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INTRODUCTION

LITTLE IN MEDIEVAL CULTURE ENCOURAGED ITS PEOPLE TO LOOK to Nature for any lessons on morality, happiness, or anything else more complicated than wringing food and resources from it. Although finding the hand of Providence in Nature was its oldest lesson, there might be others. Medieval people discovered their rules and reasons for moral conduct outside Nature, in secular law codes or revealed religion that told them what God wanted. Sometimes the ordinary work of finding food, clothing, and shelter within Nature caused people to confront conflicts between what they believed to be right and what they saw in Nature. These dilemmas opened up the prospect of disturbing choices about right and wrong to people disposed to think that morality was unambiguous, the same everywhere, and revealed in Scripture. Many were taught to think that Nature was fallen, depraved, and hence in most respects impenetrable to human reason and a distraction to the real purpose for which a moral person existed for a short time in this world. A few people came to believe that they could learn something more from Nature than being comfortable in it by the fruits of their or other people's labor. Neither position implied that people should therefore hate or love Nature, but some did and others simply responded to the beauty or horrors they saw in it. The monotheisms taught that the natural world existed to serve humanity. But could it teach them anything worth knowing beyond the material processes by which they were born, ate, reproduced, and died? What was in Nature as they found it?

The premise of this book is that medieval people, obviously existing in Nature, were blocked in their ability to understand what they saw there. "Nature" here means everything associated with later naturalists – in other words, the living part of the universe. For the most part, we will agree with

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Pliny the Elder that Nature is life here on earth. Assumptions about the purpose of Nature, the meaning of inherited wisdom about it, and the precepts of their faiths all made it difficult to fathom the processes of Nature. In these circumstances some people retreated from Nature as much as possible and placed their thoughts and hopes on higher things. Others attempted to find a way forward by, in a sense, going around Nature and appealing to answers above or beyond it, the realms of the supernatural. Jesus said His kingdom was not of this world, so what could be found here that was worthwhile, and why spend time looking for it?

The argument of this book does not concern those who retreated from or looked away from Nature. Their behaviors have received ample attention in the scholarly literature on communal religious life, magic, and superstition, among other subjects. Our concern is with those medieval people who pressed forward, into Nature, if still not thinking themselves completely of it or this world. These people did not judge the results of natural processes as tricks by the designer or, even worse, as the wiles of Satan.

The argument of this book is that certain practical tools or fresh habits of thought allowed some medieval people to discover new things in Nature, even to change it, to make themselves more comfortable in it, and perhaps to find in Nature some happiness – one antidote to their fears and perhaps even a guide to moral behavior. The plan is to make this argument by investigating five issues where confronting Nature was especially challenging but hence also potentially beneficial. First we must look closely at what precisely is meant by the medieval "discovery of nature." A method to test and evaluate medieval ways forward into Nature is to examine what people understood about an aspect of botany – grafting. This manipulation of Nature bore strange fruits and required ingenuity, theories, and a desire for its consequences. A second strand of the argument about Nature concerns the mule as the clearest case of an animal hybrid that tested the medieval understanding of what was natural and permissible in Nature itself. The third part of the argument takes up inheritability – why and how did like produce like? Often a first interest in this question brought the inquirer to the vexed question of the inheritability of sin as a model for understanding the process of Creation itself. These three approaches to Nature come together in the fourth theme, the problems surrounding the possessing of Nature, the inheritability of Nature itself in the form of money, property, and even enslaved human bodies. Private property is also private Nature. How and why did it come to pass that some people became more comfortable in

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Nature by owning it? Death was the inescapable fact of life in Nature. Yet people claimed the right to pass property down to their descendants, like producing like in the family itself but also wealth in land and everything upon it, under it, or simply passing across it. Finally, the fifth issue concerns the ways some medieval people saw Nature as an agent occasionally independent of God's wrath. Examining medieval attitudes toward disasters and other natural phenomena illuminates this agency and brings us to their struggle to combat risk and fear by inventing insurance.

These perspectives enrich in rewarding ways the typical stories about medieval people and their encounters with the natural world. Making Nature's history longer and more complicated is not enough to command your time and attention. As we think about how to survive in the Nature we have fashioned here, why not reimagine another context in which people believed Nature and God commanded them?

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THE DISCOVERY OF NATURE

THIS IS A BOOK ABOUT MEDIEVAL IDEAS CONCERNING NATURE AND what cultural tools enabled premodern people to understand, manipulate, and even own it. Although the idea of what can be passed on is primarily studied here in the natural world, other aspects of being a copy or an heir also appear. The initial approach is to use two tools, biology and linguistics (pragmatics), to read the historical sources to find evidence on inheritability.[1] This method requires clarity in language, especially the changing meaning of key words. By way of entering the problem of who discovered Nature and why, let us explore for a moment the common theme of inheritability, which will surface repeatedly in topics like mules, sin, and private property. The problem with the word "inheritability" is that it is an ugly modernism evoking advances in evolutionary theory and genetics foreign to medieval thinking. Although we must use the word for the moment, please try to think of it as a tag for the simple phrase "like produces like." As we will repeatedly see, this phrase increasingly meant something important in our period bridging ancient and modern thought.

