

5

Empowering Nature, or: Some Gleanings in Bee Culture

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The chiefest cause, to read good bookes,
That moves each studious minde
Is hope, some pleasure sweet therein,
Or profit good to finde.
Now what delight can greater be
Than secrets for to knowe,
Of Sacred Bees, the Muses Birds,
All which this booke doth show.
—A. Crosley, “To the Reader”¹

Sometime in 1984, a swarm of “African” bees—also known as killer bees—hitched a ride from somewhere in Latin America to Lost Hills, California. In June 1985, a machine operator working in a Lost Hills oil field saw bees kill a rabbit and reported it to the authorities. In an extensive official campaign over the next few months, twelve colonies containing African bees were found in the area—most discretely tucked away in abandoned drain pipes or college campus trees, but some in the managed apiaries properly reserved for “European” bees. The newspapers went wild. “Aggressive Bees Rout Entomologist.” “U.S. Enters Bee Fight With Own Quarantine.” “Invader Bees Reproducing.” “Bee Battalions Mopping Up Killer Bee Invasion.” This time, briefly, the mulattos would be removed and destroyed for a Europeans-only California. “Africanized Bees Won’t Take Over Country Just Yet” (Whynott 1991: 152–55).

Hitchhiking, border-crossing aliens who hide out in abandoned places and run from the restless gaze of the immigration authorities, who are capable of savage and unpredictable acts, and who reproduce much too quickly on U.S. soil: These are familiar U.S. stories of the non-European human outsider. How did they come to infect and infuse stories about bees? The workings of nature, including the lives of bees, are not so mysterious

that we cannot talk about them; and we must talk about them in human, cultural ways. But are natural facts merely transmutations from human lifeways? The bee scientist protests that it is the popular press that creates popular stereotypes; scientists learn from the bees themselves. The cultural analyst returns to cite assumptions that cross technical-popular lines—those that create norms of bee labor and reproduction, those that categorize “Africans” as outsiders. The dialogue breaks off; but “nature” is confirmed. “Nature,” like the bee, is both a tireless laborer and a provoker of great crises. She confirms our prejudices but then escapes from our best-laid schemes of domestication. She provokes us to both recycle and reform conventional knowledge. And in the bee she has found a worthy representative.

Nature

Naturalizing power requires empowering nature. Empowering nature means attributing to nature forms of agency we can understand. Yet “nature” is also, by definition, that which escapes human attributions. This essay argues that the work of nature in U.S. American culture is to create the space for a tension between those forms of agency we best know and those we imagine to be outside our ken.

This is a tension that cultural analysts rarely recognize. We tend to write of “naturalizing” social relations as a synonym for “justifying” them, thus ignoring the cultural specificity of the justification through reference to nature. When we do acknowledge “nature,” we tend to highlight the ways nature can be whatever we want it to be. Fashion sets the agenda for understanding nature; political virtues congeal into scientific laws. Nature is molded and melded into a reflection of human cultural concerns. The historically shifting imagined differentiations of gender and race are the (still so intransigent to be infuriating) best example: Cultural agendas create the frameworks and technologies in which observers find natural difference where they need to see it.

These insights are certainly truthful ones; yet, it is also worthwhile to pay some attention to the specificity of “nature.” Inequalities can also be legitimated through reference to religion, civilization, progress, and other things. Naturalizing has its own peculiarities—including, for example, its development in dialogue with Christian notions of the deity. Nature, like God, is both lawful and mysterious; it requires human efforts to know it, yet always slips away from full knowledge. Thus, although cultural analysts over and over demonstrate the cultural shaping of so-called natural attributes, we can never thus unseat “nature”: It is an aspect of nature to be

partially and ultimately wrongly labeled by human cultural efforts; this is what gives nature its majesty.

Unfortunately, we can get little insight about the cultural specificity of nature as an object of knowledge from most of those who write about nature.² Nature writers, like cultural analysts, take the domain for granted, although they tend to emphasize the other side of the tension. Nature writers, environmentalists, and scientists tend to be fascinated by the Otherness of nature—its wildness, its mystery, and thus its capacity to provoke cultural renewal. The human experience in nature about which they write is an experience of awe because of nature's basic unknowability. Sometimes even in the deepest forest, a wild animal acts like it knows you, they write, but it is the undependability and transience of this moment that makes it so poignant. All we can depend upon is difference: Natural history catalogues this difference; natural science analyzes its dynamics.

Both cultural analysis and nature writing depend on their mutual tension in understanding nature even as they reject the other as insignificant, unfortunate, and downright wrong. Even radical difference is codified in culturally familiar exoticizations (as anthropologists have learned in painful self-recognition). And the idiom of the cultural "making" of nature separates the plastic medium (with its own possible refusals and unpredictabilities) from the cultural template. If it is the unmentionable possibility of knowing unknowable nature that is intriguing to the nature writer, it is the unmentionable possibility of politically docile nature getting away that is intriguing to the cultural analyst. But thus neither approach tends to discuss the constitution of the domain of "nature" on which its analysis depends. My argument here is not that we should "mix" culture and biology or humanistic and scientific approaches; it is about the cultural shape of "nature" that makes these kinds of statements sound so appealing, so natural.

Let me turn from these abstract and high-minded concerns to the domain that interests me here: domestic animals. Domestic animals are those nonhuman animals we most expect to act like people—or, at least, act in culturally familiar ways. We expect them to act like humans, but they are not humans. It seems to me that domestic animals exemplify the tension I have set forth here; almost by definition, domestic animals are shaped by yet escape the cultural models of agency we thrust upon them. I leave it to my readers to worry about what they think about their pets. Here my subject is honeybees—that is, the culture of bee nature and the "nature" in bee culture.

To "domesticate" an animal is to bring it into the orbit of the human family. In the history of most domestic animals—here I confine myself to European and European-diaspora traditions—this has meant not only a relation to the human-species family but also to specific human-kinship—defined families who rear and train animals. Domestic animals are supposed to behave as family members and work within the family unit. Like other

family members, they receive care and subsistence for their devotion to the family. Most domestic animals are supposed to have families of their own under the wing of the human family. Middle- and upper-class urban pets in the United States are a “hyperdomesticated” exception; they are expected to join a particular human family directly and often are required to remain celibate and/or childless as family dependents. Most other domestic animals in the United States, including farm animals and rural pets, are encouraged or required to form supervised families that work under human headship. Even in industrialized stock raising, domestic assumptions still chart the course for human notions of stock genealogy, socialization, the division of labor, and patterns of productivity; animals as workers are often organized in family-like firms. Thus the social lives of domestic animals tend to be shaped by two kinds of human kinship attributions: First, they should have appropriate kinship relations with humans, to work with and under them; second, they should have appropriate kinship relations with each other, to make them both productive and proper human companions. In these ways, the agency of domestic animals is understood in relation to (human, culturally specific models of) kinship.

There are a large number of human-animal relationships that challenge and confuse the lines between “domestic” and “wild,” and it is commonly recognized that human kinship attributions may be only awkwardly appropriate in these cases.³ Honeybees are not like this. North American beekeeping derives from a long European tradition in which bees have been, if anything, emblematic of domesticity. Honeybees are devoted to their home in a hive; busy, they work hard; helpful, they cooperate within a natural division of labor; loyal, they protect their home altruistically; parental, they provision their brood; frugal, they save up a full larder. All of these characteristics of bees, and many more, have been taken as indications of the affiliation between honeybees and human families.

Yet even this emblematic species will not fully cooperate; after all, bees are not people. Bees are problematic for, as well as emblematic of, domestic ideals. That’s why, more than people, honeybees are “just part of nature.”

Origins

This essay enters a conversation begun with a story David Schneider tells about his research on Yap, published as a letter to the editor of *Man* (Schneider 1968). Schneider was investigating Yapese beliefs about human procreation; people had insisted over and over that sexual intercourse was not necessary for conception. “Conception was the reward arranged by happy ancestral ghosts, who intervened with a particular spirit to bestow pregnancy on a deserving woman” (126). In support of their beliefs, they

offered him examples of sexually active women who had never had children as well as sexually undesirable women who had. But Schneider, weighed down by his “own version of the forms of western European thought” (127), was puzzled by this belief until the following incident. The story is lively enough to quote at some length:

One fine day, walking along a path I did not often take, I came upon four large men removing the testicles of a small pig. Always the anthropologist, I did not assume that I knew why; I asked. Makes the pig grow much bigger, they said. But, said I slyly, could a sow ever get pregnant from such a boar? Not from that one! they affirmed. It needed a boar whose testicles had not been removed.

