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Section 3: Paper 5

Why Practical Ethics Should be Interested in Cognitive Science

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Abstract: Practical ethics can greatly benefit from the work in cognitive science. Cognitive science boasts substantial research and data on how people think, reason, and process information, as well as on the nature of the mind. I argue that cognitive science research and data are invaluable to investigating how people conduct themselves as they plod through practical moral problems. I discuss three reasons why practical ethics should be interested in cognitive science: cognitive science (i) helps us to better understand how people reason and offers theories about underlying mental processes; (ii) offers substantive discussion on normative accounts of reason and rationality; and (iii) provides insight into the nature of the human mind which may ground morality *qua* a human enterprise.

1. Introduction

Practical ethics is a real-life endeavor. It is concerned about identifying and deliberating moral issues and moral courses of action in various aspects of human life: environmental issues, animal rights, biomedical and health issues, and so on. Thus, practical ethics is a kind of *applied ethics*. The traditional *modus operandi* of applied ethics consists in *a priori* development of normative theories, principles, or rules (i.e., development of a normative ethics) and the subsumption of actual, real-life moral problems under these rules and principles. This tradition is firmly rooted in philosophical inquiry with the aim of logical reasoning, coherence, conceptual clarity, and rational justification. Any empirical evidence is viewed as “merely” descriptive without the possibility of affecting or challenging norms. Recently, however, there has been a movement which eschews this tradition and instead insists on a more intimate relationship between the empirical and normative dimensions of ethics. This movement is perhaps most alive in practical ethics, wherein it is labeled “empirical ethics”. Those who endorse empirical ethics

believe that empirical research can serve ethics in a more prominent and integral capacity than the “handmaiden” role traditionally allotted to it (Hoffmaster 1991).

Since the ken of practical ethics is moral issues in human life, it is essentially a social enterprise. Much of the work done in the social sciences captures and discusses practical ethical issues, and sociological studies are most commonly appealed to for accounts of actual moral problems and ascribed meanings as experienced by those who are involved in the first degree. More generally, practical ethicists who endorse empirical ethics incorporate ethnographies, case studies, policy reports, surveys, experiments, interviews, and participatory observation, thereby drawing on research from the many disciplines of the social sciences. The social science data are supposed to put ethical issues in context, stimulate ethical questions, or challenge or otherwise inform ethics.

It is not common, however, to find practical ethics incorporating research from the cognitive sciences. This is not to say that cognitive science is a complete stranger to ethics. The growing field of empirical moral psychology brings findings in psychology, and cognitive science more broadly, to bear on issues related to psychological perspectives on morality, such as moral development, moral character, moral judgment, and moral reasoning. However, despite the advances made by moral psychology, practical ethics still remains largely ignorant of the research and data of the cognitive sciences. This ignorance is a symptom of the fact that practical ethics is viewed as a separate domain from moral psychology, where the latter is generally understood to be a branch of metaethics. What possible lessons or applications might be gleaned from moral psychology are thus effectively cordoned off from practical ethics.¹ Whatever cognitive science research does appear from time to time in the practical ethics literature is scant

and usually only given cursory treatment (e.g., Musschenga 1999; Molewijk et al. 2003). This is unfortunate since practical ethics can greatly benefit from the work done in cognitive science.

Cognitive science boasts substantial research and data on how the human mind operates—how people think, reason, and process information—as well as on the nature of the mind and how people interpret and interact with their world (including their social world). Such research and data are invaluable in investigating how people conduct themselves as they plod through practical reasoning problems. Since practical ethics consists in the analysis of practical moral problems, it is only natural that cognitive science research should be of interest to practical ethics. Of course, practical ethics concerns the examination of moral *issues* in human life and society, but there is a level of analysis that concerns how real people deliberate real moral problems. And this is where cognitive science affords a rich source of data and information relevant to moral judgment and decision-making.

