What does the Modularity of Morals have to do with Ethics?
Four Moral Sprouts Plus or Minus a Few

Owen FLANAGAN & R. A. WILLIAMS
Duke University

Abstract

Flanagan (1991) was the first contemporary philosopher to suggest that the hypothesis of the modularity of morals (MMH) was worth serious consideration by cognitive science. There is now a serious empirically informed proposal that moral competence and moral performance are best explained in terms of moral modules—evolutionary ancient, fast-acting, automatic, emotionally-based reactions to particular types of socio-moral experience (Haidt & Joseph 2007). MMH fleshes out an idea, which is nascent, on various interpretations, in Aristotle, Mencius, and Darwin. We discuss the evidence for MMH and whether the postulated modules are best conceived as perceptual and Fodorian or emotional and Darwinian; and whether assuming that MMH is true has any normative ethical consequences whatsoever. Advocates of MMH can be read as making several distinct normative ethical claims, among them, that accepting MMH provides reason for greater moral tolerance, and possibly that we might wish to conceive of a well-developed moral agent as someone who tunes in a moderate way —but does not turn way down or off—all the innate moral modules. One reason is that the modules are adaptations. We model a morally mature modular agent as a "Mencian-agent," since Mencius the great Chinese philosopher who plays in relation to Confucius the role that Plato plays in relation to Socrates or Plato play to Aristotle in the West—comes closest to the ideal being floated with his "four sprouts" view. The idea is that the right way to build virtue is to take the four sprouts Tian (Heaven, now "Mother Nature") endows us with and grow them. We sketch some reasons to worry about suggesting that a Mencian agent is the right ideal. This re-connects the cognitive science of morality with normative ethics in a particularly vivid way that involves the reassertion of the "is-ought" problem. We explain in a new way what this problem is and why it won't yield because of the plasticity of human nature and the realistic options to "grow" and "do" human nature is multifarious ways.

Moral Modularity

In *Varieties of Moral Personality* (1991), Owen Flanagan argued that an hypothesis of the modularity of morals, *MMH*, was worth serious consideration by cognitive science on the grounds that (some aspects of) morality seems to be adaptive, possibly even a biological adaptation, and in ad-

dition morality seems to involve multifarious competencies suited to different social ecologies (or different aspects of a single social ecology) rather than a unitary competence. Specifically, the argument was that virtues such as justice and benevolence have different emotional bases, domains, and learning histories, and thus possess characteristics of other skills that have been profitably modeled modularly, such as face recognition, language, the senses, and the basic emotions.

There is now, a decade and a half later, a serious empirically informed proposal put forward by social intuitionists, which claims that moral competence and moral performance are best explained in terms of intuitional moral modules.[1] Social intuitionism is the name for the view that certain adaptive social challenges are governed by evolutionarily ancient, fast acting, affect programs, and are directed and leveraged more by the emotions and less by cognition or reason than most think. Morality is a matter more of "knowing how" than "knowing that." Furthermore, the "know how" involved is less like the "know how" of an expert gymnast than the "know how" involved in walking and talking—something primitive and natural.

MMH as put forward by the social intuitionists, fleshes out an idea that was anticipated, on various interpretations, in Aristotle, Mencius, and Darwin, and which in its current form is supported by interdisciplinary work in anthropology, cross-cultural psychology, primatology, and economics (Brown 1991; Fiske 1991, 1992, 2004; Schwartz & Bilsky 1990; Shweder & Haidt 1993; Shweder, Much, Mahapatra, Park 1997; and de Waal 1991, 1996).

Methodologically, *MMH* utilizes an approach that Howard Gardner (1983, 1993, 2006) deployed in his theory of "multiple intelligences" to successfully open up the concept of intelligence to a more anthropologically realistic and ecologically valid account of what 'intelligence' means (possibly, if one is a realist about psychological kinds, what intelligence is) than simply what IQ tests test. The idea is to study cross-culturally the aspects of mind and life that are deemed to involve "intelligence" (or in the current case "morals") broadly construed, rather than accepting a culturally and normatively specific conception that privileges the aspects or kinds of intelligence (or morality) that some tradition endorses or favors, and thus which it, not surprising but incorrectly, claims captures what "intelligence" (or "morality") really is. In Gardner's case, the evidence he suggests provides "persuasive evidence of several *relatively autonomous* human intellectual competences" (1983, 8). Moral modularity promises something similar: moral competence consists of, or is the emergent product of, a set of autonomous or relatively autonomous socio-moral competences. One appealing feature of the social intuitionists' version of *MMH* is that it claims to offer a universal psychosocial baseline for comparing and contrasting moral orientations across individuals and cultures. Depending on how *MMH* is framed, it might also be read as embedding a criterion or criteria for judging the adequacy of a type or level of moral competence and performance.[2]

---

1   This proposal can be found in the work of Haidt and his colleagues (Haidt, 2007; Haidt and Graham, 2007; Haidt & Joseph, 2004; Haidt and Joseph, 2007) as well as Hauser (2006), Shweder (1990), Shweder and Haidt (1993), and Greene (2003). Haidt and Joseph (2007) claim that their five modules map onto the three "ethics" proposed by Shweder (1990) and Shweder et al. (1997).

2   Despite logical concerns about deriving "oughts" from "is's," empirical scientists have tried to cross the gap. In the early 1970's, Lawrence Kohlberg claimed to possess an empirical theory of moral psychology that enabled us (finally) to derive 'ought' from 'is', to plot moral development, and to establish the philosophical adequacy of (his and Kant's) the highest stage of moral development (Kohlberg 1971). Kohlberg's idea failed

In this paper, we discuss two different versions of *MMH*—one from classical Chinese philosophy, specifically from Mencius 5 c. BCE, which we call *Mencian Moral Modularity (MMM)*, the other from 21st c. social psychology which we call *Social Intuitionist Modularity (SIM)*. After sketching and critically comparing *MMM* and *SIM* we address two important questions: (1) Are the postulated moral modules best conceived as perceptual and Fodorian or as emotional and Darwinian? (2) Assuming that some version of *MMH* is true—possibly *MMM* or *SIM*—does this have any normative ethical consequences whatsoever? Can anything about how we ought morally to perceive, feel, think, and act be extracted or derived from the claims about universal emotional modules that are keyed to particular kinds of situations? The first question is central to cognitive science, the second to ethics.