I was unnerved, I admit. So I went back over the whole matter slowly and carefully. Castrate the pig and he grows larger than if he is not castrated. Right! But a castrated pig cannot get a sow pregnant. Right! And then they added once again, if you want a sow pregnant you must get a boar which has not been castrated. They copulate, the sow gets pregnant, the pigs are born.

But, I protested, everyone has been telling me that coitus does not make women pregnant. That is correct, they said. But they were puzzled, and so was I. We did not understand one another. I had presented them, I felt, with logically inconsistent statements that fairly cried out for some explanation. They could not see what my problem was since they had provided me with the full array of necessary, correct facts and to them there was no problem.

So we kept at it until I again put the contradiction to them; if you castrate a pig he cannot get a sow pregnant. Surely that proved that copulation causes pregnancy! But suddenly one man saw what my problem was, for he put it plainly and emphatically: “But people are not pigs!” Once that point was made, the rest followed in happy, logical order. I had obviously assumed that biological processes operate for all animals and had included man [sic] among them. But they had assumed that no one but a fool would equate people and pigs. (127–28)

Why couldn't Schneider tell the difference between people and pigs? One could argue that Schneider's work after he returned to the U.S. from Yap was devoted to just this question. He touches upon his answer in referring to “biological processes” in the quote above: U.S. Americans, like himself, can't tell the difference between people and pigs—especially when it comes to issues of sexuality and reproduction—because U.S. Americans assume that pigs and people are similarly creatures of nature. An extensive research project developed this insight. In *American Kinship* (1980), Schneider describes understandings about kinship that create a realm of natural social association for U.S. Americans. Turning structural-functionalism on its head, he argues that kinship solidarity, rather than being a requirement of social

structure and function, is a symbolic commitment, a cultural assumption shaping the realm of social associations imagined as natural. At the center of this kinship solidarity, he finds sexual intercourse, which creates both the love and the continuity of the "diffuse, enduring solidarity" of kinship.

Yet in order to further explore the realm of nature, I would argue, we must return to the pigs as well as the people. What makes human nature "natural" is the fact that people and pigs—and other animals—share in it. Schneider's insights about people take us in the right direction: For U.S. Americans, sexual intercourse creates cohesion and reproduction not just for humans but for all species. Sexual intercourse is discussed by both animal lovers and animal scientists as the central dynamic of species and kin-line reproduction; species and kin-line reproduction, in turn, are seen as forging the pattern of animal social relations. When animal biologists explore "reproduction" they focus almost entirely on the organization of sexual intercourse, to the neglect of feeding, maturation, and much more.⁴ One could argue that U.S. American "nature" is that cross-species realm created by the species-specific kinship solidarities formed through sexual intercourse. (And, thus, gender and race—so central to U.S. American notions about the possibilities of sexuality—are always already key to constituting "nature.") As with human kinship, functionalist assumptions about the evolutionary importance of sexuality-based kinship solidarities can be turned on their head to reveal cultural assumptions. In this sense, sociobiology has only formalized a common popular assumption: Sexually created kinship is the diffuse, enduring solidarity that makes for both family and species cohesion and continuity. It is thus no surprise that a U.S. American can't tell the difference between the sex life of a person and a pig.

Schneider's story also alerted me to an entirely different aspect of cultural analysis: its rhetorical effectiveness. The story is purposely sly: an understated, dry humor makes fun of the anthropologist as it forces the reader to think critically about his or her own assumptions. The story made me think about the rhetorical strategies of Schneiderian cultural analysis more generally: Even when the text is deadly serious in tone, it tends to depend for its effectiveness on an ear-tweaking irreverence. It confuses the common-sense and the unheard of, the respectable and the risqué. To be done well, it must pull the rug from under the reader, but entirely quietly and calmly.

By the time I was receiving my graduate training, Schneiderian cultural analysis was being taught as a partial analysis—the symbolic part of a more ambitious agenda that should include history, social practice, and structures of inequality. This is a useful project that continues to excite me. However, now that anthropologists have begun to pay more attention to the ways writing and style shape varied forms of analysis, it may be a good time to restore Schneiderian cultural analysis to a status of completeness. Thus, a rug-pulling, ear-tweaking style of cultural analysis works rather differently

from the more conscientious puzzle solving of structural-Marxist-type analyses that begin with inequality. It is unfulfilling to puzzle solve with just symbols and meanings; but it is also difficult to ear tweak with social relations of inequality.

It is in this spirit that I can continue to a companion story that also serves as a stimulus point for this essay. When I was doing fieldwork in the Meratus Mountains of South Kalimantan, Indonesia, I became fascinated with Meratus Dayak honey-hunting practices and their related bee lore. The prime honey producer in the Meratus Mountains is the bee called, in Latin, *Apis dorsata* or, in English, the “giant honeybee.” In the Meratus Mountains, *Apis dorsata* colonies build single large combs hanging from the high branches of specially prepared forest trees; Meratus Dayaks scale those trees in the dark of moonless nights to take down the honey.⁵ One evening I was talking with some Meratus friends about bees; I explained that I had learned that a colony of bees had a queen—I used the word *raja*, “ruler”—surrounded by many workers. *Raja* locally refers to the head of government and the spirit of authority; it looms over more politically precise postcolonial terms such as *presiden* and *gubernur*. One of my friends laughed at me and suggested that my view of bees was derived from political propaganda spread by my government to make its subjects think that even animals accepted hierarchy with obedience. I had to stop and think: As a cultural analyst, he had pulled the rug from under me. In imagining government, could I really tell the difference between bees and people? There was “nature” again, staring me in the face.⁶

I went back to the United States and tried to learn a lot more about honeybees. But what has kept startling me—with the help of my Meratus ethnographer—has been the inability of the sources I have tapped to disengage bee agency and human agency, even for those that take their “natural” difference for granted. Because it never occurred to Meratus to treat honeybees as “domestic” home-and-family mates, I became particularly fascinated by how stuck Europeans and U.S. Americans have been in the domestic model. The tensions of working with bees through this model have informed the challenges of beekeeping and bee knowledge. And because I had started out with Southeast Asian bees, I couldn’t avoid the discussions of (bee) race and nationality that pervade U.S. storytelling about the “domestic.” Stubborn assumptions about the necessities of bee-and-human kinship and nationality inform both scientific and popular bee lore. New apicultural challenges recycle old cultural assumptions even as current versions prove useless. Yet even the familiar returns with the force of the uncanny.

Bee science is distinctive in its popular-technical hybridity. Much bee research is still done by individual curious beekeepers and small apicultural research stations without expensive equipment. Bee journals for the “serious hobbyist” as well as the commercial apiculturalist abound; at the same time,

bee research is visible in high-profile journals such as *Science* and *Nature*. Here is a realm then, where natural kinship is created for a distinct but diverse cross section of U.S. Americans.

Honeyed Households

“Honeybee” can refer to all the species of the genus *Apis*, but in the United States the term most commonly refers to the European “races” of the species *Apis mellifera*. No species of *Apis* are indigenous to the New World; the familiar pollinator and honey producer *Apis mellifera* (which in this section I’ll call honeybees or bees) was brought over by European colonists as part of the ecological package in which they conquered and transformed the New World with Old World flora and fauna. Once having settled down on American soil, of course, the conquerers forgot not just their own foreignness but also that of the flora and fauna they brought with them; they made themselves at home and began to worry about properly socializing somewhat later-arriving aliens—or else keeping them out. But that is a story I will tell later.

Technical books on honeybees often remind their readers that the bees are not fully and properly “domestic” animals, since they do not rely on humans for their care, subsistence, or reproduction.⁷ Yet in European and European-diaspora traditions, bees are always treated as domestic, first, because this is the dominant model of husbandry, and, second, because bees have so many home-endearing qualities, as I mentioned above. It is this tension between their domestic embodiments and refusals that makes honeybees interesting as creatures of nature; they defy human control even as they exemplify domesticity. Their home life proves that “home” is natural law; yet they refuse to stay home as they should.