In this paper, I will discuss three reasons why practical ethics should be interested in the work and research of the cognitive sciences: the cognitive sciences (1) help us to better understand how people reason, as well as offer theories about underlying mental processes; (2) offer substantive discussion on normative accounts of rationality and what constitutes good reasoning; and (3) provide insight into the nature of the human mind and thus how morality *qua* a human enterprise might be grounded therein.

Let me note before we begin that it is not my intention to offer any new findings, or to offer any new analysis of data. Indeed, consulting empirical research in psychology or cognitive science is not a new idea (see e.g., Johnson 1993). Rather than offering anything new, the purpose of this paper is simply to motivate the incorporation of what appears to be underexplored research from cognitive science into practical ethics.

2. Why Practical Ethics Should be Interested in Cognitive Science

2.1 Reason #1

Contrary to what John Locke believed, we now know that the mind is largely opaque to itself, and not only in terms of content but also in terms of structure and operations. This does not mean that we know nothing of our own minds, but evidence suggests that we do not know our own minds as well as we think we do. Cognitive science provides a more general and objective understanding of the human mind. Though we remain unable to subjectively introspect the full content, structure, and operations of our own minds, cognitive science gives us a picture—sometimes several pictures—of the mental processes and architecture that subserve our overt behavior and phenomenology. For instance, many researchers, following the work of Kahneman and Tversky (Kahneman, Slovic, and Tversky 1982), believe that a significant amount of human reasoning is heuristic in nature—that we often use short-cuts or “rules-of-thumb” in much of our reasoning (e.g., Gigerenzer, Todd, and the ABC Research Group 1999). Cognitive science explores the extent to which our reasoning is heuristic in nature, as well as theorizes and provides data on the specific heuristics we use and in which reasoning contexts we use them. Cognitive science may also investigate the mental processes underlying our reasoning by computational modeling (e.g., Sun 2006; Thagard 1996) which provides insight into many cognitive domains and their associated set(s) of functions. There are also various theories of human mental architecture, ranging over parallel distributed processing networks, connectionist networks, and varying degrees of modular architectures. Each architecture provides insight into

the flow of information within the mind, and instructs us on how we process and cognize information.

The theories and evidence supplied by cognitive science can assist practical ethics in understanding the psychological decision-making processes of people in moral contexts, and how information is cognitively processed as they reason through problems. This can lead to advances in two important respects. First, an analysis of human reasoning can put constraints on normative moral theories and principles. Moral theories carry sets of background assumptions about how people reason, the nature of motivation, and the capacities of people to make decisions (Musschenga 1999). These assumptions, however, are subject to the empirical inquiry of cognitive science. Gigerenzer (2008, 6) points out that “[a] normative theory that is uninformed as to the workings of the mind ... will most likely not be useful for making our world better.” Indeed, a normative theory that is uninformed as to the workings of the mind will most likely not be useful for adequately resolving ethical issues (cf. Birnbacher 1999). The role for cognitive science here is to tell us whether and to what extent what *ought* to be done also *can* be done. By the same token, ethical theories should aim to provide principles which are realistically achievable by “average human beings,” that is “for human beings with limited rationality, limited sympathy and limited strength” (Musschenga 1999, 195). Hence, what we morally demand and what we can reasonably expect of people dealing with specific moral problems can be partially determined by evidence produced by cognitive science; cognitive science can be used to suggest appropriate constraints on our ethical theories, principles, or norms by taking into consideration the natural limitations and abilities of human cognition.

The second way in which understanding the cognition subserving moral decision-making can advance practical ethics is by suggesting ways to facilitate good reasoning. Once the

psychological underpinnings of decision-making in ethical contexts have been identified, cognitive science can indicate ways to improve the epistemic situation of people faced with moral problems. (We will see an example of this below.) This involves not only understanding our reasoning processes, but also the informational structures that our cognitive mechanisms are sensitive to (in the environment and within the mind). Understanding the structure of information with which we are presented or otherwise confronted, in conjunction with our cognitive wherewithal, will help us to develop ways to engineer such information (cf. Sterelny 2003, 2006) so as to make it easier to process, comprehend, and give it meaning, while hopefully allowing us to avoid many of the systematic errors evidenced in the psychological literature. Thus, cognitive science can do more than simply constrain normative theories; instead of merely expressing skepticism toward ethical theories or principles in light of certain cognitive shortcomings of humans (e.g., Musschenga 1999), we can view our ethical theories and principles to be in a dynamic and reflexive relationship with human cognition, and engineer our epistemic environment to enhance our decision-making capacities in order to meet the tenets of the normative theories or principles we adopt.