Ancient Modularity

Mencius (5th c. BCE), the most famous classical Chinese philosopher after Confucius, differed from the Master in this way: Confucius described the virtuous person as a *ren junzi*—a virtuous gentleman—where *ren* ascribes virtue generally. A *ren junzi* is a good person, generally speaking. For Mencius, on the other hand, *ren* is a specific virtue, benevolence, one of a team of (at least) four, which together constitute virtue or good character. Mencius claims that virtue comes from enhancing or growing four innate sprouts:

> Humans all have hearts that are not unfeeling toward others. Suppose someone suddenly saw a child about to fall into a well: everyone in such a situation would have a feeling of alarm and compassion—not because one sought to get in good with the child's parents, not because one wanted fame among their neighbors and friends, and not because one would dislike the sounds of the child's cries. [F]rom this we can see that if one is without the heart of compassion, one is not a human. If one is without the heart of deference, one is not a human. The heart of compassion is the sprout of benevolence. The heart of disdain (shame/disgust) is the sprout of righteousness. The heart of deference is the sprout of propriety. The heart of approval and disapproval is the sprout of wisdom (2A6, See also 6A6).

Next, Mencius says this: "People having these four sprouts is like their having four limbs." Later at 4A27, he writes that if one grows all four moral sprouts, all four limb buds, "then without realizing it one's feet begin to step in time to them and one's hands dance according to their rhythms."

From these passages we can extract what is arguably the first text known, East or West, to

---

(Flanagan 1991), but the renewed interest in empirical moral psychology in the last twenty years has been accompanied by revisiting the "is-ought" barrier with an eye for gaining some normative consequences from the study of moral psychology, even if these normative consequences involve only ruling out certain rule-based theories such as consequentialism or Kantianism as psychologically unrealistic or unnatural rather than resolving which among the many ways psychologically realistic ways of configuring moral personality is best (Flanagan 1991, 2002, Hauser 2006, Greene 2003).

express a version of *MMH*, actually two versions, a descriptive and a normative version. Call these *Mencian Moral Modularity* (*MMM*).

> $MMM^{Descriptive}$ Human nature contains seeds for four different moral competencies.
> $MMM^{Normative}$ Moral excellence involves growing all four seeds to maturity.

The descriptive thesis—$MMM^{Descriptive}$—tells us that human nature contains the sprouts of compassion, shame/disgust, deference, and distinguishing right from wrong each of which, to speak in an Aristotelian way, has a trajectory, a directionality, a proper function, an *ergon*, a potential that it seeks to actualize. These four spouts mature into the four cardinal virtues of benevolence (*ren*), righteousness (*yi*), propriety (*li*), and wisdom (*zhi*).

The normative thesis—$MMM^{Normative}$—says that growing all four is good, something we *ought* to do. Not doing so would be like being a person with missing or lost limbs. Assuming one grows the seeds properly, one is truly human and a good or decent person. One can fail to be fully human if any one of the seeds lies latent or dies (Van Norden 2007). Just as the loss or failure to grow any of the four limbs would lead to difficulty moving through space, loss or failure to grow any of the four Mencian sprouts will lead to difficulty negotiating socio-moral space; one will not acquire the ability to "dance" in the effortless and graceful (*wu-wei*) way that a morally well-formed person does.

Mencius's modularity thesis, *MMM*, can be summarized as follows: Human nature contains four seeds or hearts that in a normal environment grow into four distinct virtues that taken together constitute good character or virtue, generally. Sympathy is the sprout for benevolence (*ren*); shame and disgust for righteousness (*yi*); deference for propriety (*li*); a sense of true and false, accurate and inaccurate, match and mismatch, approval and disapproval is the sprout for practical wisdom (*zhi*), of appraising persons and situations for who and what they really are, for knowing what to do, and when and how to do it, and so on. Each sprout is an innate cognitive-affective disposition that possesses the potential, the natural trajectory to grow into one of the four cardinal virtues. If these sprouts are planted in a normal environment they will grow like the four limbs do. If they receive suboptimal nourishment, they will grow some; and if they are not nourished at all, they will not grow (6A8). The best outcome is that the four sprouts blossom into the four cardinal virtues. Barring congenital abnormality or abnormality in social conditions the best outcome is realized and virtuous agents emerge.[3]

So, Mencius defends both $MMM^{Descriptive}$ and $MMM^{Normative}$. Although no one ever asks why it is a good thing that we have four limbs and why they are sized the way they are, it is instructive to consider what one could say if asked. One way to defend Mencian normative modularity for limbs would be by claiming that:

---

3   If having all four virtues well-developed is not "normal" in the sense of 'usual' (and it is not for Mencius, who is nostalgic for a past Golden Age when virtue was normal) in the way having four limbs is, then we are owed an explanation of how and why the current environment fails to pull for the development of the four cardinal virtues in the same way we would need an explanation for odd numbers of limbs.

1. Evolution settled on a four leg/four limb design because it was an adaptation = adaptation$^{\text{historical}}$

2. This design is still adaptive = adaptation$^{\text{current ecology 4}}$

3. This four limb design emerges naturally in a species universal way across normal ecologies; and thus,

4. We *ought* to grow our arms and legs the way nature designed them to grow.

The 'ought' in (4) expresses the bi-directional agent-to-world goodness-of-fit between a universal phenotypic trait and the world (literally, the earth). If $MMM^{\text{Normative}}$ were credible, the parallel would run as follows:

1. Evolution settled on four moral modules (= sprouts) because they were adaptations = adaptation$^{\text{historical}}$

2. They are still adaptive = adaptation$^{\text{current ecology}}$

3. The modules (= sprouts) emerge, grow, and are tuned (roughly) the same way across all natural and social ecologies; and thus,

4. We *ought* to grow the modules the way Mother Nature (*Tian* = heaven) designed them to grow.

21st century modularity—*SIM*

Jonathan Haidt and his colleagues (2001, 2004, 2007) have proposed a version of *MMH* that is advertised as a social intuitionist model to convey that the modules consist of dispositions to have rapid-fire emotional reactions (the intuitions) that subserve quick affective-cognitive-action tendencies that are triggered by specific types of social or environmental situations, akin to Mencius's example of the universal human impulse to save the child falling into the well (See table 1). We refer to the model promoted by Haidt and his colleagues as the social intuitionist modularity or *SIM*, for

---

4   The two senses of *adaptation*, *original-historical* and *current ecology*, are the favored ways among philosophers and biologists of making the distinction that psychologists make in terms of *proper* and *actual* domains. Haidt and Joseph (2007) follow Sperber in dividing module triggers into a proper and actual domain: "Sperber (1994) refers to the set of objects that a module was "designed" to detect as the *proper domain* for that module. He contrasts the proper domain with the *actual domain*, which is the set of all objects that in fact trigger the module" (16). The language we use of adaptation historical & adaptation current ecology is preferred in philosophy, *inter alia*, it marks the possibility (which is actual) that even if the proper and actual triggers are the same, the environment may have changed so dramatically that this is no longer functional. Then and now I *want* to kill you if you steal my sexual partner. But the technological extensions of myself now available, guns e.g., make the impulse more destructive now than it was when the ice melted at the end of the Pleistocene. At that time all I could do was chase you away or try to exact revenge with my fists or found objects. Now I succeed in killing you. Adaptation talk emphasizes phenotypic traits while domain talk emphasizes the set of circumstances that trigger these traits. What we (and Sperber, Haidt, etc.) are really interested in is the relationship between phenotypic traits and their domains; we merely choose to emphasize the former.