The biggest problem with bees, as far as domestication-minded people are concerned, is their independence. Honeybees gather nectar and make honey for themselves and their brood. Queens mate with multiple drones in nuptial flights high above the ground in a difficult arena for humans to intervene. And while bees may consent to live in human-constructed hives, making them stay in a particular hive is another matter. European *Apis mellifera* build their nests in enclosed spaces, where they have protection from cold and predators; besides hives, they live in holes in trees, spaces between walls, and other convenient nooks. Bees in a hive may “abscond,” that is, take off as a whole colony with the queen to build a nest elsewhere. They may also “swarm,” that is, take off with a queen and part of the colony, leaving the rest of the colony with another queen to continue working in the original nest.

The assumptions and practices of U.S. beekeeping and bee lore derive originally from European peasant traditions in which the tentativeness and tensions of bees' domestic positioning was a major feature of bee culture (that is, human cultivation of bees). In these traditions, people aimed to consolidate the domestic status of bees but expected that they would never be fully successful. Thus, European beekeepers worked hard on symbolic-practical fronts to keep bees from absconding from the hives in which they produced honey within and for the human household. One might consider the European custom of "tanging," in which beekeeping families clanged kitchen implements—pans, kettles, spoons, hearth irons—to keep the bees from absconding. The loud sounds produced may have helped keep the bees from flying off, at least temporarily: Certain kinds of sounds, transmitted through the substrate of the comb to the bees' legs, cause bees to freeze (v. Frisch 1967:286).⁸ Yet the symbolism of tanging, as the sounding of the tools of the home, is even more apparent. Bees continually had to be reminded of their domestic loyalties. In this same vein, European beekeepers used charms to calm the bees and keep them home. Here is an Anglo-Saxon charm, addressed to potentially absconding or swarming bees, which makes its "domestic" reminders quite clear:

Sit ye, my ladies, sink
Sink ye to earth down;
Never be so wild
As to the wood to fly.
Be ye as mindful of my good
As every man is of meat and estate. (Fife 1939:336)

Another example of efforts to keep the bees in the family is the English custom of "telling the bees," practiced in rural areas through the early twentieth century: When a death occurred in the human family, the bees were to be told about it. Bees needed extra respect as household members because they could always leave; no one bothered to tell the cow.⁹

Given domestic models for understanding quandaries about bees, it is not altogether surprising that discussions of gender involving bees come back to family and household—and the debates and insecurities they gather in combining the laws and mysteries of nature. European bee scientists and beekeepers have been in agreement about the gender classification system for bees since the seventeenth century: The queen lays the colony's eggs; the workers are nonsexual females; the drones are nonproductive (for subsistence) male sexual agents. However, the question of how to interpret these gender classifications is, of course, never closed. An amusing interchange between U.S. bee commentators at the end of the nineteenth century lit upon the ambiguous gender status of the sexually and reproductively inactive

worker bee. If sexual intercourse and the reproductive families it makes orders nature, is the worker bee a real woman?

What are the absolute facts of the case? The worker (barring a few exceptions) is *anatomically* a female but *functionally* a neuter.

Thus argued a Mr. E. E. Hasty, writing in the correspondence pages of *Gleanings in Bee Culture* (1899b:81), a journal for bee enthusiasts and beekeepers. He claimed that it was more appropriate to write of a bee as “he,” because a worker bee is not only an insect but also not a particularly female one.

Our little squad of bee-writers . . . want an insect which isn't a female, after all, called “she.” This alleged reform, if it could be successfully inflicted on the language, would at once create an urgent need for some other pronoun than “she” to express the *real* femininity of the queen. (81)

But the defense from a Dr. Miller was gallant and passionate.

Did you ever see such audacity as that displayed by that man E.E. Hasty? I called his attention to the fact that he owed Mrs. Bee an apology for calling her “Mr.” Bee, and, instead of promptly apologizing to her, as any gentleman ought, he just gets stubborn, and insists he is going to keep right on being impolite, and will call her “Mr.” whenever he likes. (80)

Dr. Miller does not consider a bee either an “it” or a “he”; after all, even if she is not the mother of the family, she is truly the angel of the house. Thus his reply to Hasty’s charge of gender ambiguity reclaims the feminine domestic of the household, not the reproductive pair:

But *is* the worker functionally a neuter? Her function is to keep house, nurse the babies, and hustle around to get something to put on the table. If those are neuter functions, then all of our household goddesses should be addressed as *it*. (80)

Miller then accuses Hasty of being inadequately domestic himself; he has been “living so long on one meal a day” that he must have become dyspeptic and “soured on the female persuasion” (80). How could he recognize the domestic, and thus feminine goodness of the bees?¹⁰

The editor sides with Hasty but is willing to “compromise” with Miller by changing his use of “he” for worker bees to “it.” It is with some hesitation, for he thinks: “But somehow it took the ‘life’ out of much that is said” (82). He continues, “Like Hasty I associate with ‘he’ smartness and wickedness; and with ‘she’ softness and goodness” (82). But readers get involved,

mainly in defense of women's domestic roles. One reader argues that it is (properly domesticated) women—including worker bees—that nurture and save the race.

The queen . . . can do nothing to keep her race from becoming extinct; the worker must come to the rescue; the worker performs the other half of the work of the true female. . . . When the time comes that the relative missions of queen and worker are not only fully understood, but to each the credit given that to each belongs, then . . . each will be addressed as it properly should—Mrs. Queen and Mrs. Worker. (Greiner 1899:213)

Even the queen is demoted to a wifely service status within the natural household: Mrs. Queen. But a second reader warns the editor of domestic revolutions:

Man smarter than a woman? Not much! We have seen women who could peel the bark off a hickory sapling, the equal of any male gender. Better to continue to say *she*, young man, when you think of the worker-bee; this is the age of "woman's rights," and you may wish you had if you do not. *She* is not so "soft and good" as she might be when you get her aroused. (Abbott 1899:213–14)

From Family Beekeeping to Industrial Apiculture

U.S. beekeepers and bee scientists inherited a European domestic model for thinking about bees; their changing practices, questions, and debates have continued to be informed by issues of domesticity. However, bee knowledge and beekeeping practices in the United States have moved through a national trajectory understood as entrepreneurial and progressive. In this trajectory, bees have seemed to grow closer and closer to becoming the model "modern" industrial workers: Already exemplars of routine, industriousness, and orderliness, new bee-handling technologies have made them interchangeable and movable units of labor power. Bees have become part of a nature that could be technologically grasped and controlled—but only by recognizing nature's inherent resistance to full capture. Indeed, the struggle between natural resistance and human modeling creates technical progress. As one bee manual put it,

There is continual confrontation between bees and man. Man seeks to find the most efficient equipment for the bees' use according to his own ability to handle it. The bees, however, only accept and use man-made equipment if it suits their own needs. It can be very frustrating, but this learning

. . . is what makes beekeeping one of the most fascinating nature studies.
(Stephen 1975:331)

Books on bees in the United States almost always begin their story with a nineteenth-century *national* event, the invention of the movable-frame hive by a U.S. citizen, Reverend Lorenzo L. Langstroth. Before the Langstroth hive, one gathers, there was timeless tradition in all its sticky variety. After Langstroth, there was clean, progressive, modern bee culture. The following presentation is representative:

Before Langstroth, and the Langstroth hive, there were log hives, gum hives, box hives, skep hives, and many others. . . . What Langstroth saw, that day in 1851, was that he could suspend wooden frames in the hive, three-eighths of an inch from the walls, and the bees would leave the spaces between the frame and the hive wall free of wax. . . . The Langstroth movable-frame hive brought on an era of commercial beekeeping. (Whynott 1991:18)

The Langstroth hive allowed U.S. beekeepers to remove honeycomb without destroying the hive, thus allowing them to work with more hives more easily.¹¹ Other late nineteenth-century inventions, such as bee-dispersing smokers and centrifugal honey extractors, were equally important to the new bee culture. The queen excluder, a screen large enough for worker bees to pass through but too small for the queen, let beekeepers separate the brood comb, where the queen laid eggs, and the harvestable honeycomb. Supers, boxes of empty comb layered above the hive, induced continuous honey production beyond bee needs.¹² Indeed, the new manipulable hive, with its coerced segregation of the queen in her nursery and its rising tiers of insatiable supers, became an industrial production module in which bee labor is valued as much for its regular efficiency as for its products.

