a highly adversarial view of the human person, constantly at war with their very being. This is because, in one way or another, each of these juxtapositions is an expression of the view that in order to be fully human, to flourish as an individual, I must be freed from the constraints of nature. Of course, they would not have viewed it this way because the 'animal' or 'biological' is a meaningless fact upon which society imposes meaning. So what I need liberating from is the biological with its various cultural meanings attached. This conception of the biological though is not plausible and to be intelligible it must contain at least some teleological and therefore meaningful content.

In contrast to the reductionist perspective, the authors I examined in Chapter II were keen to emphasise human exceptionalism at least in part as a rebuff to ideas they have about biological determinism (Mikkola 2019), and the implication that if gamete size or chromosomes are all there is to sexual difference, then all there is to women *qua* women (and men *qua* men) is their unique role in childbearing.[4] They are right to emphasise human exceptionalism in relation to other animals in regard to sexual difference. They are also right to reject the idea that there is nothing more to 'being a woman' than her role in childbearing. Insofar as each advances the adversarial perspective they do, between natural norms, or rather the denial of natural norms, and human norms in order to push back against the notion that women as women and men as men are nothing more than their reproductive functions, their adversarial

[4] Butler illustrates this concern aptly in an interview she gave in 1992: "I actually think that the whole question of "What is a woman?" ought to be kept open as a question. It would be a great mistake for feminists to embrace a "biological" or "natural" definition, if only because that leads to a reduction of women to their reproductive function" (Bankowsky, 1992).

perspective is understandable.[5]

However, this perspective risk collapsing into incoherence since, in order to even get off the ground, there must be a developed conception of what it means to be a woman in the first place which at least de Beauvoir[6] and Butler[7] forbid. Furthermore, as I have shown, it need not be the case that in taking the biological aspects of being male and being female seriously, we are required to say that being male or being female is nothing other than their reproductive functions, or, in particular, that women *qua* women are nothing other than their role in reproduction.

Being a woman or being a man encompasses our being human and our being rational, and therefore the freedom that comes with being a rational being. This means that gender can take on a far greater variety and expression than is possible in other non-rational creatures. Our physiology can be changed and accentuated in various ways, such as through the use of lingerie; our sexual behaviour can be expressed in marriage or any other number of generative commitments not available to other non-rational creatures. While the authors under discussion rightly recognise we have a freedom not possessed by other creatures, our bodies and their limits remain a source of disquiet for them. De Beauvoir clearly sees the limits set by the body as something to be resisted and overcome, and Firestone (and even Witt) in her footsteps advocates for its radical change. Butler in turn thinks that the definition of woman (or man) in biological or natural terms almost automatically leads to her reduction to something less than human (see Footnote 4). As my hierarchical account of sex and gender indicates though, this need not be the case.

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[5] To be sure, the adversarial perspective goes to extreme lengths in de Beauvoir especially in her discussion of the relation between mother and child during pregnancy. "[T]he whole organism of the female is adapted to and determined by the servitude of maternity… The female is the prey of the species" (1949, 56); "penetrated by a foreign gamete, it implants itself in the uterus: first violated, the female is then alienated…" (ibid, 57); "she is the most deeply alienated of all the female mammals, and she is the one that refuses this alienation the most violently; in no other is the subordination of the organism to the reproductive function more imperious nor accepted with greater difficulty" (ibid, 66).

[6] As I explained in Chapter II, de Beauvoir is unable to coherently affirm her adversarial account of being a woman because her own ontology forbids her from committing herself to any fixed notion of what a woman is. "But the definition of man is that he is a being who is not given, who makes himself what he is. As Merleau-Ponty rightly said, man is not a natural species: he is a historical idea. Woman is not a fixed reality but a becoming; she has to be compared with man in her becoming; that is, her possibilities have to be defined…" (De Beauvoir 1949, 68).

[7] Butler is also forbidden by her own ontology from identifying what a woman or a man is, and is therefore unable to identify that which would constitute violence in their regard (1990, 33).