2.2 Reason #2

Cognitive science contributes significantly to the joint enterprises of determining what constitutes rationality, on the one hand, and what makes humans rational creatures, on the other. Such issues carry over into practical ethics insofar as practical ethics is concerned with making reasonable and rational decisions in social, political, and other practical ethical contexts. The inception of rational decision theory introduced the normative ideal of rationality as constituted by logic and probability theory (e.g., Savage 1954). The idea is that one can assign personal utility and probability values to expected outcomes, and the outcome with the highest expected

utility is the rational choice. However, this ideal of rationality has come under harsh criticism. It is common ground that humans often fail to meet the dictates of this standard model of rationality, but some psychologists and philosophers now stress that the dictates of the standard model simply *cannot* be met by humans, or any existing or conceivable computer for that matter (e.g., Cherniak 1986; Gigerenzer and Todd 1999; Samuels, Stich, and Faucher 2004). Rather than admit that much of human reasoning is irrational, what many cognitive scientists demand, and sometimes develop, is a reconceptualization of rationality which is more commensurate with actual cognitive processes and human capabilities.

Readdressing the normative issues of reason and rationality can help practical ethicists to develop a more thorough understanding of appropriate ways to reason through ethical problems. As such, cognitive science research can offer encouragement for certain empirical, nonfoundationalist approaches to ethics which are often dismissed as irrational or nonrational by the standard model. Narratives, for instance, have been appealed to for some time by certain ethicists as a method to gain a fuller picture of social and cultural contexts than what the content-empty standard model can ever offer (e.g., Mattingly 1998). Narratives, it is argued, “provide an opportunity for imaginative moral reflection” and serve as a forum for moral reasoning, “act[ing] as situated knowledge because they locate events in peoples’ lives and concerns” (Borry et al. 2005, 67). Cognitive science can shed new and informative light on the narrative approach in ethics. Klein (1998) for instance views narratives to be particularly interesting for cognitive science because they invariably carry more information and (perhaps paradoxically) are easier to cognize than what is conveyed by, say, formal reports. According to Klein, narratives provide immediate contextualization which helps us to organize our thoughts, make sense of events, and communicate a meaningful background and framework for information. Organizing evidence

through a narrative, he continues, allows for superior understanding and facilitates better memorization and recall. Narratives therefore enable good reasoning and effective cognition.

We can see, therefore, that cognitive science can offer evidence to ground certain types of reasoning as good and rational ways to approach problems in practical ethics which have been often been deemed irrational or nonrational because they do not conform to the traditional standards of rationality. Other types of reasoning methods that deserve exploration from a cognitive science perspective include casuistry, case-based and analogical reasoning, and feminist and pragmatist theorizing.

2.3 Reason #3

I emphasize here that practical ethics is a human enterprise, concerned about real people dealing with real ethical problems. As Musschenga (1999, 184) observes: “Ethics aims to provide guidelines for human conduct. It can hardly do that if it does not account for human nature.” Thus, practical ethics should be grounded to some considerable extent in human nature. And the nature of the human mind is certainly not an insignificant part of human nature. This is precisely where we can expect cognitive science to offer some insight.