In the late nineteenth century, U.S. popular science, invention, and publicly proclaimed family values were closely intertwined. Science outlined the necessities of hygiene and efficiency, including family and industrial hygiene and efficiency, which kept organisms in line with new technologies. In dominant understandings, the organization of families and industries were not at odds with each other; family order was the basis of industrial order. U.S. Americans were learning about and shaping a kind of nature that blossomed in the hands of entrepreneurs; this was a nature that kept up with the times, even as it held on to its true value. Those who worked with bees were part of this. Even smallholder beekeepers were imbued with an entrepreneurial spirit in which they hoped to turn morality and knowledge to the expansion of production. Bee journals combined science, commercial schemes, practical wisdom, and family morality. (*Gleanings in Bee Culture*

ran a column on "Our Homes" that referred specifically to human family relationships.) The importance of the scientific and moral code of hygiene was highlighted in campaigns against American foulbrood, a bee disease spread by "contaminated" food. Inventions such as the queen excluder and the movable-frame hive worked with ideals and dilemmas of "domestic" production, intensified their possibilities, and extended them into the basis for a commercial and industrial apiculture.

Immobile queens and efficiently designed hive-homes were only the beginning of this process of "domestic" rationalization in which—as for the more well-known schemes of factory Fordism—kinship models and industrial efficiency became difficult to extricate from each other. A series of inventions and new beekeeping practices made bees increasingly easy to replace, transport, and sell in large quantities. Bees became easily interchangeable labor units. The rearing of queen bees became a commercial proposition as bee men learned to isolate and organize provisions for queen cells; mated queens sent in small boxes could spawn industries of worker families across the continent. By the turn of the century, it also became profitable to send out larger packages of workers, sold by the pound; beekeepers could let their colonies die back in the winter but supply the family firm with new "packaged bees" in the spring. Or one could buy two pounds of bees and a caged queen for an instant family in a hive (Whynott 1991:45–51). Finally, in the 1940s, bee scientists perfected artificial insemination techniques that allowed them some control over bee reproductive lines. Only then could they attempt to breed for specific characteristics: bees resistant to American foulbrood, or bees with a preference for alfalfa. Still, "man is just beginning to modify honeybees through artificial selection" (Seeley 1985:16).

By the middle of the twentieth century, bee science was flourishing. The excitement lay not in the study of bees as individual organisms but rather in the systems of cooperation and communication developed by the bee colony as a social unit. The study of forager bee "dancing" as a communicative vehicle, initiated by German bee scholar Karl von Frisch, aroused enormous interest among both scientists and the educated public in the United States (v. Frisch 1967). Von Frisch is quoted as saying, "The bee's life is like a magic well: the more you draw from it, the more it fills with water" (Ioyrsh 1974:187). And indeed, this well of knowledge about institutionalized coordination and communication has continued to yield (see, for example, Michener 1974; Moritz and Southwick 1992). That the water from this well tastes a little like time-and-motion and organizational studies of industrial labor should not be too surprising. And, of course, the influence is not just one-way: Insect studies—as in the sociobiology of E.O. Wilson (1971)—can also boomerang to inform ideas about human interactions. Indeed, the latest craze in bee studies brings together kinship moralities and the ideally efficient division of labor through investigations of the genetic

"kinship" basis of both the social coherence and the internal divisions of bee society (see, for example, Robinson and Page 1988; Page, Robinson, and Fondrk 1989). Tellingly, even scientific critics argue that the glowing results are an artifact of the method (Carlin and Frumhoff 1990; Oldroyd, Rinderer, and Buco 1990).

Meanwhile, a new form of beekeeping practice has further intensified the commodification and transferability of bee labor: migratory beekeeping. Migratory beekeepers haul truckloads of hives back and forth across the United States each year, following the agricultural blooming seasons (Whynott 1991).¹³ This practice owes its profitability to the massive use of pesticides in U.S. agriculture, which wipe out local insect pollinators; bees must be trucked in to pollinate the crops. (The invention of forklifts and the vast sums spent on U.S. highways also deserve credit.)

Surprisingly, most of the peddlers of migratory bee labor are families. "The other day," said one major beekeeper to a journalist, "I'm riding down 1-95, heading to Miami with five loads of bees, with my three daughters and two sons-in-law, and I looked out there and saw my grandson and my daughters, and they're all in the bee business, they grew up in it, and that's gonna be their life too" (White 1991:43-44). Many such families move with the hives ("We're in it to make a living and have a good family life," said one beekeeper [Mairson 1993:91]); some use their family to promote their business ("When Jim goes by himself [to find farms on which to set his hives], he gets no locations," she says. "When he takes me and the kids, he never gets any refusals. The landowner can't refuse; he sees you have a family to support" [Mairson 1993:86]). But unlike earlier generations of beekeepers, these families do not attempt to stretch to include the bees. The humans are the labor recruiters; the bees are the labor. What kinship they have with the bees is managerial. Like other migrant workers, the bees are replaceable. And they love to labor.

But like the natural hive home, the naturally fully mobile factory doesn't always work, and migratory beekeepers must build contingencies into their plans. The trip from one region to another—collapsed into timeless irrelevance in bee-labor management plans—in fact takes its tolls, and migratory beekeepers' stories are full of the never-fully-planned-for hazards of travel.

A migratory beekeeper from Florida once paid a beekeeper in North Dakota \$10,000 to shake bees into several hundred hives. The bees were shook and the hives were loaded on a truck and the driver left for Florida. But along the way, because of the heat, the bees left the hives and pressed against the nets, which puffed out from the truck. In the beekeeper's yard in Florida, when the nets were pulled off the truck, most of the bees absconded. As the beekeeper put it, "Ten thousand dollars flew into the trees." (Whynott 1991:48)

Furthermore, the bees encounter localizing hazards—situations that mark them as noninterchangeable. One crisis was the honeybee tracheal mite, which appeared first in Texas and then in Florida in the mid 1980s (Whynott 1991:21–22).¹⁴ States began to ban the transport of bees across state lines. Florida was placed under federal quarantine; no bees could leave the state. Bee-labor power was no longer so easily manipulable. But from the perspective of the 1990s, this episode seems a minor mobility setback in comparison to the entry of “African” bees into the United States. By the early 1990s, California had already weathered one major quarantine-and-exterminate incident (described in the introduction); Texas was gearing up for its own more extended quarantine program (Winston 1992:136); the first U.S. death attributed to “killer bees” had occurred in Texas (*New York Times* 1993). Bee migrant labor was suddenly a charged issue, and the industry might never be the same. In order to make sense of this new alien hazard, however, it seems important to think about the long-term significance of race and nation in U.S. bee culture.

Before leaving industrial models, it may be useful to consider that the model worker in the U.S. American imagination has always been a white worker and a national representative. Indeed, the forms of labor discipline, hygiene, morality, and orderliness that constitute the model U.S. American working family could be said to be founded on a “natural” contradiction: On the one hand, they depend on the energy of immigrant assimilation; on the other hand, they depend on the social purity of strong racial and national borders. So too with bees. I have so far presented European-origin bees as if they homogeneously and alone occupied the conceptual space of bee-nature; yet, in fact, their traits have come to be understood in relation to a much more multicultural bee space.

Eyeing the Other

In the United States, kinship, as well as nationalism, relies on two contrasting and contradictory understandings of Otherness, which one might call romance and reproduction. The romance of the stranger brings into kinship the seductive draw of the unfamiliar. Family making requires it in the form of marriage to an/other (another gender, another family); the romance of the stranger is the converse of the incest taboo. In the national arena, the romance of the stranger takes a variety of forms: imperial expansion; immigrant assimilation. For animals, including bees, hopes for the “hybrid vigour” created by cross-breeding bring strangers into the family. In contrast to this model, reproduction wants the continuity of the same, “a chip off the old block.” Otherness is a terrifying threat to the possibilities of reproducing the same. The children must be protected from it. The nation

must be protected from it. Labor productivity—including that of bees—must be protected from it. These two versions of the Other exist in uneasy tension, together threatening the stability of family and national morality. If romantic strangers are incorporated, can dangerous strangers be rebuffed? Not really. The stability of the family, industry, and the nation stand in “natural” vulnerability from this dilemma. The stability of bee kinship and labor arrangements are also vulnerable.