To see this, it is necessary to emphasise a further incorrect aspect of the anthropology of these authors only touched on in Chapter II. That is, their commitment to a hyper-individualism which fails to recognise any natural, given or unchosen relations or obligations. A number of contemporary authors have noted this aspect of a certain strand of reflection of gender which tends to minimise the role of the body,[8] but perhaps the legal scholar O. Carter Snead captures the idea most succinctly when he characterises this anthropology as the "unencumbered self, without *constitutive* ties to others" (2020, 91). Under this conception "the individual self must be understood as prior to and not determined by any purposes or ends" (ibid, 78). This, I submit, is part of the reason for the adversarial account of the self clearly present in de Beauvoir, Firestone and Butler. The body, as a given with its own ends, especially the body as sexed and directed towards the generation of children, is not unencumbered and it *does* at least appear to have some prior and determined ends or purposes. Margaret McCarthy explains:

> *"[T]o have a sexual body is to find ourselves already in relations we do not simply choose and, even more, in relations that define us—constitutive relations. To have a sexual body places us before three such relations. Being sexual, we are born and as such are children, sons and daughters, owing our existence to others, being, effectively an "inheritance." Then, being sexual, we are already poised toward the opposite sex. To say "male" or "female" is already to have the other in view. Finally, being sexual, we are potentially mothers or fathers. All of this, then, situates our freedom, and dramatically so, whether we like it or not"* (2016, 291-292).

This conception of the self, consistent with my own hierarchical account which recognises the body as a given and allows for natural, unchosen relations, recognises that our gender establishes us in relation first to our own parents, or more generally, lineage and historical tradition. This itself is an elevation of the fact that we are a product of sexual reproduction

[8] I already briefly discussed Carl Trueman (2020) in Chapter II and his idea of a poietic conception of the world which sees reality as a kind of raw material out of which meaning, and purpose, can be created by the individual. O. Carter Snead argues that "[o]ur dominant anthropology in the three perennial conflicts in public bioethics - [abortion, assisted reproductive technology and euthanasia] - is insufficient. It is rooted in expressive individualism, a reductive and incomplete vision of human identity and flourishing. While this captures a truth about human particularity and freedom, it misses crucial aspects of embodied reality. Through the lens of expressive individualism, there are no unchosen obligations, relationships are instrumental and transactional, and natural givens offer no guidance for understanding or negotiating the world" (2020, 270-271). Although writing in a different context, it seems that the individualistic anthropology I identify in de Beauvoir, Firestone and Butler suffers from very similar anthropological difficulties to those identified by Snead underlying these debates in bioethics. Perhaps 'gender theory' could be added to Snead's list of insufficient anthropologies. See also Laqueur (1992); McCarthy (2016).

which has no analogue among other animals. We are not simply offspring but sons and daughters. The significance of sexual difference in this regard has varied throughout culture and time, but it remains the case that the relation between son or daughter to father has, in general and for the most part, been considered to be different in important ways from the relation of son or daughter to mother. It is a *gendered* relation because of the ultimate orientation of the son or daughter towards motherhood or fatherhood. This means that, for example, in the relation between child and parent, the child, boy or girl, first learns how to associate with men and boys in a different manner to women and girls. That is, due to a boys' ultimate orientation to fatherhood, he learns to relate to girls and women as potential mothers, a potential which other boys and men do not have. While this may happen in other animal species, it cannot happen within a culture or tradition which is what makes this relation a rational and therefore gendered relation.

Second, to have a sexed body is to be "poised" towards the other sex as McCarthy states the matter. This is true and applies to all sexually dimorphic species. However, the hierarchical account of sexual difference allows us to recognise that this constitutive relation has a rational dimension in the human species. This rational relation can be expressed in marriage or other such rational unions. Again, men and women are "poised" towards one another as potential fathers and mothers. Third, our gender situates us in relation to our children (or potential children) such that a man is a potential or actual father, and a woman is a potential or actual mother, to those children. Once again, this is an elevated constitutive relation which involves imparting an education first in terms of language, which itself is a tradition.

