

Chapter 1

Formative Drives

The question of how living beings replicate themselves not only formed the most pressing issue for natural history in the late eighteenth and early nineteenth centuries, but captivated European culture at large. This fascination can be gleaned from the sales of natural history texts, the growth of medical handbooks on childbearing and rearing, and the rise of fiction about both pregnancy and the artificial creation of life. The problem of replication—the accurate reproduction, development, and maintenance of form—resonated in the related issues of family resemblance and the kinship between humans and the rest of the animal kingdom, first formally acknowledged by Linnaeus in 1735. This chapter will examine the human being as an animal that replicates in multiple interrelated ways—physiologically, artistically, and linguistically, in physical media and in mental organization. Systematic attempts to classify humans in relationship to other organisms occupy a unique position in this dynamic, both instantiating a drive to represent the human in context, and documenting the replicable human instantiation of a particular organic form. Moreover, Linnaeus’s classification highlights the extent to which humans are themselves replicas of primate forms, with deviations so minor that he declared they existed only in intellectual rather than physical traits. In the absence of an accepted theory of heredity and of any consensus on the nature of the bond between organisms, naturalists and lay people alike struggled to make sense of the series of resemblances that reproduced itself from generation to generation, within and beyond families. This chapter will trace attempts at classification in fields from comparative anatomy to botany that implicated humans within natural systems and natural lineages. In this endeavor, we will turn repeatedly to a figure uniquely concerned with the consequences of such attempts for human subjects and for the practice of natural history itself: Johann Wolfgang von Goethe.

In addition to writing literature, Goethe was also a naturalist concerned both with the ability of organisms to generate and maintain form and with the relationship of humans to other organisms. Already a

canonical literary figure early in life, he complained passionately about the poor reception of his naturalist works, blaming false expectations among the public for attempting to restrict him as a literary author to the humanities. In retrospect, we view this period as merely the beginning of the gulf between the humanities and the natural sciences across Europe, which would widen over time, but Goethe's experience of the incipient breach was agonized. He rejected this split not only by pursuing both literature and natural history throughout his career, but also by integrating his methodological concerns about naturalist investigation into his fiction and poetry, while simultaneously importing concerns about the complexity of human motivations and decisions into the naturalist methodology he advocated. The most striking product of this merger can be found in his most complex novel, *Elective Affinities*. The novel not only presents a self-reflexive natural history of humanity, but engages its readers directly in an enactment of Goethe's claim that natural history proceeds only through motivated, mediated, and biased interpretations of phenomena. His methodological works argued that explicit self-analysis built into natural history would enable the progress of knowledge. His novelistic experiment, in which the readers are the test subjects, displays a much more pessimistic view of the human ability to interpret nature, however. Enacting the split between literature and science that he refused to acknowledge, Goethe's *Elective Affinities* exploits the critical potential of fiction to reveal an evidently insurmountable failure of interpretation among its characters and to induce a failure of interpretation among its readers.

We will thus turn to Goethe as an astute meta-morph-ologer of humans, adept both at diagnosing the human tendency to construct affiliations out of similarities in form (meta-morphology), and at analyzing the logic of metamorphosis (metamorph-ology). This book will perform its own metamorphology of the human subject in the late eighteenth and early nineteenth centuries. After beginning in this chapter with the human ability to replicate, we will focus next on the constituent segments of the body, and then interrogate the teleological implications of the functionality of organs, and ultimately of bodies themselves, in order finally to resituate the body within communities that look to them to explain or legitimate their structures. As we analyze the literary, naturalist, surgical, aesthetic, philosophical, and political interventions into the body in the coming chapters, the formative influence of human interpretive strategies will come under repeated scrutiny. It is then fitting that we begin with Goethe, who simultaneously participated in so many of these discourses that will, as this study progresses, be seen to involve ever greater numbers of disciplines and wider ranges of the population.

As a work preoccupied with form and structure, Goethe's novel *Elective Affinities* could be described as a *Bildungsroman*, although not in the sense that the word eventually came to inhabit. Instead, *Elective Affinities* is an investigation of formation (*Bildung*) in all of its associated meanings. Over the course of the novel, Goethe amasses an impressive array of persuasively but elusively related themes, including the imagination (*Einbildungskraft*), education (*Bildung*), artistic images (*Bilder*), imitations of images in *tableaux vivants*, the creation of humanity in the image of God (zum *Bilde* Gottes), religious iconography, architecture, mapping, and mirroring. At the core of the work lies the human form itself, its production, growth, and healing process: the functions of life united by Goethe's acquaintance Johann Friedrich Blumenbach under the operations of the formative drive (*Bildungstrieb*) discussed in the introduction. *Bildung* is a word whose denotations reach in two directions: it can be applied both to form in the world, and to the shape the world takes in our minds, what Goethe refers to as "the creative [*bildende*] power of the mind."¹ *Bildung* therefore reveals the drive to organization that Goethe postulates operates within all of nature, including our own minds. Structuring the novel around *Bildung* allows Goethe to delve into his ongoing obsession with the ability, or inability, of humans to reach conclusions about nature from our perspective as natural objects within the nature we observe.²