How are differences among bees understood? Otherness among animals is generally talked about in terms of the categories of *race* and *species*. In theory, animals of different races can mate and produce fertile hybrid offspring, while animals of different species can not. Yet, applied to actual animals, the contrasts between these kinds of group differentiations are not always very clear—and certainly not for honeybees.¹⁵ Groups of honeybees achieve labels as distinctive because of geographical isolation, and the question of whether they would mate with individuals of other groups is often unknown.¹⁶ Conflict still rages among honeybee scientists about which groups constitute a distinctive species and which a race. Contemporary experts calculate the number of known *Apis* (“honeybee”) species as low as four and as high as twenty-eight (see, for example, Ruttner 1988:3; Otis 1991). Furthermore, groups now firmly seen as species were once thought to be races, and vice versa. In this context, in which experts continually make “practical”—i.e., culturally sensible, useful—decisions about classification, it may be important to note the cultural assumptions behind these terms: *Species* difference points, by definition, to difficulties of coexistence. Since mating is understood to make kinship and solidarity possible, and animals of different species supposedly won’t mate, they eye each other across an unbridgeable abyss; even if they were similar, they would not know how to communicate or cooperate. A different species is inscrutable. In contrast, *race* difference always points to the problem of miscegenation. The sense of similarity is plenty strong; the difficulty is enforcing segregation.

Perhaps we can view it as an historical accident that the difference between European and Asian honeybees is currently seen as an inscrutable species difference, while the difference between European and African honeybees is seen as a segregation-inciting racial difference. (If it is not an accident, then it draws on intertwined histories of animal and human travel, science, and politics that are much too large for consideration in this paper.) From the perspective of those whose knowledge begins with the unmarked European-origin honeybee, Asian bees are difficult to understand and African bees are potential rapists.¹⁷ As a result, contrasting dilemmas arise as U.S. beekeepers are forced into contact with Asian and African bees. The rest of this section offers one crazy yet serious example of each: the attempt to capture and domesticate the “big bees of the Philippines,” and the attempt to fight off the “invasion of the African bees.” Each attempt has been unsuccessful,

reminding those who care about bees that bee nature is there for a moment and then off and gone. Each episode plays the tension between romance and reproduction rather differently; but both show the strains.

In the late nineteenth and early twentieth centuries, U.S. interest in honeybee races—as well as human races—was focused on the differences among *European* races. There were German bees, Italian bees, Caucasian bees (from the Russian Caucasus), Cariolan bees (from Austria and the Balkans), as well as a variety of less-discussed Middle Eastern, or “Oriental” bees—Syrian, Macedonian, and more. Although judged in many ways like human races, they had their colors backwards: the northern races were dark and the southern ones blond. During this entrepreneurial period, most U.S. beekeepers advocated appropriate hybridization among these races, with a strong preference for the light-colored Italians. (Despite the disapproval of experts, who promoted hybridization, U.S. beekeepers selected even among Italians for the most light-colored bees.) Work on hybridizing bees, as well as other plants and animals, was tied to U.S. eugenic theories in which for people, too, the nation was built up by combining the best of the European races.

This was a period of U.S. expansion as well as European immigrant assimilation. One expansion particularly tested and modified U.S. ideas about cultural borders: the turn-of-the-century U.S. acquisition of Cuba and the Philippine Islands after the Spanish-American war. Certainly, U.S. responses to this new status as colonial ruler were varied. U.S. beekeepers’ reactions showed both excitement and wariness; yet the romance of imperial incorporations was particularly visible. Two kinds of imperial romance were in particular evidence: First, beekeepers were excited to colonize Cuba with their already familiar bees and beekeeping techniques; they spoke glowingly of the possibilities of expanding into this new and favorable space. Second, rumors of a big, long-tongued honeybee in the Philippines excited many beekeepers who thought U.S. colonization gave them the rights to all Philippine labor. Here, I focus only on the latter and tell the story through excerpts from the 1899 *Gleanings in Bee Culture*.

Going the rounds of the daily papers is a statement, more or less modified, that in taking control of the Philippine Islands our government has obtained full possession of the giant bee, *Apis dorsata*, which bee is to be immediately brought by the government to this side of the world. . . . Those who are favorably inclined to the new bees, and desirous to obtain them, may feel assured that they will receive information promptly through GLEANINGS whenever anything authoritative is to be said; and those who oppose their introduction may possess their souls in patience; for, if we are to believe those who say *Apis dorsata* would be no acquisition, we may also believe them when they say that it could not live in our climate. (1899a: 57–58)

Gleanings was cautious, but interested. And their interest grew after receiving a letter from a U.S. soldier stationed in the Philippines, who offered to get the bees. The letter shows the intimate intertwining of the animal and human colonization:

Dear Sir:—After reading the above address perhaps you are wondering who it is that is sending you a letter accross 11,000 miles of ocean and land. Well, to explain who I am, and the object of this letter, I will say that my residence is in Dallas, Polk Co., Oregon, and at the breaking-out of the Spanish-American war I was a law student in the office of Daly and Hayter. . . . When the war against Spain was declared I enlisted with the 2d Reg. Oregon Vol. Infantry, and we came with the first expedition to the Philippines. Our regiment was the first to land on Philippine soil. . . . Now, what I want to do is to get some of these bees [*Apis dorsata*] to the United States. . . . Will you kindly help me out by sending advice, cages, and instructions for using? (Uglow 1899: 228)

Gleanings replied enthusiastically, but noted the danger in the project because the Philippines was not yet fully conquered. (Filipinos had declared themselves an independent republic before the arrival of the United States; the U.S. army fought for several bloody years before convincing Filipinos of their revived colonial status.) *Gleanings* offered a reward (\$25.00 for one queen alive) and begin to gloat:

If this young soldier friend has not been shot down in the late battles we may expect shipments of *Apis dorsata* in the near future. . . . It will be a joke if GLEANINGS gets ahead of the government in securing the big bees. . . . The daily press has given us enough free daily advertising of these big bees to create a large demand for them already. We are already getting calls. (1899c 228–29)

Yet evidence of a struggle around the question of bringing the aliens to the United States was also clear in the pages of the journal.

When left to herself, Nature takes good care of her own. Out of her infinite resources she gives each form of animal and vegetable life its appropriate place and rank. The importation of foreign species is contrary to Nature's intention, and often results disastrously. (Cutts 1899)

Dr. Doolittle reproves Dr. Miller very gently for not wanting *Apis dorsata* to be fooling around in the neighborhood of the doctor's home. He asks: "How came you, doctor, to have any territory exclusively for your own use in this world? Did God give you a right to turn the rays of sunshine on the flowers around Marengo, that they might bloom for your Italian bees and not for *Apis dorsata*?" The same question might have been asked

about the introduction of common rabbits into Australia in 1864. . . . The government spent millions of dollars in killing them, but to no purpose. Locusts were a blessing in comparison. Dr. Miller has a right to feel some degree of fear in view of such facts. (Stenog 1899)

Both sides of the controversy tended to conclude that aliens would not do well in the United States. As Stenog, the author quoted above, put it, "*Apis dorsata* will, in all probability, flourish about as well in Marengo, Ill. as lemon-trees would there outdoors" (1899:387). Yet readers responded to the competition to get the bees and offered information about sightings of *Apis dorsata* in various places in South and Southeast Asia. In each case, the problems of human colonization loomed as large as those of bee colonization; the bee-seekers could not get natives to help them, and they asked no questions about native bee-handling practices. Thus they approached each bee encounter with the hope that the bees would act like their model Europeans. Finally, the headline called out "Apis Dorsata Caught at Last" (Rambo 1899a: 424). A missionary named, of all things, Rambo had found them in India and captured half a swarm with great difficulty. His romantic enthusiasm was enormous: "If the bee friends could but see these beautiful bees as I saw them through field-glasses they would want to have them, if only for their beauty. . . . They looked so innocent as to make me itch to catch them in my hands" (Rambo 1899a:425).