From the perspective of hyper-individualism, all of these relations are an imposition on the self. These relations are a limit on my 'becoming' (de Beauvoir); they are the reason why the sex distinction must be eliminated (Firestone); and they are a "violent" imposition of discourse (Butler). On this last point, for Butler, these relations are not natural because nothing about nature, outside of discourse, can ever really be known about it. This is why sex, the body, is

"always already gender" (1990, 11), that is, the discourse we impose on it.[9] Once again though, the view that these constitutive relations are a kind of imposition is shown to be incoherent. First, there simply is no perspective from nowhere in which we might come into being free from all relations to others, so if these constitutive relations are a 'imposition' they are entirely inescapable. Second, it is not possible that any such constitutive relations are an imposition unless we have a substantive conception of what the human person is. It is only from a standpoint where we can say what a human being is, that we are in any position to assess what is good for them and what is not. At the same time though, de Beauvoir and Butler in particular, forbid us from making any such judgement.

The same idea that there are not or should not be unchosen relations, and that self-will takes precedence, is also strongly present in transgender writer, Charlotte Tate, who, in explaining what it means to be 'transgender', contrasts "birth-assigned and self-assigned labels" (Tate, Ben Hagai and Crosby 2020, 7). Consistent with the hyper-individualism I have argued is an integral part of this anthropology, Tate emphasises the assignment *by another* ("assigned to the category male at birth") as opposed to assignment by oneself, where the latter takes precedence over the former (ibid, 6). 'Assignment by another' is an imposition on the 'unencumbered self'.

Relatedly, in his historical study of reflection on gender, Thomas Laqueur identifies a further corollary of this hyper-individualism: "In striking contrast to the old teleology of the body as male, liberal theory begins with a neuter individual body: sex but without gender, in principle of no consequence to culture, merely the location of the rational subject that constitutes the person" (1992, 196). Here Laqueur emphasises the move from an Aristotelian conception of women as "deficient men" (see Chapter III), to the Enlightenment conception of women and men as rational subjects who are essentially neuter. The unencumbered self then, to be truly unencumbered, cannot be either man or woman, for whether by nature or by culture, such an imposition on the self is anything but 'unencumbered'. Rather, it is replete with "constitutive

[9] See Chapter II for details.

ties" (Snead 2020, 91) and must be understood in light of, and partially determined by, unchosen ends and purposes, rather than prior to those ends and purposes (ibid, 78).

Laqueur's point about the "neuter individual body" of liberal theory also applies to Butler despite the fact that, for Butler, there is no body that resists cultural interpretation. Sex is always gender, so no subject comes to be except into an already gendered world. There is no actually pre-existing subject. However, as Barnes rightly notes, even if there never is an actual moment in which a human person is not being gendered through the discourse which surrounds them, it is nevertheless the case that being gendered describes a genderless unit being assigned to a gender category whether by itself or another (2022b). Within Butler's anthropology, even if there is no actual moment where an individual is not gendered, gender remains an ultimately arbitrary attribute of the individual determined by discourse. The individual, in themselves, if such a thing could ever be accessed, is not gendered. Butler then, is still working in the hyper-individualist paradigm of the unencumbered self.

The "liberationist paradigm" and the hyper-individualism underlying de Beauvoir's, Firestone's and Butler's accounts of sexual difference and gender, are reflective of an anthropological error which fails to take account of the kind of embodied beings we are. By contrast, my hierarchical and hylomorphic vision of gender offers a superior account of gender which does not unduly limit our freedom, nor does it emphasise our rationality to such a degree that we cease to be rational *animals*. Adversarial accounts of gender and sexual differentiation should not be the starting point for subsequent reflection on gender. My integrated Aristotelian approach, which recognises and can account for the natural relations arising from gender, offers a starting point reflective of the kind of beings we really are.

IV) Gender, not cuisine, not baldness, not race

A third major advantage of my integrated and hierarchical account of gender is that *it provides an answer as to why we make the division between women and men in the first place*,

as opposed to any other natural division we might make. My integrated and hierarchical account of sexual difference, through its conception of the elevation of living powers, recognises that the fundamental division between the sexes arises from the uniquely relational nature of gender as well as the almost paradoxical fact that this division is the first marker of individuality, both temporally and ontologically. To see this, consider the following.