The novel, then, analyzes, as we will do in this chapter, human embedment in purportedly natural systems. Rather than portraying an expansive cosmopolitanism of belonging, however, *Elective Affinities* exposes the catastrophic consequences of the friction produced when mental systems of inclusion, however *naturally* they result from needs and desires, fail to accord with integrative systems in nature. In his brilliant 1921 critique, "Goethes Wahlverwandtschaften," Walter Benjamin diagnoses the malaise at the novel's center as a result of the seemingly all-inclusive totality of the concept *nature*. The characters fail to emerge from the passive circuit of this mythic morass; controlled by their drives, they fail to perform the processes of differentiation necessary for language, for decision making, and for moral judgment. Not only the characters, but Goethe's oeuvre itself in Benjamin's analysis teeters on the edge of this fallacy in which "[w]ithout distinctions, existence becomes subject to the concept of nature, which grows into monstrosity" (315).³ Without distinctions, without differentiation, there can be no agency. Benjamin is not alone in rejecting the "election" in the novel's title as inadequate ("For choice [*Wahl*] is natural and can belong even to the elements; decision [*Entscheidung*] is transcendent" [346]).⁴ J. Hillis Miller, focusing on the grafting imagery that will recur in this chapter, describes the novel as

anastomosal, consisting of constantly intersecting, intertwining, fusing, and branching lines that cannot be reconciled. Although Miller recasts the title of Goethe's work as "*chosen anastomoses*" (172, emphasis mine), for Miller as for Benjamin the courses and coursings in the novel obscure decision, instead manifesting an inner logic of transformation within identity, which we will discuss below under the name of metamorphosis.⁵ Benjamin prescribes decisiveness as the only cure for this passivity, as the only means for humans to emerge from nature.⁶ The route to such decisiveness, however, remains obscure. Ultimately for Benjamin, the obverse to the mythic he associates with nature can be found only in a divine irruption into the human sphere. Goethe, however, approaches the ability or inability of humans to differentiate among natural objects, including themselves, to draw meaning out of this differentiation, and to participate in a moral sphere, without recourse to revelation. The failure of characters in *Elective Affinities* to rise above nature is thus posited by Goethe as the foundation of human existence. It is a condition evidenced by the reaction induced in its readers, Benjamin not excepted, to participate in the natural urge to create cohesive systems. Nature is always codifiable into overlapping and infinitely proliferating systems—organic systems known as organisms, chemical systems of bonds and reactions, physical systems of attraction and repulsion—all available to multiple systems of classification. As I argue in this chapter, the threat that Goethe reveals so disturbingly is not a collapse into undifferentiated chaos, but an excessive openness to dissection and hence to interpretation.

In this chapter, we will plunge into this excess by exploring the motivated systematization of objects in nature that grounds interpretation. The schemas we will examine embed humans into related groupings—families, the order of primates, or the domesticated order of cultivated nature—whose designation as *natural* meets unexpected challenges.

Goethe's Monstrous Otto

In the debate over the mechanism of reproduction that dominated late-eighteenth-century natural history, the overarching puzzle lay in the ability of organisms to consistently produce offspring of the same species, to consistently replicate their type. An interesting addendum to this question, however, was the attempt to understand why individuals tend to resemble their parents and other family members. Resemblance played a major role in the debate between preformationism and epigenesis discussed in the introduction.⁷ Preformationists separated the question of species adherence from that of family resemblance. Preformationism begins with the claim

that each organism exists as a preformed germ in its mother's body, so that all generations already existed, enveloped sequentially, in the first female of every species. Naturalists such as Charles Bonnet and Lazzaro Spallanzani, whom we will encounter throughout this book, believed that deep structure was too complicated to coalesce according to natural law. There was no contesting, however, that offspring display not only characteristics of a general type, but also of their specific progenitors. While commonalities along a maternal line could perhaps be explicable from a preformationist perspective, resemblance to fathers would seem to necessitate an extreme version of predetermination.

As Marie-Hélène Huet discusses in her study *Monstrous Imagination*, preformationists found a way out of this dilemma by crediting, or more often blaming, the maternal imagination, at the moment of conception and more prominently throughout gestation, for a child's appearance. According to this view, the organization of the germ accounted for the deep structure of the organism, but superficial appearance was susceptible to maternal molding.⁸ This physical influence of the mother's mind on the appearance of the child was held to be responsible both for family resemblance and for the aberrations, birthmarks, and deformities that were commonly called monstrosities. The mother's duty lay in reproducing the image of her husband in the baby. The power granted to the imagination of gestating women produced a paradoxical disconnect between the sexual act and the appearance of the child. Although unexpected resemblances raised suspicions about a woman's fidelity, the logic of imaginative influence deflected this explanation. As Huet points out, a child who resembles somebody other than its mother's husband might not have been the result of physical adultery. Still more startlingly, the resemblance of a child to the mother's husband could not be taken as proof of its legitimacy.⁹

The more recent theory of epigenesis, on the other hand, posited a physical interaction during intercourse that directed the new creation and subsequent development of the fetus.¹⁰ In the popular version of epigenesis put forward by Johann Friedrich Blumenbach in 1781, every individual organism possesses a formative drive (*Bildungstrieb*), directed toward maintaining and reproducing its own form. The interaction of the parents' two drives together imprints both their basic structure—their species-type—and their specific characteristics on the child. While epigenesis eliminated the need for reference to the imagination, it remained vague about the mechanism by which such guidelines were combined, transferred, and followed throughout development.