	Harm/Care	Fairness/ Reciprocity	Ingroup/ Loyalty	Authority/ Respect	Purity/ Sanctity
Adaptive challenge	Protect and care for young, vulnerable, or injured kin	Reap benefits of dyadic cooperation with non-kin	Reap benefits of group cooperation	Negotiate hierarchy, defer selectively	Avoid microbes and parasites
Proper domain (adaptive triggers)	Suffering, distress, or threat to one's kin	Cheating, cooperation, deception	Threat or challenge to group	Signs of dominance and submission	Waste products, diseased people
Actual domain (the set of all triggers)	Baby seals, cartoon characters	Marital fidelity, broken vending machines	Sports teams one roots for	Bosses, respected professionals	Taboo ideas (communism, racism)
Characteristic emotions	Compassion	anger, gratitude, guilt	Group pride, belongingness; rage at traitors	Respect, fear	Disgust
Relevant virtues [and vices]	Caring, kindness, [cruelty]	fairness, justice, honesty, trustworthiness [dishonesty]	Loyalty, patriotism, selfsacrifice [treason, cowardice]	Obedience, deference [disobedience, uppitiness]	Temperance, chastity, piety, cleanliness [lust, intemperance]

Table 1. The five foundations of intuitive ethics (Haidt and Joseph 2007, 392).

short. *SIM* is one version of *MMH*.

SIM draws on interdisciplinary work (Brown, 1991; Fiske 1991, 1992, 2004; Schwartz & Bilsky, 1990; Shweder & Haidt, 1993; Shweder, Much, Mahapatra, Park, 1997; and de Waal 1991, 1996) and claimed originally that there are three types of social situations that people everywhere evaluate in affectively loaded moral terms:

1. Suffering/Compassion
2. Fairness/Reciprocity
3. Hierarchy/Respect

Evaluative intuitions in these domains are found cross-culturally among humans and in non-human primates as well (e.g., anger to unfair rewards is found in capuchins and canines). Recently, a fourth and fifth module have been added: a purity/sanctity module based on considerations of the role such intuitions play in Jewish, Hindu, and Islamic moral thought; and an in-group/loyalty foundation that accounts for the tendency humans have to create, think, and act in terms of in-groups and out-groups (Haidt and Joseph 2004).[5] So, we add:

4. Purity/Sanctity
5. In-Group/Out-Group

_____
5   In correspondence, Haidt says he is not committed to five modules being the right number. There might be more.

Social Intuitionist Modularity can be then be defined this way:

> SIM [Descriptive] *Homo sapiens* possess five innate intuitive psychological modules that are activated in normal social environments, can be grown, and are the basis of morality.

The key ideas that define *SIM* are that there are (at least) these five intuitive modules and that something in the vicinity of virtues, or special purpose moral skills, are built upon them. These five dispositional mechanisms underwrite complex multidirectional syndromes (mind-world-action) that arose to meet specific adaptive challenges and that serve as the foundation of morality, or something in the vicinity. The outcome of building morals on modules might be that we understand moral agency in terms of the application of distinctive domain-specific moral skills or as what Dewey called, the "interpenetration of habits," or some of each.

In philosophy, virtues, as special purpose moral skills, are defined as dispositions (to perceive, feel, judge, and act) in a way that is responsive to tokens of a situation type (Flanagan 1991, 2009). Courage, temperance, benevolence, and so on are virtues that are appropriately activated by situations that call for them. A kind person sees the old lady standing on the subway and gives her his seat. A decent person feels sympathy for the child who scrapes her knee and goes to help her. A courageous person sees when the rights of the powerless are being trampled and stands up for them (even at cost to herself). In the normal life of a virtuous person, declarative rules are not consulted and need not be consulted in cases such as these.[6] The virtuous person unlike what Aristotle called the "continent person" (whom Kant admired) moves in that *wu-wei* (effortless) manner that Mencius celebrates as suited to our kind of animal.

SIM mirrors Mencius's model in making both a descriptive (there are five innate sprouts) and a normative claim (minimally a claim that we ought recognize the importance of all five to morality and that doing so will improve moral comprehension across life forms, possibly something stronger, to the effect that normal moral competence involves growing all the modules and coordinating them).[7] Defenders of *SIM*, however, are sensibly cautious about offering anything as strong as the Mencian limb analogy. They point out that which sprouts develop, and the extent to which different cultures or subcultures build on the modules, depend on environmental and social inputs. Privileging some sprouts at the expense of others does not necessarily prevent one from being virtuous, as "cultures vary to the degree to which they build virtues on these five foundations" (Haidt & Graham 2007, 99). Nonetheless, "the available range of human virtues is constrained by the five sets of intuitions that human minds are prepared to have" (Haidt & Graham 2007, 106). This last point, if true, is very important. It would mean that "morality" as a psychological kind is restricted

---

6   A number of researchers (Flanagan 1991, 1996, M. Johnson, 1993, P.M. Churchland, 1996, Haidt 2001, Casebeer 2003, and Casebeer and P. S. Churchland 2003) take virtue theory to be the best supported by, or most consilient with, the empirical findings of psychology and neuroscience. One of the main points of support drawn from the research is that the declarative rules of deontology or consequentialism are often either not appealed to or are appealed to as mere post hoc rationalizations of prior intuitions.