The assumption of innocence so great to make one "itch to catch them" describes U.S. attitudes toward Filipinos as well as toward Philippine bees. In each case, the innocents were to be caught and colonized for their own good. Despite worries about the incompatibilities between U.S. Americans and Filipino humans and bees, the dominant sense was that they could and should be brought into the safety and productiveness of the U.S. cultural and political economy. Like wild children, they could be socialized in their new family setting. Schools were brought to the Philippines. U.S. democracy became the authoritarian standard. But the bees, among others, were recalcitrant. Even when caught, no one could make them stay put. The honeybee swarms absconded and returned to the forest branches on which they made their combs. As one *Gleanings* headline put it, "Caught and Gone Again; the Giant Bees not Willing to be Confined to Hives" (Rambo 1899b:466). By the 1920 edition of *The ABC and the XYZ of Bee Culture*, the authors were able to say of efforts to domesticate *Apis dorsata*, "For the last 20 years there has been very little said about them" (Root and Root 1920:643).¹⁸

By the middle of the twentieth century, for both people and bees, a sense of unmarked "Americanness" had emerged. No contenders to European-origin bee hegemony in the New World had appeared for some time, and, just as for humans, there was less talk of racial differences among Europeans. But race emerged at the forefront of bee talk again when the issue became

the newly arriving "Africans."¹⁹ Bee scientists speak of numerous races of bees in Africa, but in the U.S. discourse on beekeeping, these have been entirely collapsed into a globally frightening Africanness. Such continental homogenizations are also at work in the discourse on people.

The story of African bees in the New World is astounding. It began in Brazil, where a geneticist named Warwick Kerr imported queens from South and East Africa to cross-breed with the European-origin honeybees in Brazil. Kerr had heard about the large honey harvests in southern Africa, and wanted to bring some of that productivity to Brazil. In 1957, Kerr took those bees that survived the journey and had been selected for further testing to a eucalyptus forest in Sao Paulo. They were set up in hives, and the queens were kept from escaping by screens. But someone "apparently" removed the screens, and twenty-six swarms escaped, including one East African queen and twenty-five queens from the Transvaal. These twenty-six swarms reproduced and formed a feral population in the area.²⁰ This population continued to reproduce, and it spread out to surrounding territory at the amazingly rapid rate of 300–500 kilometers each year (Winston 1992:11). They soon moved beyond the borders of Brazil into neighboring nations.

Moving southward into Argentina, the African-derived population was blocked by cold weather. A 1991 report showed only northern Argentina as "saturated" by African bees; the middle latitudes had become a zone of intermediate European-African hybrids, while the southern area was free of an Africanized bee population (Sheppard, et al. 1991). Moving northward, however, there was no such obstacle. In 1976, the "African" bees reached Venezuela. In 1980, they arrived in Columbia. In 1982, they were in Panama. In 1986, they had found their way to southern Mexico (Winston 1992:12). By this time, agricultural bureaucrats, beekeepers, and politicians in the United States were crazed with anxiety.

Back in 1965, *Time* coined the term "killer bees" to name this population for its propensity to sting those who disturbed the nest. The sting from an African-derived bee is no more serious than the sting from a European-derived one but the former come out faster and in much larger numbers (Collins, et al. 1982). Killer-bee lore continued to grow. In 1974, the *New York Times* compared "the northward swarm of vicious African honeybees" to "the monster creations of science fiction" (Winston 1992:5). In 1977, a movie called *The Swarm* depicted African bees invading Texas: They overturned trains, attacked children, killed thirty-seven thousand people, and destroyed a nuclear missile site before the Army Corps of Engineers could bomb the national menace out of existence (White 1991:38; Winston 1992:5). Bee scientists and beekeepers spoke out against tabloid journalism (e.g., Winston 1992:1–7). But their "objective" rhetoric, while less hysterical, was also, of necessity, charged with culturally specific concerns about race,

nationality, and kinship. The two fears that have dominated U.S. research agendas—fears about the domestic stability and the aggressiveness of African-derived bees—have spawned bee programs that further reify racial distinctions for the cause of segregation. And just as in *The Swarm*, agricultural bureaucrats have turned the protection of racial purity into a national security mandate.

The bees that have been spreading through South America have tropical habits in many ways comparable to those of the Southeast Asian bees that interested U.S. beekeepers at the turn of the century. Writers for whom European standards are culturally normative always describe tropical bees as strange. (For example, one serious journalist calls the African bee “hypersensitive, hyperactive, and hyperprocreative” [White 1991:37].) Yet it seems more useful to see the European-derived bee as the odd creature. European honeybees have specialized their colony-building practices to cope with cold winters. They pick protected cavities, such as hives, to build their nests, and once they find a good cavity, they are likely to stay there for some time. They build up big colonies in which the warmth of numbers can keep up winter temperatures. In contrast, tropical honeybees, including the African-derived Brazilian population, are not winter specialized. The African-derived bees of South America sometimes build their combs in the open, even seeming to taunt European-oriented beekeepers by building beneath—instead of inside of—human-constructed hives (Winston 1992:31). Furthermore, they have no need for huge colonies, preferring to form new swarms that can take advantage of scattered nectar-producing areas. The whole colony absconds easily, following the nectar. These are practices that scare domestication-minded beekeepers. And, although a reasonably large literature is available on indigenous African methods of honey production (see, for example, Irvine 1957; Isack and Reyer 1989), it seems never to have occurred to anyone in the Americas to learn from African bee culture.²¹

The other problem with African-derived bees is their aggressive response to disturbance. Sometimes these bees come out to protect the colony when a person or animal merely approaches the nest. A person who is not allergic to bee stings can take several hundred stings without major ill effects. However, those who for some reason do not run away from defensive African-derived bees may be stung several *thousand* times. Penned or tied-up livestock are especially vulnerable. (The joke is told in Mexico that the latest get-rich-quick scheme is to tie your sick old horse next to your neighbor’s beehive; when the horse is stung to death, you sue the neighbor [White 1991:45].) Three hundred fifty people may have been killed by excessive stinging in Venezuela between 1975 and 1988, or about 2.1 deaths per year per million people (Winston 1992:52). Opinions differ about whether this is an unacceptable death rate, considering that quite a few people—although not quite

as many—die from stings by European-derived bees. But many North Americans have been frightened.

U.S. fears are put in perspective by their contrast with the Brazilian response. Brazilian beekeepers *like* the new bees; when the government passed out European queens to bring back European strains, beekeepers killed them (White 1991:56). Brazilian beekeepers claim that the African-derived bees are better honey producers than the German bees they once managed. After an initial fall in honey production, with fears about the introduction of the new bees, Brazilian honey production has risen dramatically. Brazilian bee scientists are also among the most vocal advocates of the view that these bees are all-American hybrids: They are not “African” nor “European”; they mix the best of each for an American setting. The scientist who originally introduced them has continued to sponsor efforts to create the best hybrid qualities; by 1960, he has argued, all “pure-African” bees had been eliminated. “A new generation of beekeepers began to take over in Brazil,” he recalls, “and, with techniques that we had helped develop, they began to thrive, and the bees’ less desirable qualities began to be bred out. Today, our beekeepers overwhelmingly prefer Africanized bees. . . . And do you know how hard these bees work?” (White 1991:59)²²

In contrast to this enthusiasm for hybridization, U.S. bee research has been aimed at separating out the traits of each bee race to make them properly distinguishable. The dominant U.S. view is that the African-derived bees are really, essentially “African”; their mitochondrial DNA is similar to bees in Africa (Fletcher 1991; Hall 1991). (Mitochondrial DNA studies are also a key technology in contemporary U.S. scientific efforts to produce “race” among humans.) The contrast between Brazilian and U.S. views is striking. It is hard not to think about Brazilian national ideology, in which it is the melding of African, European, and indigenous American (human) races that has produced the energy and passion of Brazil. The bees, too, have found their “American” potency in racial blending. In contrast, U.S. American beekeepers and officials campaign for European racial purity as the guarantor of the nation.