In his naturalist writings, Johann Wolfgang von Goethe joined the rampant debate over the mechanism of reproduction, but he maintained

his customary distance from both of the conventional, competing theories. Like so many of Goethe's hypotheses, his theory of reproduction shifts subtly into a theory of perception and representation. Goethe noticed that while epigenesists emphasized a drive or activity that directs development, preformationists stressed the underlying foundation that is a prerequisite for life. In an essay on Blumenbach called simply "Bildungstrieb," Goethe insists on the interconnection of an epigenetic activity with a preexisting basis, writing that "we must think of this action as always coexisting with the underlying material, the two forever present at one and the same time. Personified, this prodigy confronts us as a god, as a creator and sustainer, whom we are constrained to worship, honor and praise" (ScS 35).¹¹ While a first reading might mistake this activity/foundation distinction for a form/matter dichotomy, Goethe's categories are much more complex. For Goethe, what preexists the drive is not just physical, but a "predelineation, predetermination, prestabilization, or whatever we wish to call the process which would have to occur [first]" (ScS 36).¹² Goethe's variant of preformation understands the preexisting groundwork as informational rather than material. Meanwhile, the epigenetic drive or activity cannot be dissociated from substance. Because both must coordinate in order for an organism to reproduce properly, Goethe dismisses the distinction between the theories as misguided rhetoric: "If we now return to philosophy and reconsider evolution and epigenesis, they will strike us as terms which only avoid the issue" (ScS 36).¹³ The mystery that Goethe wanted to move to the center of the investigation is what he termed *metamorphosis*: the coexistence of accuracy in replication with the possibility of variation.

The centrality of the concept of metamorphosis to Goethe's thinking about nature can be derived from a handwritten note to his own *Morphologie* in which he states, "Form is a thing in motion, in the process of becoming, of passing away. The study of form is the study of transformation. The study of metamorphosis is the key to all the signs of nature" (my trans.).¹⁴ Understood as the coincidence of epigenesis and preformationism, metamorphosis could be described by the words already cited above: "Personified, this prodigy confronts us as a god, as a creator and sustainer" (ScS 35). Such a powerful and bewildering natural capability is monstrous, uncanny, and godlike; it is in fact in response to our observation of continuity within change in nature that we posit God, Goethe suggests. Metamorphosis appeared in association with the divine in ancient myth, in Ovid's literary codification of it, as well as in the alchemical works that Goethe read with gusto, and it still carried a mystifying aura into the natural history of Goethe's time. Goethe leads this social construction of metamorphosis back to its natural origin, however, defining metamorphosis as a natural law.

Tim Mehigan has aptly described Goethe's novel *Elective Affinities* as a text about the conception, birth, and death of a child, namely Otto. Viewed in this way, one must conclude that the conditions necessary for understanding conception are somewhat wider for Goethe than might be expected, including the entire history of the parents' relationship with each other, with their friends, and with their families, as well as an understanding of physiological processes. Goethe refuses to use Otto as an argument for a particular theory about the mechanism of reproduction, however, instead portraying conception as a phenomenon contained and circumscribed by the social world, while also insisting that this social world is firmly a part of nature. Otto, simultaneously a healthy child and a monster, is the product of a sexual act between husband and wife that conforms physically to social norms. He is also the product of a community, of multiple histories, and of a ferment of emotions and desires. Otto's parents Eduard and Charlotte hoped to marry each other early in life, but under pressure from family instead married other partners. After the deaths of these spouses, Eduard and Charlotte do marry each other, only to each fall in love with a guest in their household, Eduard with Otilie and Charlotte with the Captain. Otto's conception is inspired by each spouse's fantasy about an absent and forbidden partner.

By lamplight then, in a twilight, the heart's desires and the imagination at once asserted their rights over reality. Eduard held Otilie in his arms; now closer, now receding, the Captain hovered before Charlotte's soul; and thus absent and present in the queerest fashion were intermingled, in excitement and delight.

But the present will not be denied its monstrous due.¹⁵

By assigning the imagination of the pair the status of "Rechte" (rights), the narrator legitimates a private mental sphere for the characters. The present also makes demands, however, and its "Recht" is described as monstrous. What is the right of the present if not the conception itself, following inexorable natural laws? In its monstrosity this conception is perfectly normal. Following Goethe's description, cited above, of procreation as both monstrous and uncanny, Otto's conception performs the dual activity of creating and preserving. The unique new combination of features manifests resemblances not to the child's parents, however, but, shockingly, to their love-interests, the Captain and Otilie. Consistently described as healthy and without defect, Otto's classification as monstrous pushes the limits of the category—not de/formed, but mis/formed. By juxtaposing the imagination and the monstrous, Goethe alludes to the long history of condemning the formative power of the imagination

for producing monstrosities. He subtly undermines the traditional dynamic, however, reversing the valance of the imagination and of the activity of propagation itself; mental creativity is elevated while physical necessity is rendered suspect. In a real sense, the two are here at odds, a conflict that persists throughout the novel and throughout breeds mischief and destruction.