Why are we 'men and women', rather than, say, 'culinary creatures', especially since I relied so heavily on this parallel in the last chapter? In contrast to the neuter individuals envisaged by the hyper-individualistic conception of the person, it is not the case that human beings are not non-gendered individuals or, more specifically in regard to childrearing, non-gendered parents. Rather, we are men and women, and mothers and fathers (Anderson 2018, 165). In terms of courtship, men and women do not relate to each other as 'non-differentiated potential children making rational beings', but specifically as men and as women.[10] The fact that gender is not generic is part of the reason why we classify members of the human species specifically as men and women rather than as culinary creatures. While the classification of the human species as a culinary species is not wrong and does indeed differentiate us from other animals, the classification fails to provide any differentiation within the species. Our being culinary is shared equally among members of the human species, but our being men and women is not. In this sense, belonging to a specific sex is the first ontological differentiator among members of the same species.

While being men and women points to a division within the species where 'being culinary' does not, why do we not divide all of humanity into bald and non-bald people[11] or gingers and

[10] In his *Lectures on Ethics*, in a lecture titled 'Of duties to the body in regard to the sexual impulse', Kant writes: "[T]he sexual impulse is not an inclination that one human has for another, qua human, but an inclination for their sex…The desire of a man for a woman is not directed to her as a human being; on the contrary, the woman's humanity is of no concern to him, and the only object of his desire is her sex… humanity here is set aside. The consequence is, that any man or woman will endeavour to lend attraction, not to their humanity, but to their sex, and to direct all actions and desires entirely towards it. If this is the case, humanity will be sacrificed to sex" (156). Kant is right to say that sexual desire is not directed towards another human being *qua* human but wrong to suggest that it is directed towards 'sex' as abstracted from humanity. He almost reads as if he were saying that the sexual desires of a man are directed towards femaleness, regardless of species. The difficulty arises, it seems, from the abstraction of our humanity from our sex. Rather, we are directed towards each other specifically as men and women. This includes our humanity, our animality and our sex. This is a similar error to some of the authors I examined in Chapter II who fail to recognise that our animality is subsumed and elevated by our humanity.

[11] In the *Republic*, Plato implies that he considers the difference between men and women to be as trivial as the difference between bald and non-bald in terms of women's fitness for any particular "skill or occupation associated with the running of a city…" (Book V. 454c; 454d-455e).

non-gingers, or white and non-white people?[12] Each of these is a kind of differentiator within the human species but each does not have the cross-cultural and trans-historical ubiquity of the division of gender.[13] Why though does gender have this ubiquity and other divisions do not? I have already provided a partial answer in Chapter V whereby I offered a classification for the accident of sex (gender) and explained how this accident was inseparable with a special relation to form. Gender, I argued, is unlike baldness and gingerness, which, while remaining inseparable accidents, have a more general relation to form. Furthermore, sex (or gender in the human case) is holistic in a way in which baldness and gingerness are not. I also explained the difference between the accident of sex and ethnicity through showing how ethnicity can properly be said to belong to a corpse where sex (or gender) cannot.

However, even while accepting that these divisions are not equivalent, none of this explains why gender is the fundamental and basic division that it is.[14] Answers which reduce this division to a product of culture, discourse or history are insufficient, based as they are on a false anthropology, or so I have argued. On the alternative anthropology I have offered, the answer lies in the incompleteness of the accident of sex in the human species, or, to say the same thing, the relational aspects of the gender. This is present in my characterisation of gender as an incomplete accident which needs another gender for its completion (Chapter V). It is also the reason the idea of a third sex is incoherent (Chapter VI). Furthermore, precisely because of its incompleteness, gender provides a natural given relation between child and parent, between man and woman, and between a mother and father and their children, as explained in III)

[12] In 2023, Johns Hopkins University removed its definition of a lesbian as a "non-man attracted to non-men" after a public outcry ("Johns Hopkins pulls 'lesbian' definition after uproar over use of 'non-men' instead of 'women'"). The clear implication in this definition is that women are 'non-men'. Of course, everything in the universe that is not a man is a non-man. This particular division then, among other issues, is so broad as to be entirely unhelpful.