7   It is not clear whether Haidt and colleagues believe all cultures do and, more importantly for our purposes, should grow all five modules.

to the original modules and extensions of the modules.[8]

So, *SIM* offers a modified nativist theory. The modules as originally set (or maturationally programmed to emerge in a normal environment) constitute the initial settings both in terms of which basic emotions are activated by which situations and how high or low the emotional responses are tuned. Extensions of the range of activation of the modules and the tuning up or down of the strength of emotional response, and actions taken, are accounted for by culture. Moral differences at every level, between individuals, across cultures, subcultures, and so on, are explained by differences in the degree to which the five modules are tuned, what situations they are tuned to, and the relative priority given to the various modules. Thus, from this shared set of five intuitions (modules), various cultures develop moralities that extend (or suppress) the modules in different ways. *SIM* sometimes depicts these different moralities as "incommensurable" (Haidt and Joseph 2004, 56). If by "incommensurable" they mean incomparable, this seems unlikely if all moralities have a shared modular base.

Because *SIM* emphasizes the innate emotional bases of moral response virtue theory, it is taken to be more consistent with the empirical findings than are other philosophical models. Virtues are dispositions to respond perceptually, affectively, and in action in quick, domain specific ways, whereas a rule-based theory such as utilitarianism or Kantianism is couched in terms of consultation with and application of a general-purpose rule, the principle of utility or the categorical imperative. According to *SIM*, although the five foundational modules[9] underwrite virtues, they are not themselves virtues but are "essential tools in the construction of virtues" (Haidt and Joseph 2007, 63). Thus, we can think of the modules as potential virtues. One interesting question is whether the modules also provide the seeds or sprouts upon which vice grows or can grow (think of the desire to harm another). One could of course be skeptical that there is any real moral force to designations of virtue and vice. All naturalistic accounts of morality can be taken (although it is not necessary) to show that such designations as 'virtue' and 'vice' are to be read as honorifics (or pejoratives) pinned on different ways of cultivating the modules. Different societies favor different extensions of the modules. There is no deep answer to the question of which way is *the* right way.

The question remains whether developing *all* five foundations to some small or large degree is typical or, what is different, necessary for an adequate morality. If *SIM* is true, then the surface structural differences among moralities, about which most moral disagreements turn, are different expressions of the same underlying deep structure. Furthermore, the evidence suggests that either some cultures build morality on a sub-set of these five foundations or that if and insofar as all five intuitive modules are appealed to in all societies, they are hooked up with different domains of

---

8   If it is found that a given moral modularity model cannot account for some aspect of morality, the model might be able to proliferate modules to account for the relevant aspect. The *SIM* itself has been expanded by the addition of Purity/Sanctity and In-Group/Out-Group modules to account for aspects of morality not captured by the original three. The real trouble comes if the relevant aspect cannot be accounted for in terms of modules (see below on central systems).

9   While Haidt and his colleagues regularly call these five foundations "modules," Haidt and Joseph (2007) make a somewhat different, possibly weaker claim: "[a]ll we insist upon is that the moral mind is partially structured in advance of experience so that five (or more) classes of social concerns are likely to become moralized during development" (381).

activation and/or are tuned up-down (higher and lower) in response to different activating conditions.

Classical and Contemporary Modularity

There are two issues that need to be addressed: First, is *SIM* Mencian in substance, in content, or in terms of what the five modules are set to do and why they are set to do that, in terms of what their function is or what their functions are? Second, are the *SIM* modules Mencian insofar as it is desirable, i.e., normative, to grow and develop all of them, as it is, for example, to grow and develop all four limbs? To answer these questions it will be helpful to line up the two sets of modules, classical *MMM* and contemporary *SIM*:

MMM	SIM
Sympathy-Benevolence (ren)	Harm/Care
Deference-Propriety (li)	Authority/Respect
Shame/Disgust–Righteousness (yi)	Purity/Sanctity
Approval/Disapproval-Wisdom (zhi)	
	Fairness/Reciprocity
	Ingroup/Loyalty

Table 2: Relationship between Mencian modules and social intuitionist modules

Assuming that moral modules (sprouts in Mencius), pick out a small set of universal phenotypic traits that are adaptations[historical] one might expect the *MMM* list and the *SIM* list to be the same. The reason is that smart people can see adaptations without knowing anything about the Darwinian theory that explains what an adaptation is, how one works, and so on. But, the lists differ and not just because Mencius has only four, not five sprouts as *SIM* does. Mencius does not have a sprout for justice/fairness. This, of course, doesn't mean that Mencius doesn't recognize some such moral competence or universal feature of moral life (showing that he does or doesn't would require deep textual exegesis, which we do not engage in here). That said, justice as fairness is not marked off and treated much, nor is it considered a major virtue in classical Chinese philosophy. But, if there is a justice/fairness sprout in human nature (as there is among capuchins or canines) but it shows up neither as a sprout nor a virtue, we are owed an explanation as to why it wasn't seen in the 5c. BCE by Mencius. One might look for justice/fairness in Mencian righteousness *(yi)*, but this will be difficult since the virtue of *yi* is rooted in the sprout of purity/shame, which according to *SIM* is a whole different deal—it supports not judgments of fairness but judgments about whether marrying first cousins or being an atheist makes one dirty or yucky. Furthermore, although *MMM*, has an up-down module in "deference," the sprout for propriety, which maps nicely on to the authority/respect/hierarchy module of *SIM*, there is no sprout that maps onto the ingroup-outgroup module of *SIM*. Then, again, one could make a plausible (but not decisive) argument to the effect that the Chinese tradition makes much ado about filial piety (*xiao*) which is a paradigm case of an

ingroup virtue—that starts with one's parents, older siblings and which then generalizes to other elders inside one's culture.[10] This, if true, might lay the basis for an argument to the effect that the ingroup/outgroup module is a subspecies of authority/respect/hierarchy, or vice versa. But, it will take work, and all these mapping problems might make one worry about the intuitiveness of the intuitional modules themselves.