While Goethe would seem to have reproduced a fully formed theory of the imagination, the theoretical underpinnings of Otto's monstrous appearance are in fact rendered carefully ambiguous.¹⁶ The conception exploits the weaknesses of preformationism and epigenesis to create a sense of insecurity about the true causes of resemblance in nature. Otto provides a test case of natural oddity that elicits theories from those around him. In each case the theory espoused conforms to a desire or expectation on the part of the speaker. This phenomenon is manifest when the women who assist Charlotte's labor "affirmed that he was the living image of his father" (*EA* 172, trans. modified).¹⁷ Following the logic repeated throughout the novel, imagination is implicated here not, or not *only*, in the development of the child's appearance, but in its perception. The characters' oscillation between preformationist and epigenetic perspectives follows a similar logic. Charlotte provides strong evidence of her preformationist tendencies when arguing against a divorce. Facing for the first time the seriousness of Eduard's infatuation with Otilie, Charlotte cries, "Can Otilie be happy if she causes our separation? If she robs me of a husband and his children of their father?" (*EA* 100)¹⁸ At this point neither Charlotte nor Eduard suspects her pregnancy, still in its earliest stages. They have no children. The exclamation is extraordinary, but not nonsensical in a preformationist context. If the embryos already exist in the mother, merely awaiting intercourse to prompt development, a divorce would indeed be an abandonment of them. Eduard's reply comes from an entirely different, epigenetic, perspective, "I would have thought our children were taken care of" said Eduard smiling coldly" (*EA* 100, trans. modified).¹⁹ The double meaning of the verb *taken care of* implies that precisely his passion for Otilie, his desertion of Charlotte, has "taken care of" or "done away with" the potential for offspring of his and Charlotte's marriage. When later repulsed by Otto's appearance, however, Eduard switches to a preformationist explanation. Like most of his interpretations of the world around him, Eduard's shifting assumptions follow and aid his desire. By emphasizing to Otilie the adulterous thoughts that accompanied the conception, he gives them a reason to consider Otto evidence in favor of divorce, instead of an impediment to it. Significantly, neither Otilie nor Charlotte is repelled by the child. Each considers him a sign of the bond between herself and Eduard. Otilie denies the

resemblance to the Captain and acknowledges only that Eduard's child resembles her, symbolizing her preordained connection to Eduard (*EA* 206; *HA* 6:455). Charlotte, meanwhile, believes that her pregnancy will save her marriage, ignoring any implications of the circumstances of the child's conception or its appearance. The theoretical investments of the characters are consistent only in being self-serving.

Rather than providing support for a particular theory, Otto then represents an enigma. At issue is not the precise mechanism behind this particular natural anomaly, but instead the way in which humans react to confusing natural phenomena, repudiating parts of nature while establishing others as norms. In a conversation with Johann Peter Eckermann in 1829 Goethe claimed: "[B]ut Nature understands no jesting; she is always true, always serious, always severe; she is always right, and the errors and faults are always those of man" (Goethe, *Conversations* 238).²⁰ It is the self-interested mistakes of humans that are at stake in the novel, and that have catastrophic consequences for all involved. The indeterminacy of a mechanism to explain Otto's appearance recurs throughout the novel as examples of strange and often misleading affinities multiply: between human and animal milk, between human and simian features, and between Otilie and plants. Goethe portrays the attempts of his characters to construct coherence in the world with a sympathetic but frustrated ambivalence. As we will see, Goethe views the desire, indeed the need, to integrate belief and observation, as a natural drive, but he does not exempt from responsibility those who choose self-interested blindness.

Monkeys, Humans, and Other Mammals

Otto's strange position within a complicated web of relationships is evident not only in his conception and appearance, but also in his earliest upbringing. Nourished neither at his mother's breast nor that of a wet nurse, Otto is bottle-fed by Otilie with unsupplemented animal milk. His isolation therefore extends beyond an estrangement from his parents and he becomes one in a number of instances in the novel that expand the location of kinship from the family to the species and beyond. *Elective Affinities* thus participates in an era of speculation about the meaning of likenesses between humans and other species.