[13] Witt refers to the importance of ubiquity in her account of gender as a 'mega-social role' which unifies other social roles (2011, 87-89). She is trying to answer the same question as me, but from a different perspective. She thinks gender is the mega-social role because of the way culture(s) is ordered (ibid, 104). She considers race as a possible mega-social role, but race does not have the cross-cultural ubiquity that gender does (ibid, 98-99).

[14] Aquinas himself offers a rather startling answer to the question of the ultimate reason for differentiation between the sexes in the human case: "And as among animals there is a vital operation nobler than generation, to which their life is principally directed. Therefore the male sex is not found in continual union with the female in perfect animals, but only at the time of coition; so that we may consider that by this means the male and female are one, as in plants they are always united; although in some cases one of them preponderates, and in some the other. *But man is yet further ordered to a still nobler vital action, and that is intellectual operation.* Therefore, there was greater reason for the distinction of these two forces in man; so that the female should be produced separately from the male; although they are carnally united for generation" (ST. I. Q.92, A.1 [emphasis added]). The ultimate reason for sexual difference in the human species then is not the generation of the species, but the contemplation of God. To explore this possibility would take us beyond the realms of philosophical anthropology and into theological reflection on what it means to be human. For commentary and discussion of this passage see Barnes (2020).

above. Gender then, establishes us in foundational given relationships of at least one of these kinds, and often all three. Race sets up no such inherent relation, nor baldness, nor gingerness.

Given the kind of beings we are i.e. rational animals, our being bald, or ginger, or of one skin colour or another, are not recognised as basic divisions in the human species because they are not inherently incomplete and relational powers in the way that gender is. Even a difference like racial difference is not, in principle, given the kind of things we are, a difference that, at an anthropological level, affects relations among rational beings. A man and a woman of different races or ethnicities can still embody the basic gendered relations, of child to parent, of man to woman, and of mother and father to child. Racial differences are not directed towards these relational ends or indeed any other.

At the same time as gender is uniquely relational, it is also uniquely *individuating*. When a woman is pregnant or a baby born, the first question, almost invariably, is "is it a boy or a girl?". In this sense, gender is temporally individuating. Gender, as reflective of our being *rational*, is the first indication that we are dealing with a *someone* rather than a something. Now, clearly there is a kind of analogue here with other animals which, in generation, bring a new individual into existence, for that is just what generation is. But the manner of our being individual must be characterised in a radically different way just because we are rational. Returning to Boyle on the difference of philosophical species: "It is not merely that animals can do things that plants cannot; it is that the whole language of 'doing' takes on a new significance, a new logical character, when we turn from plants to animals" (Forthcoming, 20). The doing to which Boyle refers, is also an indication of the 'being' of a thing, in the traditional sense that 'action follows being'. The 'new logical character' of the doing of an animal as compared to a plant, is all the more evident in the case of a human as compared to an animal, and, it seems, the division between boy and girl, is the first indication of this 'new logical character' of 'being an individual'. That is, being an individual, in the human case, is radically different from being an individual in the case of an animal or plant, and the division of gender signifies this in an inchoate manner.

Our being bald, or ginger, or one race or another, neither has the relational characteristics explained above, nor do they indicate anything about the rational manner of our being individuals. In short, these characteristics do not point to our being persons in the manner in which gender does.

V) Gender and hierarchy in Aristotle and Aquinas

The final advantage of my integrated and hierarchical Aristotelian account of gender differentiation is that *it makes up for the deficiencies in Aristotle and Aquinas' own account whilst developing considerably an aspect of their thought seldom applied to sexual difference*, that is, the hierarchy of living things. In Chapter IV, I defended the general metaphysical hylomorphic framework arguing that it was consistent with empirical discovery and the discipline of systems biology. In Chapter V I defended that notion that sex is a kind of accident adding significantly to Aquinas through my account of sex being uniquely incomplete. Here, I want to show how the hierarchy of living things present in some of Aquinas' arguments concerning marriage contain the seeds of my own reflection on gender. Whilst neither Aristotle nor Aquinas says anything explicit about gender, they do offer valuable reflection on the matter through their discussion of marriage which they regard as the human or rational way in which we procreate. One does not have to endorse their general vision of marriage to see that what they are talking about is quite similar to 'gender' as I articulate it.