Furthermore, when the two lists of modules, *MMM* and *SIM*, are lined up, Mencian "wisdom" (*zhi*) stands out as a loner and the reason is informative. Mencian wisdom (*zhi*) appears to be a largely cognitive meta-skill akin to Aristotelian *phronesis*, practical wisdom, which involves the abilities to read other people's character and to skillfully coordinate means and ends, to apply a principle of the mean, and so on (Van Norden 2007, 123). Wisdom (*zhi*) is not like the other modules because it does not have the property of being rooted in the emotions, being fast acting, or automatic. But one can see its usefulness: A standard difficulty for virtue theories is to break ties: what should I do when I am called upon to be just and compassionate at the same time or when my powerful (purity) desire to ostracize the slimy scum bag conflicts with my impulse to be compassionate? Which is trump? It is not clear how modules solve such problems among themselves except by sheer strength. A practical general reasoning ability (*zhi*) could help here, especially if it held a trump rule to the effect that if/when there is conflict between, say, the purity and compassion modules, the latter (or former) is trump. Indeed, a close reading of Mencius indicates that he in fact endorses such trump rules. For Mencius, benevolence (*ren*) and righteousness (*yi*) are the two most important virtues, more important than propriety (*li*) (Van Norden 2007, 273).[11] How did Mencius, or does anyone, gain this ranking hierarchy? The best answer is that the hierarchy among his intuitive modules, now three (subtracting wisdom (*zhi*)), is discovered or seen by wisdom (*zhi*). And if this is right (and it is), then the whole Mencian analogy between the four sprouts and the four limbs starts to come undone, or at least begins to show the limits of its usefulness. If wisdom (*zhi*) is a meta-skill, a principle, a heavily cognitive competence, or a set of skills for utilizing the core cardinal virtues (now three) and if benevolence and righteousness trump propriety in impor-

---

10   Charles Goodman a wise comparative philosopher writes to us: "Mencius very clearly reasons in accordance with ingroup/outgroup although he has no special sprout for it." See 3A5: "Does Yi Tzu truly believe ...that a man loves his brother's son no more than his neighbor's new-born babe?" See also 4B29: "Now if a fellow-lodger is involved in a fight, it is right for you to rush to his aid with your hair hanging down and your cap untied. But it would be misguided to do so if it were only a fellow-villager. There is nothing wrong with bolting your door."

Perhaps Mencius doesn't have a separate sprout for ingroup/outgroup because he thinks it's relatively easy to develop the relevant attitudes. It seems more likely that he sees an appropriate degree of partiality for those close to you as included in some or all of the other sprouts. This point is stated, perhaps even more strongly than Mencius' other views should justify, at 4A27: "The content of benevolence is the serving of one's parents; the content of dutifulness is obedience to one's older brothers; the content of wisdom is to understand these two and to hold fast to them; the content of the rites is the regulation and adornment of them; the content of music is the joy that comes of delighting in them."

11   Van Norden (2007, p. 352) suggests that the four Mencian sprouts govern four parts of life, where e.g. propriety (*li*) would not even match Haidt's hierarchy/respect since it is all about beauty. On this interpretation, benevolence, *ren*, would be the only good match between *MMM* and *SIM*.

tance, then the analogy with growing and coordinating all four limbs breaks down, unless, that is, some limbs are to be stronger (or longer) than others and one limb (wisdom) is less like a limb than like the mind. Wisdom on the meta-skill or rule view is more like motor cortex or even PFC (prefrontal cortex), which controls the limbs (via motor areas) than like one of the limbs themselves (now three).

If one attraction of the *MMM* is that it seems to maintain a smooth relation between "is" and "ought," between description and normativity, then in fact upon reflection it doesn't do this. If another attraction of *MMM* is that it anticipates the modern modularity view, *SIM*, then in fact in doesn't do that either. There is not a match between the list of philosophy's first great moral modularist and its 21st century mate—between *MMM* and *SIM*. In the end, Mencius is not, a full-fledged modularist, because he sees the need for—or even if he doesn't see the need for it, he imports—a meta-skill, namely wisdom (*zhi*), for cognitive control or orchestration of the first order virtues, whatever the number and nature of these might be. This can be plausibly read as an important, even if inadvertent, insight about the need for and role of non-modular elements for successfully negotiating the socio-moral domain in most actual worlds. The upshot is that *MMM* does not succeed, upon close scrutiny, in *describing* moral competence as fully modular, nor does a credible moral analogue of the *normative* four limb analogy emerge.

Putting aside the special problem due to the non-modular aspects of Mencian wisdom (*zhi*), one way of explaining the lack of fit between the two lists, or of explaining it away, requires particular attention to the normativity issue. Perhaps Mencius was noticing the sprouts that his culture valued, idealized, and amplified but not all the sprouts available for valuing or amplification, in which case Mencius makes no contribution to ethics as such—if there be such a thing—but only to ancient Chinese cultural anthropology or ancient Chinese moral psychology. This suggests the possibility that if there are moral modules and they are comparable to limbs, then they are comparable to the limbs of a creature that has no determinate number of limbs but some range that constitutes normalcy. Imagine that an octopus, now a 'ploctopus', can have anywhere from four to twelve limbs depending on the local ecology. The right number is determined relationally in terms of what number of limbs is best suited to the environment or, what is utterly different, what number the environment happens to serendipitously select for.

A similar problem arises when considering *SIM*'s modules as both descriptive and normative, as containing information about both what the innate moral dispositions are and what the extended competence is supposed to be. Recent work indicates that the morality of American Liberals rests primarily on considerations of harm and fairness whereas the morality of American Conservatives rests on considerations corresponding to all five *SIM* modules (Haidt and Graham 2007, 13). Cultures or, as in this case, even subcultures "can specialize in a subset of human moral potential" (Haidt 2001, 827). *SIM* theorists are not explicit about whether the difference between Liberals and Conservatives is one of privileging certain modules over others when there are conflicts, whether some modules are simply set relatively lower or higher in one group than the other, or whether (for Liberals) some modules are tuned so low as to be functionally in the "off" position. According to *SIM*, divergent conceptions of the appropriate boundary conditions (domains) of the modules, divergent relative priority among the modules, or over- or under-development of the modules would each deliver us divergent moralities, which are nonetheless built from the same suite of

possible modules. So, what is the right way to grow and/or tune the modules? If the answer is not in the modules where—if anywhere—is it? We return to this question in the final section. But first, we try to explain more precisely what kind of modules moral modules are if, that is, there are any.

Fodorian Modules or Darwinian Modules?

If there are modules that serve as the sprouts upon which morality is built, it would be good to know what kind of modules they are. We distinguish between Fodorian modules and Darwinian ones. Fodorian modules have proved extremely useful in modeling sensation and perception in the sensory modalities. Darwinian modules are helpful for modeling the handful and a half of universal basic emotions, especially those that yield characteristic facial expressions (Darwin 1872; Ekman et al. 1985; Flanagan 2000, 2003, 2009). So as not to keep things mysterious, moral modules, if there are any, are not Fodorian. If Darwinian modules are the only other kind, then moral modules are Darwinian. The reason is that Darwinian modules are affectively loaded, Fodorian ones are not.