Raising infants on animal milk was widely discouraged by manuals for parents, except in the case of the mother's death. Feeding infants animal milk, either alone or in combination with other foods, had been tested by necessity in the huge orphanages of Paris and London because of the logistical problems involved in finding a sufficient number of wet

nurses, as well as because of the contagiousness of sexually transmitted disease through nursing. In the absence of refrigeration, however, the already substantial danger involved in feeding infants animal milk increased substantially. While the Paris foundling house experimented with direct suckling of infants from goats, doctors at both the Paris and London institutions soon recognized the great increase in infant mortality among those who were not receiving human milk (Fildes, *Breasts* 273f). William Cadogan, head physician at the London Foundling Hospital in the 1740s, found that two out of three hand-fed infants died (Fildes, *Breasts* 301).²¹ The results inspired Cadogan to write the extremely popular *Essay upon nursing and the management of children* in 1748, which was translated into French and German and went through several American editions as well.²²

By the time Goethe's character Charlotte gave birth, there was an enormous literature available recommending that mothers nurse their own infants, a literature, moreover, with which one could expect a woman of Charlotte's taste in reading about medical improvements to be familiar. The decision to raise Otto on milk and water is therefore startling:

But in quite a different way besides she [Ottilie] had cause to be active on his [Eduard's] behalf. The baby was now principally in her care, and that care was all the more immediate because it had been decided not to give him a wet nurse but to bring him up on milk and water. (*EA* 177)²³

The passage is remarkable both for its circumlocutions and its omissions. First, it removes agency from a decision that, with Eduard out of contact, could only have been Charlotte's, abstaining from attributing responsibility for the choice. Second, the option of Charlotte herself nursing Otto is entirely excluded from deliberation. In fact, Charlotte is mentioned neither by name nor by relationship to the child in this passage. "Mother," "father," and "parent" are entirely absent, replaced by "man" (one), "Pflegerin" (caretaker, here translated as "in her care"), and the rejected "Amme" (wet nurse). The word *Pflegerin* aligns Otto with Ottilie, who is referred to as a "Pflegetocher" three times in the novel (*HA* 6:253, 264 twice).²⁴ Otto's isolated position here echoes Ottilie's own situation as an orphan. The passage reinforces this association through the suggestive word *Weise* (way) in the first sentence, a word we cannot help but connect to its homonym *Waise*(orphan), particularly in a paragraph on a choice of feeding procedure most commonly used in orphanages and for orphans. Charlotte's suppression of the bodily functions described as natural by the medical guides and used by naturalists, as we will see

below, to tie humans to other mammals, represents a rejection of natural familial categories. On the other hand, Charlotte's acceptance of animal milk as viable nourishment for Otto serves as an oblique acknowledgment of human integration into the animal kingdom.

This implicit orphaning of the child Otto intensifies the isolation from any secure system of relations that has been notable since his conception. But this isolation is not unique to Otto. All of the children in the book, from Otto to Nanni to Otilie to Luciane, circulate among familial and unrelated caretakers. The concept of a natural family arises only once in the novel, and then in a passage heavy with irony. Strolling through the village, the main characters find:

Instructed by the Captain the villagers had assembled in front of their houses; they were not standing in rows but were grouped naturally in their families, some, as the evening demanded, busy with tasks, others resting on newly provided benches. And they had been given the pleasant duty of repeating this cleanliness and orderliness at least every Sunday and holiday. (*EA* 62)²⁵

The Captain has created a pleasant landscape scene for the enjoyment of the nobility.²⁶ The family groups are anything but natural. Indeed, the village families seem to have as little passionate attachment to each other as the family members of the upper class. Otilie feels it is necessary to instill love and affection for their own families in the little girls she decides to educate. The difficulty of the procedure can be deduced from her failure, at least in the case of Nanni, who leaves her family and attaches herself to Otilie as a result of the intervention.²⁷ The status of physical family ties is consistently denigrated in comparison with the emotional strength of chosen relationships, whether between lovers or foster parent and child. In comparison to Charlotte's reserve toward her daughter Luciane, even Eduard's post-Otilie attachment to Charlotte remains intense. The solubility of attachment between blood relations stands in marked contrast to the insoluble bond that ties humanity as a species into a natural family, however monstrous such a connection might appear.

Among the proponents of mothers nursing their own children was Carl von Linné who, in addition to the system of classification and nomenclature for which he is famous, was also a physician and father of seven. He wrote a work called *Nutrix Noverca*, or "The Wet-Nurse as Step-Mother" in 1752, warning of the rough character that could be imbibed from a wet nurse along with the milk, and encouraging women

to nurse their own children (Schiebinger, “Why Mammals” 405).²⁸ Six years later, Linnaeus coined the term *Mammalia*, to name the class of animals that were defined by their hair, four-chambered hearts, live births, and lactation.²⁹

Linnaeus took the revolutionary step of including humans among the other animals in his classification system in the first edition of the *Systema Naturae* published in 1735, making him the first naturalist to do so (Broberg 157). In this early edition before Linnaeus abandoned Aristotelian terminology, he included humans uneasily among two groups whose names he had inherited, first in the class of *viviparous quadrupeds* (live-birthing four-leggeds) and second in the order known as *anthropomorpha*, which contained monkeys. Rationalist objections came from many quarters: the chemist Johan Gottschalk Wallerius disputed the accuracy of the term *quadruped* to describe two-legged humans, while Jacob Theodor Klein ridiculed applying a term meaning “formed like humans” to humans themselves (Broberg 171).