The most dramatic U.S. effort to enforce bee segregation occurred in the mid-1980s, when the U.S. Department of Agriculture decided to create a barrier across Mexico to stop the African bees from coming north. Like the missile-stopping barrier called Star Wars, to which the idea seems closely related, the Bee Regulated Zone was supposed to create a safety net around the United States to block out alien invaders. “The zone was to be 225 kilometers long and 170 kilometers wide, encompassing the narrowest part of Mexico. . . . The plan itself, couched in semi-military terms, gave the impression that we were going to war against the Africanized bee, using sophisticated technology at the cutting edge of scientific progress” (Winston 1992:127).²³ As with Star Wars, many scientists objected that the scheme

was impossible. By the time any money was approved and resources ready, in 1987, African bees had already moved north of the zone. The two small "Operational Units" that were implemented anyway did nothing to stop the bees' northward spread. And thus, on October 15, 1990, African bees were found in Hidalgo, Texas. In July 1993, newspapers reported the first "killer-bee"-related U.S. death (*New York Times* 1993). As one bee writer put it, the United States had begun "the transition to a post-Africanized America" (Winston 1992:133).

The Department of Agriculture's reaction to the African bees combines fears of Mexican immigrants creeping over inadequately patrolled borders and fears of Black-White racial miscegenation. Agricultural bureaucrats are afraid of the out-of-control reproduction of African bees, of the heady sexuality of the males (African bees produce more drones than Europeans), and of their unwillingness to settle down in domestic stability to work at human honey production. A serious journalist worried: "Africanized bees are skilled robbers. . . . and—in a rather macabre practice—they have been known to invade a European colony, kill the queen, install their own queen, and enslave the resident population" (White 1991:38). In other contexts, bee writers have spoken of the "incorporation" or "assimilation" of bees from another colony; why is it "enslavement" here? Is the author, perhaps, invoking "reverse discrimination"? Do we hear a tie between "African" racial terror and threats to national sovereignty?

Then too, there are the threats to the family. The mobility and aggressiveness of the African bee family, its unwillingness to settle into working-class stability, are often cited as threats to the order and efficiency of production. The national economy will suffer. There are also dangers for the human family.

"The thing that bothers me the most," [the USDA inspector said], "has to do with the quality of life. If you can't open your doors and let your children play in the yard because there are bees nearby . . . what about them? Or if there is a grandmother or grandfather out in a chair, what about them?" (Whynott 1991:168)

Yet perhaps the most telling piece of all is the admission one hears that segregation has not worked and will never work despite the intense desire—for the nation, for the economy, and for the family—to make it work. Segregation, on which so much depends, is an aspect of nature that is naturally undependable. And if the model working family, in its segregated "modern" world, is still the law of nature, it is not one that can stand against its own natural disasters.

The Texas Action Plan, to be administered by the Texas Department of Agriculture, will impose quarantines within a 150-mile radius of any find

of Africanized bees. Every hive inside the circle will be sampled. Initially, there will be depopulations, but once the Africanized bee is firmly established [and despite every precaution, it will come], depopulations will cease and a Management Plan will take effect. . . . No unmarked queens will be permitted. Beekeepers will have to maintain 10 percent of their stock for drone production, so as to saturate the area with European stock. All wild colonies will be destroyed. (Whynott 1991:168)

Envoi

In a time of massive transnational migrations and flexible industrial readjustments, the U.S. discourse on kinship and the family has taken on rapidly multiplying challenges to articulate the dilemmas of race, class, nationality, and gender. Through competing frameworks of “romance” and “reproduction,” family models have entered into social agendas for national expansion and ethnic assimilation as well as national and racial protection. These are gendered agendas. Taming the “big bees of the Philippines”—and the human men and women—was a feminizing strategy in which domestication was the goal. (Although Philippine bees are no longer a political issue, Filipino people still struggle to understand and move beyond this colonial legacy.)²⁴ Programs to fight off the “invasion of the African bees” invoke a different gender agenda: the protection of gentle European females (that is, bees) against the uncontrolled sexuality of the savage Other.

The most visible feminist discussion of gender in “nature” argues that women and nature are similarly treated as objects rather than subjects of knowledge. The split that divides male knowers and objectified women, animals, and other others in European-derived thought helps explain the predominance of white male scientists as well as the omissions and false stereotypes of masculinist theories that give no agency to women and nature. However, this approach does not help explain the gendered quality of those forms of agency that *are* attributed to nature. By beginning with the centrality of sexuality and kinship solidarity to the constitution of animal and human “nature,” as I have here in following a Schneiderian lead, it becomes possible to examine the importance of gender and race in constituting what is imagined as “natural” behavior. This is, of course, precisely where feminist sociobiologists begin when they argue that the centrality of sexuality to evolution creates assertively feminine forms of agency appropriate to female roles in sex and reproduction (e.g., Hrdy 1981). But instead of accepting and building from these natural facts, I have tried to make sense of their cultural construction.

Making “nature” a realm of legitimacy for human social relations requires extensions from humans to nonhuman creatures. We know what is natural

by comparing ourselves to animals. Where the feminist critics of science mentioned above tend to argue that scientists do not think of nature in subjective-enough terms—instead viewing nature without human passion—I find that nature is always, as a realm of cultural legitimacy and truth, infused with human lifeways. The “objectivity” of science is always culturally and politically charged because scientists, like other people, cannot think and talk without culture and politics. Yet our views of nature are not a simple reflection of our valued standards and ideals: our observations of non-humans present continual challenges to our cultural agendas that require new inflections and transpositions of our cultural “sense.” It is in recognition of such challenges that bee scientists argue that they work to understand bees on bees’ own terms. Of course, such scientific appreciation of bees’ terms reflects scientists’ ideas about the possibilities of agency, which are always culturally defined. Yet, still, attention to bee life ways can raise new, unexpected issues, as the bees refuse cultural expectations and social programs. It is the tension between these two facets of our knowledge that allows “nature” to both tell us the law and open the doors of mystery.

Notes

Gleanings in Bee Culture is the name of a U.S. journal of beekeeping, bee science, and bee commentary. I borrow the name in admiration of the breadth of possibility it opens. Harriet Whitehead and I first discussed this paper as part of an intertwined project on “the birds and the bees.” Donna Haraway kindly read and commented on a draft. I am also grateful to Jane Atkinson, Paula Ebron, Roberta Nieslanik, Troels Petersen, and Patty Zischka for letting me talk to them, at odd moments, about bees.

1. This is the opening to Charles Butler’s classic text, *The Feminine Monarchy, Or, A Treatise Concerning Bees, and the Due Ordering of Them*, 1609.
2. In making a general point of this sort, one necessarily forgets many fine exceptions, including the work of all those that made it easier for the generalization to be argued. I might begin by acknowledging Donna Haraway’s *Primate Visions* (1989) as a key study of the constitution of nature and one that makes others, like this one, possible.
3. A domestic animal, like a domestic human family, should be settled and home centered; animals whose rearing involves lots of movement disturb ideals of domesticity. This disturbing state can rub off on their caretakers, who, even as humans, are flung with their animals from the settled domestic to the edge of the wild: The cowboys who once drove cattle across the U.S. West are one obvious example. In another direction of confusion, as the wild has increasingly needed to be reinstated as protected terrain, human-reared animals must be turned wild. Game animals—trout, pheasants—are raised and let loose; emblems of diversity—endangered raptors, orangutans—are replaced in their “wild” niches. But these animals must be denied domestic status; for the fisherman or the tourist to remember that the stream is stocked or the birds are fed would ruin the effect.
4. There are important exceptions to this generalization. For example, the pioneering work of Adrienne Zihlman on chimpanzee life histories has challenged the equation of sexual intercourse and reproduction to show a much longer series of “reproductive” events.

5. Tsing (n.d.) describes Meratus honey hunting and the Meratus ecological models that connect people, bees, and honey trees in the Meratus Mountains.
6. Contemporary U.S. understandings of "nature" do not privilege political order in the same way as they privilege sexuality. Yet in earlier European traditions, the political hierarchy of nature was important. According to Ioyrich (1974:190), "Napoleon Bonaparte (1769–1821) saw elements of the state in the bee colony. In drawing up the Code Napoleon, he made use of the ideal order, collectivism, and total commitment to the queen of the bee 'empire.' He adopted the bee as his emblem, and during his reign the curtain of the Grand Opera was decorated with a bee pattern." And, according to Shakespeare (*King Henry V*, quoted in Free 1982:37):

... for so work the honey-bees,
 Creatures that by a rule in nature, teach
 The art of order to a peopled kingdom.
 They have a king, and officers of sorts:
 Where some, like magistrates, correct at home;
 Others, like merchants, venture trade abroad;
 Others, like soldiers, armed in their stings,
 Make boot upon the summer's velvet buds;
 Which pillage they with merry march bring home
 To the tent-royal of their emperor:
 Who, busied in his majesty, surveys
 The singing masons building roofs of gold;
 The civil citizens kneading-up the honey;
 The poor mechanic porters crowding in
 Their heavy burdens at the narrow gate;
 The sad-eyed justice, with his surly hum,
 Delivering o'er to executors pale
 The lazy yawning drone.