Those who endorse empirical ethics argue that the content-empty moral theories, principles, or rules of the traditional model of applied ethics are too general and abstract to be able to account for and deal with the empirical content of real-life moral problems. The claim is that the multifariousness, amorphousness, and utter complexity of concrete moral problems demand *context-sensitivity*. Contextualization highlights actual and relevant moral factors, and raises concrete moral questions. One of the research programs in cognitive science is to develop models of human cognition that can account for the fact that problems in practical reasoning involve vast amounts of information, any of which can bear in different ways on the problem at

hand. It is no secret in cognitive science that such problems in practical reasoning are contextual. The interesting part for cognitive science is that humans are actually quite good at sorting through the complexities of problems, determining what is and is not relevant, and arriving at decent or satisfactory (re)solutions.² This is not to say that we are infallible or that we always make good decisions; there are limits to the complexity and amount of information we can handle (cognitive science studies these limits as well). Rather, it is to say that it is an empirical fact that humans can (re)solve many of their problems in a quick and efficient manner, and this is in part due to our natural abilities to contextualize our problems and thereby maintain flexibility in our reasoning. Hence, an approach to the contextualization of problems in practical ethics can benefit from a closer look at the nature of human cognition.

Cognitive science can also serve to ground certain social aspects of practical ethics. Since practical ethics is a social enterprise, practical ethical issues involve social dimensions. These social dimensions must be taken into account in moral valuation and decision-making. Social psychologists recognize that humans do not grow up and live in isolation, or think and act in a social vacuum. Social models of cognition are therefore extensively researched by social psychologists, resulting in theories of “social cognition” (how people perceive and think about others) and concepts of the self and interpersonal selves (Allport 1985). Within these social models of cognition it is assumed that the social nature of our species shapes the way our minds develop and are exercised in our daily lives (Lerner and Tetlock 1999). Other cognitive scientists deploy theories and models which track the development and use of culture and concepts, which naturally assumes that people’s reasoning and thoughts are shaped by social environments. In this way, then, the manner in which we think about and conduct ourselves within social contexts can be seen to be ultimately grounded in the nature of human psychology and cognition.

Furthermore, work in cognitive science reveals that emotions appear to be inextricably connected to our social, moral, and practical reasoning systems. For example, Damasio (1994) has argued that our reason is always oriented to and guided by complex processes which monitor affective states of the body. This suggests that deliberation occurs with our reason working in concert with our emotions. Moreover, on some accounts of interpersonal selves, the self exists by virtue of its ability to have emphatic feelings toward others. These empirical theories open the door for a more encompassing understanding of moral reasoning which acknowledges a legitimate role for emotions in deliberation and decision-making. In this way, cognitive science can serve practical ethics by understanding moral reasoning and morality more generally as grounded in the nature of human cognition, and social cognition in particular.

These three reasons why practical ethics should be interested in cognitive science should convince practical ethicists to utilize and integrate cognitive science data in their own research. The empirical findings of cognitive science “place an obligation on us to cultivate a new kind of moral understanding that is grounded in what we are learning about human reason and the way the mind works” (Johnson 1993, 11).³ The lessons for practical ethics which emerge from a better and deeper understanding of the human mind will not give us a system of rules or a normative theory to prescribe reasoning methods or behavior. What will be gained instead is a genuine understanding of practical ethics as a human (and social) enterprise, which is a prerequisite for determining sensitive, critical, and constructive reasoning and deliberation in ethical contexts (cf. Johnson 1993, 12).

3. Cognitive Science in Action

To complete this paper, I will briefly illustrate the ways in which cognitive science can assist practical ethics in evaluating moral reasoning and judgment. I will consider an older but

still relevant case study by Lippman-Hand and Fraser (1979a, 1979b) of decision-making by couples which received genetic counseling. Genetic counselors provide couples with information about the probabilities of having a child with various possible forms of particular genetic diseases. The couples, post-counseling, are then supposed to decide whether to try to conceive, or whether to keep a fetus, based on such information. The traditional applied ethics view is that the probabilities will combine with subjective utilities for the corresponding outcomes, and this will determine (rational) choice. However, as Lippman-Hand and Fraser show, this is far from how counseled couples make their decisions.