Linnaeus addressed these concerns in the 1758 edition of the *Systema Naturae*, renaming the class *mammalia*, and the order *primates*. With the new coinage, Linnaeus instituted a final break from the Aristotelian tradition. The term *viviparous quadrupeds* had long been recognized as misleading, both because it incorrectly suggested a commonality with oviparous quadrupeds such as reptiles, and because it mislabeled aquatic and amphibious organisms such as whales and seals who did not have four legs, but whose commonality with land-dwelling hairy quadrupeds was recognized. Naturalists such as John Ray had already used such adjectives as *vivipara* and *pilosa* (hairy) to unite this group as early as 1693 (Gregory 17–22). By changing the name from *quadrupeds*, in the tenth edition of his *Systema Naturae*, Linnaeus also eliminated one obstacle to classifying two-legged humans among the animals. In addition, he gave humans the genus and species name that are still with us: *Homo sapiens*. These alterations did not silence the critique, which was theological behind its superficial focus on rhetoric, and which remains very much with us today in resistance to Darwin’s theory of evolution. The new terminology did in fact represent a compromising tendency, however. The order including humans was acknowledged in its very name to be the “first in rank” (*primates*), humans as a species were distinguished by their intelligence (*sapiens*), and the characteristic by which humans were grouped into a class was the female breast (*mammalia*). As Schiebinger argues, by using the female breast as the most prominent criterion of classification, Linnaeus exploited the long history of connecting women more firmly to nature than men, and thus ameliorated the effect of the revolutionary inclusion of the species within a class of animals. In lectures, Linnaeus defended

the name, claiming that “[e]ven if his critics did not believe that man originally starts by walking on all fours, . . . every man born of woman must admit that he was nourished by his mother’s milk” (cited in Broberg 175). The comment is misleading, since Linnaeus did not in fact choose to name mammals after suckling, but instead after the female organ that enables it. He implies that the demeaning association with other animals ends for males after weaning, fitting into an Enlightenment model that depicts progress toward reason as maturing away from a natural, and feminine, origin. Women, however, as possessors of the tell-tale breast, cannot escape so easily. The original German term for primates, *Herrentiere*, did give a masculine ring to one of the natural categories that included humans, but it was at least the more elite and specific order rather than the broader class. The introduction of the term *mammalia* certainly did not end the controversy over where humans belonged in the natural order. Although Linnaeus’s system quickly gained wide acceptance, some naturalists continued to resist. Blumenbach placed humans in their own order, called *Bimana*, two-hands, a classification that was accepted and reiterated by Georges Cuvier in 1800,³⁰ and was accepted by some textbooks in Germany as late as 1863 (noted by Haeckel 10).

Goethe was an active participant in the debate over the relationship of humans to other organisms, in his naturalist and literary works, and was deeply invested in the embedment of humans within the animal kingdom. As Ernst Haeckel noted in a lecture delivered in honor of Linnaeus’s two hundredth birthday, Goethe’s investigations into “Formverwandtschaft” (the kinship of form) (12), led him to the conclusion “that uniform laws of formation [*Bildung*] lie at the foundation of all organization, and that an inner bond embraces the kinship [*Verwandtschaft*] of all life forms” (13, my trans.).³¹ Goethe’s 1784 discovery of the intermaxillary bone in the human jaw eliminated a major argument for an anatomical gap between humans and other primates. His essay, “An Intermaxillary Bone is Present in the Upper Jaw of Man as Well As in Animals” (*ScS* 111–116),³² included detailed descriptions and anatomical drawings of the human jaw, in comparison with those of other mammals. He sent this essay to a friend of his, Johann Heinrich Merck, to pass along to both the renowned Dutch anatomist Pieter Camper and the leading German authority on the human skeleton, Samuel Thomas Soemmerring (Mann 57). Camper and Soemmerring both disputed the claim, but Camper credited Goethe with several small discoveries regarding the teeth of other animals (Bräuning-Oktavio 35).³³ Goethe’s discussion on the similarity of the human bone structure to that of other animals includes the comment, “Of the ape I will say nothing, for here the correspondence is all too striking” (*ScS* 115).³⁴

The self-evident similarity of human and simian anatomy fascinated and worried Europeans from their earliest scientific investigations of monkeys in the seventeenth and eighteenth centuries, leaving a residue of anxiety that is still with us.³⁵ This dual reaction is reproduced in Luciane's attraction and Otilie's revulsion to monkeys and their images in *Elective Affinities*. Otilie's aversion to monkeys, even in pictorial form, derives from her fear of connection and integration even as her teacher and foster mother insist on her desire for such integration as her most prominent character trait. Otilie notes gratefully in her journal the absence of natural history in her school curriculum, an absence she owes to the young teacher.