It is through Aristotle's arguments in the *Nicomachean Ethics* (1161a10-1162a32) about political relations in marriage, and Aquinas' arguments in his *Commentary on the Sentences* (Book IV), the *Summa Contra Gentiles* (esp. Ch. 122-124) and the *Summa Theologiae* (esp. Suppl. Q. 41-68) concerning the naturalness of marriage and reasons why extra-marital relations are unnatural, that we can discern gender. As I will show, these arguments employ a hierarchical understanding of living things with rational animals (humans) at the top.

In the works cited, Aquinas argues that marriage is the rational form of the same procreative end we share with other non-rational animals, and I submit, it is in this rational form that we can find gender. His arguments on this point are straightforward. In essence, each of his arguments concerns the natural end of procreative activity i.e. children, and explains how various deviations from marriage, whether that be concubinage, fornication or polygamy, are detrimental or damaging to this end. In the course of doing so however, he emphasises that that which makes us different from other animals (reason), makes marriage (and deviations from it) possible. Importantly, one need not agree with his arguments and might have reason to reject their empirical content,[15] but whether it is marriage as Aquinas' conceived it, or extra-marital sexual relations of whatever kind that is thought to be most conducive to human flourishing, they are all nevertheless expressions of rationality and therefore gender.

To see this, I will focus on one of Aquinas' arguments concerning the naturalness of marriage. In the course of asking whether marriage is natural in the *Commentary on the Sentences of Peter Lombard* Book IV, Aquinas raises a difficulty with his own position on marriage, namely, that there is no marriage among non-human animals, and therefore, this is a reason to think that it is not natural. His reply makes use of a hierarchical understanding of nature and reveals why what is natural is different for different species. He notes that humans can be inclined to something in two ways, in relation to their genus and in relation to their specific difference (Sent. IV. D.26. Q.1. A.1.). Here he invokes the Aristotelian classification of humans (and substances in general) in terms of their genus and specific difference which together make the species. For humans the species is 'rational' (specific difference) and 'animal' (genus).[16] As Aquinas says, the human person is inclined to something "because it befits the nature of his genus: and then it is common to all animals. In another way, because it befits the nature of the difference by which the human species surpasses its genus, inasmuch as it is rational; like acts of prudence and temperance" (ibid). Human nature, therefore, as 'rational'

[15] See Brennan, S., and Cameron, B. (2015) in which the authors argue that 'romantic-based' marriage is not a good foundation for child-rearing – a position with which Aquinas, with appropriate qualifications, would surely agree.
[16] The 'species' to which Aquinas refers is 'philosophical' rather than 'biological'.

and 'animal', allows us to share certain things in common with animals, and also to have certain powers which belong to us alone. It is on account of his understanding of human nature that we share a genus with other animals such that humans and animals have the power of generation in common. Our specific difference, rationality, differentiates us from other animals and "inclines us to marriage" (ibid). In this way, marriage becomes a *rational* expression of the generative power, and although it remains essentially generative, it is elevated and takes on a new significance in the human species. While marriage is not present in other non-rational species, it nevertheless remains natural to the human species because we are a rational species. On my account then, we can interpret Aquinas as saying that *marriage is an expression of gender*, and gender is natural to the human species.

One need not be committed to Aquinas' ideas about marriage to understand his basic point. It is simply that because we are animals, we share in the same generative ends that all animals do. At the same time though, because we are animals with *reason*, the generative power becomes *more than* merely 'generation'. Under my framework, this '*more than'* would be a manifestation of gender.

This can be seen clearly in the following passage, also from the *Sentences*, where Aquinas argues that a plurality of wives undermines marriage in more than one way.

> *"For marriage has as its principal end the procreation and education of children. And this end, indeed, applies to man according to the nature of his genus, which is why it is also common to other animals, as is stated in Ethics 8* [NE, 1161b11-1162a32]*: and this is how children are considered a good of matrimony*" (Sent. IV. D33. Q1. A1.).