7. The only insect bred to rely on human care is the silkworm (Bailey and Ball 1991).
8. Until recently, bee scientists thought that bees were incapable of sensing sounds transmitted through the air. Recent research, however, has suggested that bees are sensitive to the air-particle movements of airborne sound rather than the pressure oscillations that most vertebrates detect. Thus, for example, worker bees take clues in finding nectar sources from the air-particle movements emitted by sound-emitting dancing bees (Towne and Kirchner 1989).
9. Free (1982:105) reports that bees were informed of marriages as well. He quotes Rudyard Kipling:

A maiden in her glory,
 Upon her wedding-day,
 Must tell her Bees the story,
 Or else they'll fly away.

Free (1982:117) also reports the custom of "telling the bees" practiced in the nineteenth-century United States.

10. The cultural specificity of Miller's argument is perhaps easier to see by holding it up in contrast to an argument about the gender of bees that derives from a non-European

tradition. Bodenheimer (1951) reports the following conversation between a Middle Eastern beekeeper named Ahmed from the Wadi Do'an of Hadramaut and an Englishman named Ingrams:

"The bees have a father," said Ahmed. . . . On Ingrams' reply that the father is a queen, Ahmed answered: "But it is the leader, and who ever heard of a woman leading an army like that?" Referring to the males, he answered: "But they are soldiers, they have the swords to sting with. The bee women (i.e., the drones) are bigger and don't sting." (226–27)

The passage is of interest here not only for Ahmed's argument that bees are male but also because he uses imagery that is foreign to European smallholder beekeeping. The model of an army of bees sets up rather different dilemmas for human-bee relationships than the model of the household of bees.

11. The portrayal of Langstroth as the father of "modern" bee culture disguises the national aspirations of this narrative—a story of growing U.S. preeminence in defining global "modernity." It is easier to see the nationalism of the story in comparing U.S. accounts with those produced in other places. Thus, for example, a book on bees written in the former Soviet Union (Ioyrish 1974) introduces the rationalization of beekeeping with a different figure: Peter Prokopovich. The storyline is similar to the Langstroth tale in its portrayal of the line between traditional and modern, but it is set thirty-seven years earlier:

In 1800, at the age of 24, Prokopovich took up beekeeping. For fourteen years he bred bees in the traditional non-collapsible log-hives of the Ukraine, Russia, and neighbouring countries. But his ingenious mind was not satisfied with the primitive techniques used then in beekeeping. In 1814 he invented the collapsible hive, an invention that was of great importance as it served to rationalize beekeeping and promoted increased productivity and profitability . . . (Ioyrish 1974:193)

Later, indeed, Langstroth comes up without much fanfare:

The Rev. L.L. Langstroth (1810–1895) invented and developed a frame hive widely used in America. (Ioyrish 1974:195)

12. Various ways of manipulating the brood and honeycomb, made possible by movable frame hives, reduce the problems of swarming and absconding. But only to a certain extent, as one contemporary beekeeper testifies, even as she advocates these manipulations: "[Providing available brood comb and foundation for new honeycomb] is not a guaranteed method of keeping bees from swarming—there are no guarantees of anything, with bees" (Hubbell 1988:80). Indeed, the increase in scale these new technologies allow themselves reduce their effectiveness as tools of domestic stability. The beekeeper above goes on to say that she worked hard at the manipulations necessary to keep her hives from swarming when she had less than a hundred hives. "But with three hundred, it became impossible. I now accept the fact that a certain number of my hives will swarm" (Hubbell 1988:80). After all, bees are still predictable yet unpredictable creatures of nature.
13. One journalist reports the following figures: 300,000 hives a year moved between California and the Dakotas; 300,000 hives a year between Texas and the Dakotas/Minnesota; 180,000 hives a year between California and the Northwest; 70,000 hives between Florida and the upper Midwest; 60,000 hives between Florida and the Northeast (Mairson 1993:77).

14. The question of why this mite provoked a major crisis is itself culturally rich—and worth further investigation. A British source (Bailey and Ball 1991:78–88) describes *Acarapis woodi* mite infection as a much exaggerated problem; infected bees die only slightly sooner than uninfected ones and appear normal until they die. U.S. American beekeepers were probably particularly upset because infection rates before 1985 were very low, allowing fantasies of purity, when suddenly these rates shot up. The origin of infection was assumed to be Mexico; economic practices that moved bees across the country—that is, the sale of bees as well as migratory beekeeping—were blamed.
15. The term “race” is used for many other domestic animals to refer to the distinctive products of long histories of human breeding; this offers a different set of conceptual problems. Because human breeding plans have not been significant in producing honeybee “races,” these races are more relevantly tied to uses of the term for humans.
16. The best contemporary studies tend to use the time of day during which drones fly out to mate with queens as a measure of reproductive distinctiveness. But even this method cannot produce definitive predictions of mating possibilities because it ignores localized environmental factors affecting drone flying times.
17. Asian *Apis* include “giant” and “dwarf” honeybees (*A. dorsata*, *A. florea*, and possible others) as well as cavity-dwelling bees (*A. cerana*) similar to European honeybees. African honeybees are all considered races of *Apis mellifera* and include more than ten scientifically named groupings.
18. Efforts to domesticate Asian bees on European models have not, however, stopped. Thus, for example, in the 1980s bee ecologist Robert Whitcombe tried to domesticate the “little bee” *Apis florea* in Langstroth hives (Whitcombe 1984). His efforts, he admits, were “inconclusive.” Surprisingly, he learned a good deal about local beekeeping techniques in Oman, where he conducted his research, before embarking on his own beekeeping efforts. Yet, because he considered Omani knowledge and practices to be archaic folk survivals in a properly modern world, he was unwilling or unable to apply local knowledge in his experiments.
19. Debate rages about what to call these bees: Some call them “Africanized,” some “African.” (Spivak, Fletcher, and Breed 1991:5; Winston 1992:69). The debate reflects differences of opinion about just how hybridized these bees are from the East African “race” called *Apis mellifera scutellata*. I don’t like the term “Africanized” because it actively unmarks European-origin bees (the ones being “Africanized”). I use “African” or “African-derived.”
20. Kerr later admitted that he had handed out some other African queens to local beekeepers, and their progeny may have added to the group; but it was still quite a small genetic nucleus (Spivak, Fletcher, and Breed 1991:3; White 1991:56).
21. Contemporary U.S. scientists learn from a long colonial tradition in which “nature” in the Third World can be approached in oblivious disdain of the mediation of local human knowledge and practice (Pratt 1992). As one bee scientist put it when describing new advances in thinking about African-derived bee populations, “The best teachers are the bees themselves” (White 1991:39). To learn about African bees, no one, of course, consults Africans.
22. Compared to European-derived bees, African-derived bees mature slightly more quickly, forage slightly more actively, and die slightly sooner (Winston 1991). Kerr also claims that African-derived bees forage on moonlit nights (White 1991:59); certainly, other tropical *Apis* do (Roubik 1989:137). Goncalves, Stort, and De Jong (1991) discuss the history of Brazilian beekeeping, the beekeepers’ preference for African bees, and the rising production statistics for Brazilian honey.

23. Winston (1992:127–129) lists the following components of the plan: (1) quarantines on moving bees out of the zone; (2) destruction of African swarms and colonies; (3) maintenance of European colonies; (4) European drone flooding; (5) drone traps to kill African drones; and (6) education to discourage intentional introduction of African bees. There is nothing particularly high technology about these measures except, perhaps, the imagined scale at which they were to be employed.
24. My understanding of “colonial domesticity” in the Philippines is indebted to Vicente Raphael’s insightful paper on this topic (Raphael 1993).

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