A teacher who can arouse our feelings over a single deed or a single poem does more than one who gives us the whole series of inferior forms of life with all their names and structures; for the end-result is what we can know anyway; that the best and nearest likeness of divinity is worn by the human form. (*EA* 169, trans. modified)³⁶

Otilie's stated preference for understanding subjects not in isolation, but presented in context, and ordered from beginning to end, fails her here. She is not interested in understanding all concepts within their complete system of relationships, but only in controlling the boundaries of such systems. Humans, as far as she is concerned, belong in a system of affinity only to each other and to God, and to a system of shared space with nonthreatening organisms such as trees and birds, which she is taught to regard as her "true compatriots" (*EA* 169).³⁷ Otilie does express admiration for naturalists who, like Alexander von Humboldt, are capable of understanding complex ecosystems, and who "can depict and present the most strange and foreign things in their locality, with all their neighboring circumstances, always in their own peculiar element" (*EA* 169).³⁸ These objects of natural study can be appreciated because they remain at a distant remove from her own space, segregated in their own neighborhoods and networks. She extends the notion of relatedness only so far and then stops, insisting on a gulf between humans and Humboldt's exotic objects that was quickly collapsing in Goethe's time. The worst way to approach nature, as far as Otilie is concerned, is through contact with monkeys. Even images of these animals refute her reassuring self-image by pointing to an obvious affinity that is painful for her to acknowledge. Jacob Theodor Klein, objecting to Linnaeus's common class for humans and apes exclaimed, "I reject his first division, which he calls Primates, or foremost in Creation, because my vanity will

not suffer me to rank mankind with apes, monkeys, maucaucos, and bats” (Qtd. in Broberg 172–173). Otilie’s vanity is also present in her rejection of the similarities between simians and humans:

How can anyone bring himself to do such careful pictures of those horrible monkeys? We debase ourselves even by looking at them as animals; but there is a greater evil still in giving in to the temptation to look for people we know behind those masks. (*EA* 168)³⁹

Comparative morphology involving detailed drawings of similarities was precisely the kind of science in which Goethe himself was engaged. The resemblances that emerge from the passage between particular monkeys and specific people mimic the resemblance between Otto and his two nonprogenitors, Otilie and the Captain. In his history of the classification of mammals, Gregory rhapsodizes about the genius of Linnaeus in making precisely these associations: “[A] close study of Linnaeus reveals, so to speak, the poet and seer: uttering profound principles . . . , proclaiming that natural affinities may exist even beneath the most striking external differences; thereby bringing into clearer view the riddle of natural relationships” (Gregory 36). The corollary to the subterranean relationship between that which is superficially divergent is the occasional absence of a near relationship between that which is superficially similar. Otto fits both descriptions.

Otilie justifies the decision to avoid natural history through the conviction that “the proper study of humanity is the human” (*EA* 169, trans. modified).⁴⁰ The question remains, however, whether one can possibly understand humanity in isolation from nature and from the study of nature. Haeckel associates Goethe’s understanding of humanity precisely with his recognition of natural relationships: “Let’s stop and think what it means, that a man like Goethe, who grasped what it is to be human more deeply and represented it more perfectly than any other person, recognized in mammals his ‘silent brothers’ ” (12, my trans.).⁴¹ Goethe himself firmly linked the study of humanity to natural history in a conversation with Eckermann quoted in part above:

Without my attempts in natural science, I should never have learned to know mankind as it is. In nothing else can we so closely approach pure contemplation and thought, so closely observe the errors of the senses and of the understanding, the weak and the strong points of character. All is more or less pliant and wavering, is more or less manageable; but Nature

understands no jesting; she is always true, always serious, always severe; she is always right, and the errors and faults are always those of man. (Goethe, *Conversations* 238)⁴²

Humans are not only Goethe's preferred natural object of study. They are his preferred object of study as natural historians. Only through an investigation of the systems of classification, the selection or rejection of theories, and the manifold interpretations that have been proposed, can one truly come to know humans, just as one can come to know Otilie through her rejection of natural categories that draw her into the animal kingdom.

Otilie's reaction to the multitude of resemblances and relationships in the world originates in an anxiety fostered by her dependency, her adaptability, and her repeated transfer from one environment to another. The relationship she rejects is not of the direct familial type, but binds together those related by species or by class into families of organisms. In her role as foster daughter to Charlotte, foster mother to Nanni and Otto, and educator of girls into maternal figures, Otilie represents in spite of herself the versatility of disjointed relationships. While Otilie denies her connection to other mammals, she asserts another kind of affinity—to domesticated plants. Otilie's plant-like qualities have been subject to comment for at least a century. In 1916 Gundolf found that "Goethe's concept of law, fate, and character [needed to be] thought analogously to the relationship of germ, flower, and fruit" (554, my trans.).⁴³ Benjamin condemned Gundolf's biographical approach to Goethe's work and excoriated an association that conflated the amoral plant world with the fate and guilt associated with Otilie. Even Benjamin himself, however, refers to Otilie's "plant-like muteness" (336).⁴⁴ Indeed, in her ability to bond with strangers and in her very curious version of fruitfulness, Otilie strongly resembles not a plant in general, but a graft, and a graft of a very particular sort. Images of grafting mark the opening of the novel and recur throughout. While Eduard busies himself with grafting in the first scene, and Otilie notes the eventual successful integration of the grafted scions onto the rootstock, the gardener complains about the newfangled, miscegenated forms that result from the process, forms that, like Otto and the caricature monkeys, attest to the complexity and dynamism of nature. A careful reading will, however, reveal a crucial distinction between the general human kinship to monkeys, which Otilie rejects, and her self-generated resemblance to a vegetable graft. Otilie's plant-like characteristics are not inborn. Her behavior, like all human behavior, represents a response to circumstances outside her control, but a response that is not inevitable. Otilie's refusal to reassess and change her

behavior and disposition throughout the novel does constitute a choice for which she is responsible. Contrary to Otilie's own diagnosis of the problems in her life as originating in a departure from her course (*EA* 214; *HA* 6:462), it is in fact her obstinate adherence to her graft-like state that brings about catastrophe.