In *The Modularity of Mind* (1983), the seminal contemporary work on modularity, Jerry Fodor lays out the properties characteristic of modular systems such as reflexes, face recognition, and the five senses. The five sensory input systems have most or all of the following features: they are domain specific, mandatory, involve limited central access, are fast, informationally encapsulated, produce shallow outputs, operate on fixed neural architecture, are open to characteristic and specific breakdown, and demonstrate a characteristic pace and sequencing in ontogeny. Input systems differ from central systems in that the latter can pull on any relevant information and confirmation of their input is sensitive to the entire belief system. Thought and problem solving are canonical central system processes.[12] These differences lead Fodor to introduce "Fodor's First Law of the Nonexistence of Cognitive Science": "the more global (e.g., the more isotropic) a cognitive process is, the less anybody understands it. *Very* global processes, like analogical reasoning, aren't understood at all" (107).

We call a module Darwinian if it has the following properties:

---

12   Fodor is not trying nor does he believe it is possible to give a definition of 'modules' in terms of necessary and sufficient conditions. Although the nine characteristics of modules would seem to give us clear-cut ways to distinguish between modular input systems and general purpose central systems, the case is not so clear-cut. The problem here is two fold. First, Fodor's conception of modules allows for degrees with regard to the above listed nine properties of input systems. Some will be more encapsulated than others both informationally and morphologically (mutatis mutandis for the rest). Second, input systems need not have all of the nine properties but all such systems will have most of these properties. Rather, the sine qua non of input systems, and what prevents central processes from counting as modular, is the informational encapsulation of the system. Throughout the work, Fodor points out that we have made a great deal of progress in understanding input systems (sense modalities, reflexes, and language mechanisms) but very little progress in our attempts to understand more general cognitive processes.

- It is automatic, fast acting, and easily activated
- It involves both affect (feeling) and conation, i.e., an action tendency.
- It has features of cognitively impenetrability, e.g., the affect is hard to turn off or keep from being activated; the action can be stopped but only with conscious effort/veto (from central systems).

The key reason to say that moral modules are Darwinian is that they carry heavy affective components, which the five senses qua modules do not. Other input systems, reflexes for example, instigate action tendencies as do moral modules but often (consider the knee jerk) do so without any emotional involvement. Moral modules are affectively loaded. Indeed, a quick survey of every important list of basic moral attitudes (Darwin, Ekman, Strawson) depicts them as emotional. Of course, moral modules, such as compassion, involve cognitive appraisal: "this is a child falling into a well." But, once that the child falling into the well is perceived, the emotional reaction is automatic. Even King Herod, knowing that the child is a first-born male Jew, can't immediately override his impulse to want to save the child. The feeling of distress and the impulse to save the child will happen, and this feeling and the action are what Pylyshyn calls "cognitively impenetrable." Of course, King Herod can, as he did, think it is a good idea, all things considered, to kill all the first-born males. But doing so, especially if the killing is up close and personal, will involve overriding powerful impulses not to do so.

Was Darwin himself a moral modularist? Maybe. Here is what he says in the *Descent* (1871) in his most explicit gloss on human moral sense:

> In order that primeval men, or the ape-like progenitors of man, should become social...
> they must have acquired the same instinctive feelings...They would have felt uneasy when
> separated from their comrades, for whom they would have felt some degree of love, they
> would have warned each other of danger, and have given mutual aid in attack or defence.
> All this implies some degree of sympathy, fidelity, and courage....[T]o the instinct of
> sympathy...it is primarily due that we habitually bestow both praises and blame on oth-
> ers, whilst we love the former and dread the latter when applied to ourselves; and this
> instinct no doubt was originally acquired, like all the other social instincts, through nat-
> ural selection.... [W]ith increased experience and reason, man perceives the more remote
> consequences of his actions, and the self-regarding virtues, such as temperance, chastity,
> &c., which during earlier times are...utterly disregarded come to be highly esteemed or
> even held sacred...Ultimately our moral sense or conscience becomes a highly complex
> sentiment—originating in the social instincts, largely guided by the approbation of our
> fellow-men, ruled by reason, self-interest, and in later times by deep religious feelings,
> and confirmed by instruction and habit (498-500).

The fact that Darwin uses 'instinct' is promising for reading him as a modularist. But, the fact that he adds that with "increased experience and reason, man perceives the more remote consequences of his actions" indicates that the "highly complex sentiment" that emerges in actual worlds is a complex partly cognitively and historically conditioned competence. This seems plausible, but if

true, it has one possibly worrisome implication for the cognitive science of morality. Fodor's First Law, recall, claims that we can expect success in the study of a given faculty to the degree that it is modular; the argument applies equally to Fodorian and Darwinian modules. The more of the standard modular properties that a faculty, system, or subsystem has and the greater degree to which the faculty realizes these properties, the more we can expect to learn about the faculty. Central systems have few of these properties and to a small degree, and thus are likely to remain intractable for the foreseeable future. The success we should expect in studying the moral mind depends on the degree to which it is modular. How modular is it? No one knows yet.

Normativity

Philosophers sometimes make up in cleverness, in swift tongues, what they lack in empirical evidence. Rarely do philosophers have an *n* larger than 1. So, watch when you are told that you are doing something very naughty if you try to derive an "ought" from an "is." It is true that you "ought" not to do this because "oughts" are one kind of the innumerable things that can't be derived = demonstrated = deduced from propositions that don't also contain words like 'ought'. That you ought to eat breakfast doesn't follow from any set of facts about you and nutrition. Is it a good idea to eat breakfast? Of course. Can you derive it from facts about nutrition plus facts about your own desires for heath and well-being plus those of your loved ones? No.

Most of the important things, the things that matter cannot be proved (=demonstrated). Truths of mathematics and pure logic can be; the rest, not. Most true things don't follow and can't be derived from the true things that warrant their assertion. For example, it did not follow from the facts that we wanted to cross the Hudson River between New York and New Jersey, and that the George Washington Bridge would do the job, that we ought to build the George Washington Bridge. We could have swum, boated, or built any number of other style bridges or given up the aspiration to cross the Hudson altogether. Nor does it follow from the fact that every person so far has died that you will die. That is, it doesn't follow that you are mortal despite the fact that all persons who have ever lived before you died. It does not follow logically that you ought to seek to promote the happiness of everyone because you want to be happy and so does everyone else. The first (the George Washington Bridge) was a terrific idea and has worked out nicely. The second (your mortality) is something that, if you are rational (not delusional), you ought to believe in. The third, in the form of the golden rule, is widely thought to be a good idea even if not a theorem of any system.