Here, Aquinas argues that marriage is directed towards the procreation and education of children according to the nature of humans in regard to their genus, that is, *qua* animal. As we have seen, other animals, though not having marriage, are still directed towards this end. Since our nature, even *qua* animal, is rational, our being rational and our being animal are not different things, but two aspects of one and the same substance. So, we might say that what was pair-bonding in animals for the sake of offspring becomes marriage in humans. Here the

pair-bonding is infused with culture making marriage.[17] Of course, Aquinas himself does not say precisely this in the passage quoted, but the idea that the generation and education of children is something we share with other animals though elevated through reason and therefore culture, is certainly consistent with his own thought. Marriage then, in terms of its principal end as Aquinas understands it, including the education of offspring, would be an instance of the expression of gender as I understand it.

In accord with my own thesis, Aquinas' understanding of marriage is not limited to its procreative end. Given that marriage is an expression of gender (a rational expression of the power of generation) it includes not only those activities which culminate in the birth of a child, and not only the education of that child, but also the fidelity between spouses and the political aspects of marriage. In the *Summa Contra Gentiles*, he writes:

> "*the union of man and wife is not only ordered in this way because it is important to the generating of offspring, as it is in the case of other animals, but also because it is in agreement with good behaviour, which right reason directs either in reference to the individual man in himself, or in regard to man as a member of a family, or of civil society.*" (SCG. Ch. 123, VIII)

> And in his *Commentary on the Sentences* he writes,

> *"But as the Philosopher says, among humans alone marriage has as its secondary end the sharing of those works that are necessary in life, as was said above; and in keeping with this the two owe fidelity to each other, which is one of the goods of matrimony."* (Sent. IV. D33. Q1. A1)

The former points to the political aspects of marriage and the latter to the fidelity between spouses. These two ideas are in fact closely related since the fidelity or friendship between husband and wife in Aristotle and Aquinas becomes a kind of microcosm for political life. This idea is taken straight from Aristotle who says that man and wife live together "for the various

[17] See Weisfeld, G. E., and Weisfeld, C. C., (2002) who argue that pair-bonding is the evolutionary basis for marriage, where marriage, like pair-bonding, is a kind of adaptation which ensured paternal certainty. I see this as further reason to think that marriage is a *rational* expression of the power of generation and therefore an instance of the manifestation of gender.

purposes of life… so they help each other by throwing their gifts into the common stock" (NE, 1162a21-25). I have not discussed the relation between spouses or the political aspects of marriage as an expression of gender, but there is clearly room for reflection on the matter from within an Aristotelian-Thomistic framework.

Both Aristotle and Aquinas recognised the salient differences between animals and humans in regard to the power of generation, and the distinction between sex and gender can be read into their work without distortion. In short, contemporary Aristotelians and Thomists should be satisfied that they can intelligibly discuss a divide between sex and gender whilst remaining faithful to the source material.

Conclusion

In the introduction, I outlined three broad anthropological positions that one might adopt in regard to the relation between sex and gender. I suggested that one could be a realist about both where, if gender is not directly equated with bodily sex, it is certainly very close to it. Secondly, I said that one could be a realist about bodily sex, but not about gender which has no clear relation to sex. Thirdly, I suggested that one could be an anti-realist about both. In this thesis, I have found that each of these positions is inadequate in some way and have attempted a synthesis which draws on all three.

In reverse order, I have found that the third position presupposes an implausible anthropology whether in its dualist, materialist or idealist guise. To a greater or less extent, in each of these cases the differences between men and women are constructed, and only Butler consistently works out the radical nature of the total separation of sex and gender. While the authors in Chapter II who adopt some version of this thesis are right to emphasise the distinctiveness of sexual difference in the human species when compared with sexual difference in other species, they do so at the expense of denying any relation between humans and other animals at all. This results in a truncated anthropology which fails to recognise that we too are animals, even if animals of a different kind.