Inheritability concerns those innate characteristics of living things that can be passed down to descendants by natural means. Those behaviors that are taught and endure as the human cultural inheritance are not the subject here. Nor are we yet so concerned about *things* inherited by people, although, as we will see, the language used to describe both processes often overlaps. Passing down requires offspring and implies reproduction, and this is where matters

[1] On pragmatics and history, see Jef Verschueren, *Ideology in Language Use: Pragmatic Guidelines for Empirical Research* (Cambridge, 2012) – the basic points concern implicit and explicit meanings, and that writing is of course never free of ideology.

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become complicated. Even a fire may reproduce itself by spreading, and the character of fire remains the same, but it seems wrong to apply inheritability to fire, probably because even though it moves and seems to eat, it does not live. Light too seemed to propagate itself, but few monotheists thought that it lived outside a person.

The concept of similitude also applied, as we will shortly see, to the truism that "like produced like." This phrase has many meanings. It was used by Charles Darwin in 1859 to illustrate a fundamental belief of breeders. He also observed that "the laws governing inheritance are for the most part unknown."[2] This is the context for understanding inheritance in this book, not the foundations Darwin laid for a clearer understanding of the problem of biological inheritance. Even defining "like" left some room for ambiguity. But similitude was not exactitude, and this fact posed more questions about reproduction. Finally, reproduction was a curious phenomenon because it seemed to work in both living and dead systems, and indeed crossed and blurred the line between the two materialities as inanimate things produced or generated living creatures. Many words described how living entities reproduced themselves without extinguishing the original, so that there were more of them than before – the process of multiplication.

Peter Biller has closely studied medieval demographic thought with an intense focus on theories concerning multiplication.[3] For Biller, the key question about multiplication concerned how and where human populations increased since the Flood, and whether some "foreign" peoples were more numerous and hence more threatening to medieval Christian Europe than others. The end result of multiplication without checks seemed to suggest that the world might fill up with people – the calamity later envisioned by Thomas Malthus. Although this unlikely prospect (at least in the Middle Ages) could become for some theologians a pretext to argue for virginity or that the obligation to be fruitful might be placed in abeyance, it did not affect ideas about inheritability. In practice, Biller found most of his demographic thought in medieval theologies of marriage, a subject with a vast scholarly literature then and now. Peter Brown investigated the negation of multiplication, how and why some late

[2] Charles Darwin, *The Origin of Species* (New York, n.d.) p. 19 for the observation and quotation. This is the Modern Library edition, possibly the first book I purchased as a boy.

[3] For what follows, see Peter Biller, *The Measure of Multitude: Population in Medieval Thought* (Oxford, 2000) especially pp. 60–88 but also throughout book.

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ancient people renounced sex, embraced chastity, and in some cases even contemplated undoing the power of death by refusing to have children.[4] Although these choices remained distinctly minority views in the Middle Ages, those invested in them would have little or no interest in inheritability. Brown mentions a subject he labels eugenic sex – those ancient (and mythic) practices by which couples believed they could affect the offspring.[5] As we will see, these and other ideas about parental influences enter the broad issues concerning inheritability and will form a major focus of the later chapters in this book. But again, for those who for whatever reason had decided against perpetuating the human species, such matters were trivial.

Some aspects of the general issue of inheritability have already been well studied, especially as they concern human reproduction. Joan Cadden has carefully sifted the ancient and medieval evidence to explore one important aspect of inheritability – how male and female parents produce girls and boys, and how they may shape or affect what their children in some mysterious ways inherited from the parents, but again not exactly.[6] This study also proves that medieval medicine is the place to look for one aspect of applied biology – inheritability. Maaike van der Lugt has investigated the issues surrounding what we might call supernatural reproduction, and these exceptions provide clues about what was considered ordinary or plainly natural.[7] Her emphasis was much more on generation than inheritability, as her examples prove: the (apparently) spontaneous generation of worms (and other ostensibly simple living things), the unique Conception of Jesus and its special problems, and the occasions when demons impregnated women who then gave birth to a demonic hybrid. Worms, flies, and other creatures appeared daily; Jesus was born once; and the demons were extraordinary and repellent. These exceptional cases, however compelling as stories or explanatory models, do not get us very far in understanding ordinary inheritability. Nonetheless, these two excellent books and other studies have really advanced our understanding of human procreation and sex differences. How to study inheritability in medical and

[4] Peter Brown, *The Body and Society: Men, Women, and Sexual Renunciation in Early Christianity* (New York, 1988).