3.1 Ignoring Probabilities

Lippman-Hand and Fraser describe the couples they studied as ignoring the probabilities presented to them by the genetic counselor, and instead perceiving their problem in simple binary terms: “it [having an affected child] either will or will not happen, no matter the rate associated with it” (Lippman-Hand and Fraser 1979a, 332). What is guiding this kind of reasoning, according to Lippman-Hand and Fraser, is the utter uncertainty of their situation. Regardless of whether the statistics deliver relatively high or low probabilities, they will ignore the number in the denominator and focus on whether their child will be that “one” in the numerator (Lippman-Hand and Fraser, 1979b, 120).

It is likely that the counseled couples reduce the probabilities with which they are presented to binary terms because humans are notoriously poor at interpreting, understanding, and dealing with probabilities (Kahneman, Slovic, and Tversky 1982; Sunstein 2005). One reason for this is that we cannot form degrees of belief precise enough to represent exact probabilities. Thus, though the counseled couples were presented with exact numerical

probabilities, there is certainly no way that such probabilities were or could be included, with all their precision, in their reasoning and deliberations.

Difficulties with understanding and dealing with probabilities is certainly not restricted to laypersons. Professionals and experts alike fall prey to fallacious probabilistic reasoning. For example, Eddy (1982) informally presented physicians with the following information:

- The probability that a woman at age 40 has breast cancer is 1%.
- According to the literature, the probability that the disease is detected by a mammography is 80%.
- The probability that a mammogram will produce a false-positive is 9.6%.

Eddy then asked the physicians what the probability is that a woman at age 40 indeed has breast cancer given that her mammogram test was positive. Eddy reports that approximately ninety-five percent of the physicians wrongly supposed the answer to be around 75%. The correct answer, arrived at by Bayes' Theorem, is 7.8%. Hoffrage and Gigerenzer (1995) found the same problem with systematic experiments. They report that the range of estimates given by the physicians they studied was between 1% and 90%, the latter being most common.

One possible way to make the information embodied in probabilities transparent and conducive to proper interpretation comes from the research of Gigerenzer and his colleagues. In a series of studies and articles (some of which include the studies of the physicians discussed above), they investigate risk communication in health care (Elmore and Gigerenzer 2005; Galesic, Gigerenzer, and Straubinger 2009; Gigerenzer and Edwards 2005; Hoffrage and Gigerenzer 1995, 1998; Hoffrage, Kurzenhaeuser, and Gigerenzer 2005; Hoffrage, Lindsey, Hertwig, and Gigerenzer 2000), and they illustrate the effectiveness of expressing probabilities as “natural frequencies,” i.e., “absolute frequencies as they result from observing cases that have

been representatively sampled from a population” (Hoffrage and Gigerenzer 1998, 538). Hoffrage and Gigerenzer demonstrate that when probabilities are presented in terms of natural frequencies, rather than as numerical probabilities or percentages, the majority of the doctors they studied understood how to appropriately integrate the base-rate information (cf. Cosmides and Tooby 1996).

If natural frequencies can provide transparency of probabilities for those doctors who were studied, then it will likely help the counseled couples to properly interpret and integrate probabilities as they go about framing their problem. There may be alternative means by which the counseled couples might come to interpret the probabilities in a meaningful way, and the usefulness of the frequency format is certainly not uncontroversial (see Samuels, Stich, and Bishop 2002; Samuels, Stich, and Faucher 2004), but exploring natural frequencies is a good place to start looking for an effective means of framing their problem in a meaningful and manageable way. At any rate, there is an open invitation for cognitive science to explore ways to effectively construe moral problems when probabilities are involved.

3.2 Scenario Construction

Lippman-Hand and Fraser (1979a, 1979b) continue to describe the reasoning processes of the counseled couples, saying that they construct scenarios in their minds in an attempt to imagine what it would be like to have and live with a child with a genetic disease. This, according to Lippman-Hand and Fraser, is how they respond to the uncertainty of their situation, as well as its complexity. The couples must consider not only how they and their child will be affected by a genetic disorder, but also how other family members, friends, and their community will be affected; having a child with a genetic disease will impact the goals, values, responsibilities, and social roles of all these people (Hoffmaster 1991). The couples thus

(partially) base their decision on whether they believe they can cope and live with the worst scenario they can imagine.