Reproductive Eyes

While the procedure of propagating plants by grafting has been practiced for thousands of years, in the eighteenth century the debate over the mechanism responsible for the regeneration of severed parts engulfed vegetable as well as animal behavior, in ways that will be discussed over the next three chapters. Blumenbach was considerably more interested in animals than in plants, and therefore does not explicitly discuss plant grafting in his work on the formative drive. He does, however, address grafting in animals in a way that can easily be applied to plant activity, noting "the artificial replacement of a lost part by means of an analogous substance, for example the implantation of foreign transplanted teeth into the fresh holes left by teeth, and the nose replacement rumored of Tagliacozza" (Blumenbach, *Bildungstrieb* 82).⁴⁵ The connection between this animal transplantation and plant grafting is taken up by the artist who designed the frontispiece to Blumenbach's book and prominently included grafted trees at various stages in his *Bildungstrieb*-driven landscape, reproduced in the introduction (Fig. In.2). Like the transplanted tooth, the graft takes to its new environment in Blumenbach's schema because both the scion and the stock obey a drive to heal the wound caused by the grafting knife and to maintain their previous form. As Völker explained in his 1821 expanded version of Christian Reichart's extremely popular *Land- und Gartenschatz*:

Because the formative drive of the nutritional juices is most active in the inner part of the bark or the cambium, and the new wood and bark layers form from there: so the vessels and fibers of the pedigreed scion and the wild stock grow together easily at the site of contact and form a whole from that point on. (Reichart 26, my trans.)⁴⁶

Because the graft represents both the union of two distinct entities, and the propagation of the desired plant through its attachment to the rooted one, grafting embodies the confusion of generations implicated in the debates over reproduction discussed in the introduction, and character-

istic of Otilie as well. As an asexual method of propagation that requires intervention, moreover, grafting alludes to the difficulty of identifying a single method of producing and rearing offspring as the only natural means. Grafting, known in German as *Pfropfung* or *Veredelung* (ennoblement), was a general term that covered a variety of methods for attaching a fruit-bearing (or potentially fruit-bearing) part of one tree to the root-bearing part of another tree. In addition to its use as an umbrella term synonymous with *Veredelung*, *Pfropfung* was also used to indicate the most traditional of the three methods of grafting commonly discussed in gardening literature of the late eighteenth and early nineteenth centuries. The other two were known as *Kopulieren* / copulating and *Okulieren* / occluding. Fig. 1.1 is a plate from Christian Reichart's 1821 *Praktisches Handbuch für den Obst- auch Weinbau* illustrating various forms of grafting. Figures 1 through 7 depict traditional grafting, figures 8 and 9 show forms of copulation, and figures 15 through 17 display occlusion. In traditional grafting, a young, green branch was removed from a tree. The base was then cut diagonally or into a wedge shape and fitted to a larger branch of the rootstock, which was cut as the negative of this shape. This method of grafting resulted in a visible scar, since the grafted scion was considerably narrower than the stock to which it bonded. A new form of grafting, called "Kopulieren," was invented by Georgii Holyck in 1678. This method involved fitting a scion to a rootstock of the same size: "then choose a twig or scion, but of the same thickness as the shoot, immediately after the diagonal cut attach the former so solidly onto the trunk, that it seems as if it had grown that way from the beginning" (Holyck 34, my trans.).⁴⁷ Unlike traditionally grafted trees, a copulated plant would leave no visible trace of the hybridization by which it was created. Although Holyck does not provide a justification for his choice of name for the new method, the word clearly activates an analogy between the grafting and a sexual bond. It is no coincidence that the frontispieces to books on grafting in the garden often show a flirtatious young man and a young woman of reproductive age performing the work together. Fig. 1.2 shows just such a couple in the frontispiece to David Ludwig Henne's 1791 *Anweisung wie man eine Baumschule von Obstbäumen im Großen anlegen und gehörig unterhalten solle*.

The symbolic relevance of grafting to sexual union did not originate with Holyck. Johann Sigismund Elßholtz's *Vom Garten-Baw* was the first gardening book specifically written for the German climate, and was reprinted four times between 1666 and 1715. In a section entitled "Verwandschafft der Stämme und Reiser," he emphasizes that:

[g]rafting within a type is the best . . . The old Romans named such grafting within a type quite cleverly *Matrimonium*, mar-