[5] Ibid. pp. 20–1.

[6] Joan Cadden, *Meanings of Sex Differences in the Middle Ages: Medicine, Science, and Culture* (Cambridge, 1993).

[7] Maaike van der Lugt, *Le ver, le démon et la Vièrge: Les theories médiévales de la génération extraordinaire* (Paris, 2004).

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theological sources becomes a challenge in looking for unexpected topics that introduce the subject where it might be least expected.

A recent issue of the journal *Micrologus* devoted to heredity from the Middle Ages to modernity is the best introduction to the meanings of "heredity" in the *longue durée* stretching from about 1300 to 1800.[8] The issue is nonetheless sensitive to the classical inheritance and the scholastic understanding of it before 1300, as well as the dawn of modern genetics in the nineteenth century. The editors of the issue wrote an important introduction to what is a series of case studies or preliminary soundings into what we might call the special cases of inheritability where manageable research agendas are mostly about people – nobles or Jews, a little on dogs and horses, and nothing on plants. Leaving the specifics for later, let us note themes suggested for closer inspection over the course of this book. Legal texts will take up inheritability not just for wills and succession, but also to define a status like noble or slave. Theological texts do the same work for Jews and especially in the fifteenth century address the important topic of whether there is something innate in Jews that can be inherited, regardless of religious conversion, something impure in their blood. Medical texts might also include this issue about Jews and other ethnic groups as well as more specialized topics like hereditary diseases. The science of physiognomy, which studied the features of the human body, especially the face, for clues to human temperaments and behaviors, might also provide a mechanism for explaining special matters – for example, why the faces of children sometimes resembled one parent, or the other, or indeed neither. All these points suggest that a broad and interdisciplinary approach to inheritability will yield the best results, and that as many different types of sources as possible merit scrutiny.

I plan to show in this chapter that inheritability was well understood in surprising ways by many medieval people, from scholars in their lofty perches in the great universities to farmers in the most remote countryside. Paying close attention to their uses of languages to describe what they knew repays the effort. Modern advances in genetics and plant breeding suggest fresh questions to investigate about how medieval people thought about grafting vines and fruit trees. Botany has been neglected in modern studies, but certainly not by

[8] *L'hérédité entre Moyen Âge et Époque moderne: Perspectives historiques*. Edited by Maaike van der Lugt and Charles Miramon. *Micrologus* 27 (2008), good for the state of research up to around 2004.

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the millions of medieval agriculturalists looking for ways to get more food from their soils and labors. Money was also capable of reproducing itself, often in morally dubious ways, and its procreation, like that of people, encouraged speculations of all kinds about how and why this occurred. Finally, the problem of the hybrid, be it plant, animal, or human, challenged conventional notions about Nature and purity. The offspring, in the case of people, were often deprecated, but nevertheless needed to be explained. Most of these themes come together in the life of St. Francis, whose experience enables us to see how far thirteenth-century views of Nature had grown from their roots.

FINDING MEDIEVAL NATURE

Two phrases about Nature in the Middle Ages have incited a vast literature and baffled synthesis and conjecture. They are "the Discovery of Nature" and "Reading the Book of Nature," and the academic industries deriving from these now tiresome clichés or banalities have overwhelmed the original and ancient kernel of value they contained. Because this study depends on a patient and attentive analysis of language use in context, we are certainly interested in the histories of the word "nature" and its shifts in tone and meaning over time. Whoever was discovering Nature or reading its book, they were not what later centuries would call naturalists. The metaphor of "the book of nature" is probably as old as the book.[9] E. R. Curtius followed this engaging metaphor from the twelfth century to the Brothers Grimm.[10] Whoever first discovered or read the Book of Nature, it would be a very long time before there was a chapter on inheritability. This is a peculiar but not unfamiliar intellectual problem: we have an important topic to explore – inheritability – without a single medieval work explicitly on the subject. Nature supplies the evidence, but we have no naturalists looking for it, just as we will be looking at botany without any medieval botanists. Some scholars depreciate historical research on themes

[9] See in general *The Book of Nature in Antiquity and the Middle Ages*. Edited by Arjo Vanderjagt and Klaus van Berkell (Leuven, 2005) p. 35 Augustine may have been the first to use the trope in Latin, but Aristotle was certainly close in Greek. Kathleen M. Crowther, *Adam and Eve in the Protestant Reformation* (Cambridge, 2010) pp. 185–90, explores the trope and concludes that, though old, it came into its own in the sixteenth century.

[10] E. R. Curtius, *European Literature and the Latin Middle Ages*. Translated by Willard Trask (Princeton, 1973) pp. 319–26, and the book of nature would be a serious book for a scriptural culture.