The use and effectiveness of imagining scenarios for the purposes of decision-making has been studied for some time now by cognitive scientists. Klein (1998), for instance, has studied the procedures and processes of a number of people who frequently have to make important decisions, ranging from firefighters and emergency rescue workers, to nurses and military personnel. Klein's interest is in what he calls "naturalistic decision making settings," i.e., real-life settings in which there are felt time pressures, the stakes are high, the decision-makers are experienced, there is inadequate (e.g., missing, ambiguous, or erroneous) information, the goals and procedures are ill-defined, and there are dynamic contextual features. One of the "sources of power" that Klein noticed was employed by those he and his colleagues studied is what decision researchers call *mental simulation*. Mental simulation, as Klein explains, is

the ability to imagine people and objects consciously and to transform those people and objects through several transitions ... This process is not just building a static snapshot. Rather, it is building a sequence of snapshots to play out and observe what occurs (Klein 1998, 45).

Klein suggests that mental simulation can be used to construct an imagined past in an effort to explain the present, or it can be used to predict the future (perhaps to prepare for it) by imagining scenarios and mentally playing them out to observe potential outcomes and consequences. Alternatively, we may run through a sequence of events in our minds and evaluate it in order to form some kind of judgment. What this ability provides us is a natural effective tool for making decisions for an indefinite number of situations.

Building mental simulations seems to be precisely what the counseled couples are doing as they construct scenarios through their deliberation process. This is certainly a source of power

for these couples. As Klein observes, “[m]ost of the time when we have to make difficult choices, we do not fully understand what we want to accomplish ... With an ill-defined goal, you are never sure if the decision was right” (Klein 1998, 5). Given an ill-defined goal, procedures to approach and resolve a given problem, or attain a certain goal, will be poorly defined as well. The problem faced by the counseled couples is grossly ill-defined, and their goal is likewise ill-defined. They not only want to be parents, but good parents. And what it means to be a good parent involves too many dynamically interdependent factors to consider and keep track of—concerns about social roles, emotional investment, time and money, and so on. Scenario construction imbues information with personal meaning for these couples, and it allows them to have thoughts that are concrete, specific, and meaningful enough to guide their thinking, and eventually their actions, through their most difficult problems.

We witness here once again cognitive science at work. By appealing to cognitive science, we can identify certain kinds of reasoning processes as natural and useful; cognitive science tells us why and how such reasoning processes work. We might then investigate ways to foster and improve them. Mental simulation, or scenario construction, may be deemed irrational or nonrational by the standard model. However, it is a very effective tool in deliberation. This is evidenced in the post-counseling decision-making case study, and it is supported by research in cognitive science.

4. Conclusion

This paper was concerned with motivating the consideration and incorporation of cognitive science research in practical ethics. To echo Musschenga (1999), we can hardly study human conduct without accounting for human nature. As I pointed out above, accounting for human nature includes accounting for the nature of the human mind. If we want to learn how

people go about their reasoning and decision-making in social, political, or ethical situations—indeed, in any practical or applied ethical context--we should make an effort to understand the cognitive basis of how people think and reason. This is very important if we seek to improve reasoning and decision-making in these contexts.

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Endnotes

¹ The blindness towards moral psychology is not unique to practical ethics, and may be a symptom of larger problems associated with the relatively recent interest in bringing the empirical sciences to bear on philosophical issues (Sinnott-Armstrong, 2008).

² Cf. Herbert Simon’s (1957) notion of *satisficing*.

³ Johnson is concerned about how imagination bears on morality, not about how cognitive science *per se* bears on practical ethics. However, I find that a parallel understanding can be found in his remarks.