So, what is the big deal about normativity that is supposed to make naturalists feel impotent? There is none. Most inference is inductive and abductive (inference to the best explanation among available ones), not deductive. When people say that "this *follows* from that" they do not mean normally that it deductively follows. Relax, and certainly do not think qua naturalist that you are not allowed to speak about and argue about norms, about better and worse practices. Just don't talk of derivation and deduction. Morality is a non-mysterious public domain (although the mystifiers are a dime a dozen among theists and deontologists), and everyone is equally entitled to recommend good ideas for socio-moral practice. Ethics is like engineering. Specify ends. Talk about whether the

ends involve good, worthy goals. Specify means, evaluate them in terms of effectiveness, costs, and so on. Then, do the right thing.

Supposing *SIM* is true, are there any normatively useful insights to be extracted? In closing we examine two possibilities.

The Virtue of Tolerance: One normative consequence that *SIM* theorists suggest follows (now in the non-deductive sense) from *SIM* has to do with the warrant for greater tolerance. By recognizing the role played by each of the five modules in morality, but at the same time recognizing the indeterminate range of each module and the different degrees of emotional tuning (the strength of feelings of "intolerance, indignation, and disgust" that different people have to different practices, as Lord Patrick Devlin put it, when speaking about reactions to male homosexuality in the UK circa 1959), we can understand more deeply why moral tolerance is rational, why tolerance is a virtue, even if it is not particularly well-enabled by any of the original modules taken singly. Thus, one lesson to extract from the research discussed earlier about American Liberals and Conservatives, which found that Liberals tend to focus on the sprouts of fairness/reciprocity and harm/care whereas Conservatives tend to appeal to all five of the sprouts and thus moralize manners or class in a way Liberals don't, might be that we be tolerant of these differences in moralizing. Haidt and Graham draw something like this conclusion: "[r]ecognizing these...foundations as moral (instead of amoral, or immoral, or just plain stupid) can open up a door in the wall that separates liberals and conservatives when they try to discuss moral issues" (2007, 113). The idea is that recognition of our shared moral psychology in the five modules warrants greater understanding of where others are coming from, how they could moralize as they do, and so on. Now there is an interesting and important question here as to whether the tolerance warranted is (a) to involve tolerance in the sense of understanding where the other is coming from (and how it was perfectly understandable that the innate modules could have been grown her way rather than my way and that we both feel strongly about the matter at hand—that's what Darwinian modules are designed to do, to provide powerful affective oomph to our socio-moral reactions in their domain), or (b) whether it is supposed to involve accepting that her judgment is as good as mine. If one thinks that morality is wholly determined by the modules, whatever they are, in interaction with a form of life, whatever it is (and why ever it is what it is), then one might be driven to think that both the psychological genealogy and the substance of different valuations is to be respected and tolerated. If, however, one thinks that non-modular central systems get a say because the function of morality involves adjustments and adaptations to new situations and new worlds and that certain factual issues are at stake when people disagree about socio-moral practices, then not all views need to be tolerated as good, certainly not as equally good.

Which Sprouts to Grow, Which Modules to Activate & How Much? We return for one final word on a question that has persisted, indeed bedeviled us, throughout this paper and needs to be brought into full view in closing. What force, what significance, do any facts about basic human nature have with regard to the question of how we ought to construct ourselves and our socio-moral worlds? At the start we set out two versions of *MMH*:

Moral Modularity [Descriptive] Human nature contains seeds for four (or five) different moral sprouts or modules.

Moral Modularity ^{Normative} Moral excellence involves growing all four (or five) seeds to maturity.

The descriptive thesis we have argued is credible. *SIM* (with the possible addition of some role for central processing), in particular, is an empirically plausible modularity hypothesis.

But, the normative thesis faces a host of problems. In so far as our human nature has seeds in it, there are good seeds and bad seeds, possibly these are one and the same. The histories of ethics and moral psychology from their beginning in Confucius, Buddha, and Aristotle to more recent theorizing are filled with botanical conjectures; but, the overwhelming consensus is that, depending on the demands of the environment and the histories of a people, different seeds in our natures will be grown and they will be cultivated in different ways. At the same time other seeds in our nature will be conceived of as weeds or poisons (the "poisons" in Buddhism are also sprouts or modules—avarice, thirst, acquisitiveness). Weeds, of course, are simply plants we don't like. Mencius is pretty much the only philosopher, classical or cotemporary (except for Frans de Waal in some Pollyanna-ish moments) who speaks only of good seeds (Flanagan 2009). Xunzi, another classical Chinese philosopher, is famous for challenging Mencius by claiming that "People are bad." Xunzi, like Mencius, Buddha, and *SIM* theorists are looking at what *they* take to be the seeds. So, how many seeds are there—if indeed seeds are the right metaphor? How exactly are the seeds to be individuated? Are the modules in *SIM* fine grained enough? The modules in *SIM*— each module—contains more than one seed. The ingroup-outgroup, we take it, contains the seeds for loyalty, patriotism, territoriality, suspicion, and resentment. When are such things, such fruits or blossoms, good or bad, virtues or vices? The right answer seems that it depends. It depends on a host of factors outside, or in addition to, the modules, on features of human history, the current environment, and so on. Morality is an accommodation to interpersonal life in social worlds that are not the same as the worlds in which the original equipment evolved.

The question remains, what to do? Use your head. Pay attention to what you, we, or they sensibly aim to accomplish, keep deadly conflict to a minimum, and keep your eyes resolutely on what your innate nature wants, at times, to do and why. The modules inside you, being Darwinian, will make you feel cocky, assured that you see things correctly. Watch out for this; it can lead you astray. Generating cocky feelings (righteousness) is how they are designed; it is what the modules are supposed to do in the adaptation^{historical} sense. But, we live in different worlds now than then, so keep your eye on whether your moral confidence really has warrant in this world, in the one you're actually living in now. Use those advanced mental abilities that go beyond the modules, that involve wisdom (*zhi*), *phronesis*, or good old common sense to track ways of living well that suit you for achieving what Aristotle called *eudaimonia* (= flourishing).