I have discovered that the second position, which maintains that sex is a fact, but with no real relation to gender, presupposes a reductionist anthropology whereby sexual differentiation is reduced to a difference in some part, where that part is thought to be that which makes males and females “essentially” different. In Chapter I, I found that this position presupposes some prior holistic conception of males and females upon which it logically depends. While typical biological accounts of sexual difference rightly highlight the mechanisms of sexual differentiation in genetic terms, these mechanisms need to be understood in relation to their end. It is not only that such accounts risk reducing us to something less than fully human, they also risk reducing us to something less than whole living organisms.

The teleological holism of Aristotle has served as a basis for the synthesis of what each of these positions gets right about sexual difference, even while Aristotle himself provides a less than satisfactory account. As I showed in Chapter III, it is not merely Aristotle's faulty biology which acts as the basis for his disastrous account of sexual difference, but also his misapplied metaphysics. It manifestly is not the case that the form-matter conception of nature applies directly to generation in the way Aristotle asserts. However, through Aquinas' delineation of accidents, I have provided a framing for thinking about sexual difference as an incomplete accident and thereby remained authentically Aristotelian.

Furthermore, I have made room for gender as differentiated from, but grounded in, sex within an Aristotelian hierarchy of living things. Gender, I have argued, should be understood as the rational expression or manifestation of the power of generation which we share with other living things. Contemporary Aristotelians and Thomists writing in this area have not applied this hierarchic conception of living things to questions of sexual difference. In short, I have developed an Aristotelian philosophical anthropology which attempts to remain true to our dual nature as men and women, recognising both our rationality and elevating our animality without eradicating it.

While the anthropology I have advanced comes closest to the first position in which sex and gender are closely related, I have found a consistent Aristotelian way to distinguish the two. I do so without rejecting the importance of mechanistic explanation in sexual difference and also recognising the role that culture and our being rational plays in being sexually differentiated. Gender is indeed limited by or grounded in sex, and reflection on sexual difference in other creatures is at least partially instructive as to our own.

In terms of the limitations of this thesis, first, there are areas of current discourse to which my anthropology of sex and gender would seem to be relevant but to which I have not attempted to apply it. How my thesis relates to various ethical and policy issues, such as

artificial reproductive technology, same-sex relations, and questions about what it means to be transgender, have not been discussed. Furthermore, the broader question of how anthropology relates first to ethics and then public policy has also not been addressed. That is, how ethical norms relate to anthropology is not straightforward, and significant analysis and argument would need to be undertaken before the anthropology I have presented could be used to inform ethics or public policy. Precisely how ethical prescriptions follow from anthropological ones, if indeed they do, would be a subject of further research.

Second, I have argued that it is a mistake to reject, or be suspicious of, essentialism as such on the grounds that it threatens our self-determination. I have suggested that even to recognise oppression and liberation entails some determinate conception of what it means to be human by which to judge the oppression and liberation. However, within the context of my own anthropology, I have not developed a positive conception of liberation from oppression.

Third, while I have insisted on sexual, and therefore gender, dimorphism in the human species, I have barely explored the manner in which the power of generation is elevated in the human species through its manifestation as male or female. I have discussed how we might understand the power of generation as elevated through lingerie, sexual behaviour and the education of children, but this analysis has remained largely generic. It remains the case though that even while all these aspects of the power of generation are elevated in the human species, they have, as a matter of fact, also been elevated in a gender specific way i.e. 'being a woman' means more than 'being a female'; 'being a man' means more than 'being male'; *and* 'being a man' and 'being a woman' are different to each other.

As I have discussed, some authors reduce this difference to gestation and gamete production, and suggest that, with technology, even this could be changed. The understanding of anthropology developed here suggests that such reductionism is mistaken. Even in other animals 'being male' or 'being female' extends beyond gestation and gamete production. Clearly in humans, gender differentiation takes place within the context of our rationally

shaped desires for lasting relationships and children, including the cultural, political, and legal frameworks which govern relationships and family life. So the extension of gender difference beyond, but not separated from, gestation and gamete production would also take place in this uniquely human context. In this vein, there is scope for an exploration of 'fatherhood' and 'motherhood' beyond the narrow confines of gestation and gamete production. Any such exploration of these concepts would have to take into account our rationality and our animality without reducing us to the latter or eliminating it entirely. What precisely this would look like would be a subject of further research.

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Appendix

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