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like the economy, or inheritability, reasoning that if medieval people did not use these abstract words to describe their world, they are modern inventions imposed on the past and distorting it. There is a point to this objection; I suppose no one will ever write a book on medieval genetics or cell biology. But the absence of a word does not always prove that the subject was absent. On the model conceding that medieval people came late to the word "economy" but thought and engaged daily in markets and buying and selling, we can see that "inheritability" is a word they seldom used. Nonetheless, they thought a great deal about innate traits in people and bred animals and plants over many generations with definite goals in mind. These required some reason, unnatural selection, for believing that they could change the species God had designed – with an inbuilt mechanism allowing for fixing the subsequent change!

Historians and critics have long relied on philology to provide the basis for any such analysis of a concept whose meaning and use change over time. Yet as Marie-Dominique Chenu, an early and still fresh observer of the twelfth-century discovery of Nature, claimed, "Return to the ancients always begets a historically oriented humanism, to be sure; philology becomes its instrument, and the human sympathy we derive from such study is not without a certain aristocratic distinction."[11] This interesting sentence connects the alleged medieval discovery of Nature to the larger project of "returning to the ancients" – the many guises of classical revivals or renaissances. We assume here that the medieval interlude might best be described as yet another "rediscovery of Nature." Of course, classical authors like Aristotle, Theophrastus, and Pliny the Elder, to name the first three that come to mind, knew Nature well enough, let alone the many millions who had toiled on the land to extract from it the food necessary to feed those articulate members of society encountering Nature less onerously. So let us concede that some ancients knew Nature, and some of the pagans understood it the same way Spinoza later simply suggested it, that Nature was God. This Nature seemed altogether too secular for all those monotheists occupying the middle ground between ancient paganism and what some have called, fairly or not, the rise of modern paganism. Yet the monotheists, suspicious of any response to Nature that smacked of polytheistic spirits in

[11] M.-D. Chenu, *Nature, Man and Society in the Twelfth Century*. Translated by Jerome Taylor and Lester K. Little (Toronto, 1997) pp. 3–4 from the essay "Nature and Man – The Renaissance of the Twelfth Century," which contains the well-known section on "The Discovery of Nature." Anyone who read this work at a formative stage of education has been influenced by it forever.

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every bit of it or some pantheistic aura embracing all of it, knew their creator made the secular world. It was therefore meaningful.

Nature is this world as we find it, and opinions varied about whether the supernatural had more information to reveal about Nature than we might see and learn for ourselves. The theologian and philosopher William of Conches (c. 1090–c. 1154) has an early (from the 1140s) and important view on Nature. He wrote that "nature is a certain power grafted into things, making like from like."[12] Many of the themes of this book appear in this short sentence, which, as far as I can tell, may be William's original idea. Three points merit notice here. First, Nature is not a place or an idea but a living force. Second, William uses a wonderful word – "graft" – to explain how this quality is inserted into things. As we will see, grafting plants interested medieval people and was an important agricultural skill. Third, the phrase "like from like" has a long sequel in Western thought. This stance is the first take on the problem of inheritability – the ability we have (and share with other living things) to make something like ourselves, to reproduce. William was discussing Nature in contrast to production, the work of the craftsman who makes something we now see as artificial, not natural.

These opinions, in some ways already venerable by the time William expressed them, became increasingly well known. For example, St. Hildegard of Bingen (1098–1179) also found grafting to be a powerful image, in her case for describing what God had put in Adam's rib from which he made Eve.[13] Eve, another case of special creation, became in Hildegard's writing a

[12] William of Conches, *Dragmaticon Philosophiae*. Edited by I. Ronca (Turnhout, 1997) 1.7.3 p. 30: "natura est vis quaedam rebus insita, similia de similibus operans." All translations are my own unless otherwise noted. A search of the Brepols Library of Latin Texts Series A (accessed January 24, 2011) reveals that the phrase appears only eight times: six by William in various works, once in the obscure early-twelfth-century sermons of Isaac de Stella, and once in the thirteenth-century chronicle by the Dutch Premonstratensian Emo abbot of Bloemhof. The modern editors of this text were unable to identify the source of this phrase, which Emo used in a theological digression, but in context he might have picked up the idea from something he read in Augustine. See H. P. H. Jansen and A. Janse, *Kroniek van het klooster Bloemhof te Wittewierum* (Hilversum, 1991) pp. 156–7 for Latin and Dutch translation. For these reasons it seems fair to credit William with bringing the phrase to life. See also Clive Staples Lewis, *Studies in Words* (Cambridge, 1967) pp. 24–74 for a discussion of Nature not in the context of the environment or biosphere.

[13] Hildegard of Bingen, *Sciuias*, pars 1 visio 2 cap. 11: "Nam de costa insito calore et suco Adae Eua formata est." Brepols Library of Latin Texts- Series A, accessed April 28, 2011. Hence the qualities of heat and juice found in males also appeared in women.

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