This recommendation—to use your head (all of it, not just the modules)—is of course an old idea. But, it nicely re-connects the cognitive science of morality with normative ethics in a way that involves a clearer understanding as to why we humans have so much trouble agreeing on normativity. The reason has nothing to do with any inherently mysterious features of the logic of "oughts" or with the metaphysics of values or norms. It has to do with the fact that our natures as persons are not fully specified by our biological natures. The existentialists had it right. We humans, in virtue of being social, cultured, and very smart, are co-creators with "Mother Nature" of our being. Our

most unusual biological feature, and an evolutionary advantage so far, is the enormous plasticity we possess to make and remake ourselves in ever-new ways, to grow and train our innate sprouts to fit our current condition. There are a plethora of realistic options to "grow" and "do" human nature. It is not surprising that we are still getting used to the fact that the right answer to the question "how shall I live" in not given by our human nature nor it is unequivocally there to be read off the external world. Once we accept fully that we are Darwinian creatures, material beings living in a material world, not living in a world where morality has transcendental sources, it might be easier to accept that the questions of how we individually or collectively ought to live is not one of those where there is the one, right answer. Neither knowledge about the innate modules nor deeper wisdom about general-purpose cognition will reveal how we ought to be and to live. But, knowledge of both, especially knowledge of the modules, can teach a great deal about the initial settings, various natural trajectories, and the limits of the possibility space for making and remaking ourselves. And knowledge is power.[13]

Works Cited

Brown, D. E. (1991). *Human universals*. Philadelphia: Temple University Press.

Casebeer, W. D. (2003). *Natural ethical facts: evolution, connectionism, and moral cognition*. Cambridge, MA: MIT.

Casebeer, W. D. & Churchland, P. S. (2003). The neural mechanisms of moral cognition: A multiple-aspect approach to moral judgment and decision-making. *Biology and Philosophy, 18*, 169–94.

Churchland, P. M. (1996). *The engine of reason, the seat of the soul: A philosophical journey into the brain*. Cambridge, MA: MIT.

Darwin, C. (1872). *The descent of man and selection is relation to sex*. New York: D. Appleton and Associates.

Ekman, P., Levinson, R. W., Friesen, W. V. (1985). Automatic nervous-system activity distinguishes among emotions. *Science, 221*, 1208–1210.

Fiske, A. P. (1991). *Structures of social life*. New York: Free Press.

Fiske, A. P. (1992). Four elementary forms of sociality: Framework for a unified theory of social relations. *Psychological Review, 99*, 689–723.

Fiske, A. P. (2004). Relational Models Theory 2.0. In N. Haslam (Ed.), *Relational models theory: A contemprary overview* (pp. 3–25). Mahwah, NJ: Lawrence Erlbaum.

Flanagan, O. (1991). *Varieties of moral personality: Ethics and psychological realism*. Cambridge, MA: Harvard University Press.

Flanagan, O. (2000). Destructive emotions. *Consciousness and Emotion, 1(2)*, 259–281.

Flanagan, O. (2002). *The Problem of the Soul: Two visions of mind and how to reconcile them*. New York: Basic Books.

Flanagan, O. (2003). Ethical expressions: Why moralists scowl, frown and smile. *Cambridge Companion to Darwin*. Cambridge: Cambridge University Press

Flanagan, O. (2009). Ethical expressions: Why moralists scowl, frown and smile. (revised). *Cambridge Companion to Darwin*. Cambridge: Cambridge University Press.

Fodor, J. (1983). *Modularity of mind*. Cambridge, MA: MIT.

Gardner, H. (1983). *Frames of Mind: The Theory of Multiple Intelligences*. New York: Basic Books.

Gardner, H. (1993). *Multiple Intelligences*. New York: Basic Books.

---

13   Of course, gaining this knowledge (even of the modules) requires central processing.

Gardner, H. (2006). *Multiple intelligences: New horizons*. New York: Basic Books.

Greene, J. (2003). From neural 'is' to moral 'ought': What are the moral implications of neuroscientific moral psychology? *Nature Review of Neuroscience, 4*, 846–849.

Haidt, J. (2001). The emotional dog and its rational tail: A social intuitionist approach to moral judgment. *Psychological Review, 108(1)*, 814–834.

Haidt, J., & Graham, J. (2007). When morality opposes justice: Conservatives have moral intuitions that Liberals may not recognize. *Social Justice Research, 20(1)*, 98–116.

Haidt, J., & Joseph, C. (2004). Intuitive ethics: how innately prepared intuitions generate culturally variable virtues. *Daedalus, 133(4)*, 55–66.

Haidt, J., & Joseph, C. (2007). The moral mind: How five sets of innate intuitions guide the development of many culture-specific virtues, and perhaps even modules. In P. Carruthers, S. Lawrence, & S. Stich (Eds.), *The innate mind (Vol. 3)*. (pp. 367–392). Oxford: OUP.

Hauser, M. (2006). *Moral minds: How nature designed our universal sense of right and wrong*. New York: HarperCollins

Johnson, M. (2003). *Moral imagination: Implications of cognitive science for ethics*. Chicago: University of Chicago Press.

Kohlberg, L. (1971). From is to ought: How to commit the naturalistic fallacy and get away with it in the study of moral development. In T. Mischel (Ed.). *Cognitive development and epistemology (pp. 151–235)*. New York: Academic Press.

Mencius. (2008). *Mengzi: With selections from traditional commentaries*. Bryan W. Van Norden (Trans.). Indianapolis, IN: Hacket Publishing.

Schwartz, S. H., & Bilsky, W. (1990). Toward a theory of the universal content and structure of values: Extensions and cross-cultural replications. *Journal of Personality and Social Psychology, 58*, 878–891.

Shweder, R. A. (1990). Cultural psychology: What is it? In J. W. Stigler, R. A. Shweder, and G. Herdt (Eds.). *Cultural psychology: essays on comparative human development (pp. 1–43)*. New York: Cambridge University Press.

Shweder, R.A., & Haidt, J. (1993). The future of moral psychology: Truth, intuition, and the pluralist way. *Psychological Science, 4*, 360–365.

Shweder, R. A., Much, N. C., Mahapatra, M., & Park, L. (1997). The "big three" of morality (autonomy, community, and divinity), and the "big three" explanations of suffering. In A. Brandt & P. Rozin (Eds.), *Morality and health. (pp. 119–169)*. New York: Routledge.

Sperber, D. (1994). The modularity of thought and the epidemiology of representations. In L. A. Hirschfield & S. A. Gelman (Eds.), *Mapping the mind: Domain specificity in cognition and culture (pp. 39–67)*. Cambridge, UH: Cambridge University Press.

Van Norden, B. W. (2007). *Virtue ethics and consequentialism in early Chinese philosophy*. Cambridge: Cambridge University Press.

de Waal, F. (1991). The chimpanzee's sense of social regularity and its relation to the human sense of justice. *American Behavioral Scientist, 34*, 335–349.

de Waal, F. (1996). *Good natured: The origins of right and wrong in humans and other animals*. Cambridge: Harvard University Press.