

THESIS

A PHILOSOPHICAL COLLISION:  
MEDIA ETHICS MEETS NEUROSCIENCE

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## ABSTRACT

### A PHILOSOPHICAL COLLISION: MEDIA ETHICS MEETS NEUROSCIENCE

Paving new theoretical pathways often comes at the crossroads of different perspectives uniting to consider questions. Neuroethics is one such lens at the forefront of current media ethics research. This thesis seeks to build theoretical bridges between neuroscience and media ethics, an integration of diverse methodologies to assist in maturation of the field. Neurobiological tools and theories have flanked sociological considerations for several decades, and research in journalistic academia has also begun to integrate these ideas. Decision making from the inside-out is examined through Cognitive Affective Units, Identity Theory, the role of emotions in reasoning and Schema Theory. A sample study design is suggested utilizing Rest's Defining Issues Test developed for fMRI. Other areas suggested for exploration include pedagogy, free will, autonomy and moral development processes.

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## CHAPTER 1. INTRODUCTION

As the media ethics field moves forward to unravel the mysteries of human decision making, neurobiological and physiological methods flank many research considerations. The art of tracking physical response to psychological and emotional reasoning is evolving into a strong platform for considering sociological and psychological behaviors. These methods move beyond assuming simple explanations for physiological reactions, and they are forging the way for a philosophical revolution in ethical considerations. Based on evidence revealing the role of emotion in decision-making, this work will attempt to build a theoretical bridge between neuroscience and media ethics by focusing on how these different fields work hand-in-hand to assist in unraveling the mysteries of human behavior. This thesis seeks to articulate how neuroscience methods can enrich the traditionally philosophical mindset of media ethics. The methodology includes a comparative literature review and a study design suggestive of how neuro-psychology and philosophy merge to illuminate the multiple layers of decision-making involved in ethical dilemmas. The study will use Rest's Defining Issue's Test and utilize a neuro-psychological setting.

Northoff argued that progress in neuroscience would allow researchers to reveal the "neuronal correlates of psychological processes involved in ethically relevant notions," (2009, p. 565). The neuroscience methods of observing decision-making can complement many current ethical theories. This growing body of research offers innumerable applications for academic pursuits, from expanding the studies of media-induced behavior and emotional reactions to applying the new research to philosophical

theories and the ethical decision-making processes of media practitioners. The convergence of these two research paths also raises points of conflict, especially in the traditions of higher reasoning and individual moral evolution. Neuroscience offers an empirical element to media philosophy, a stream of study needed to encourage maturity of the field.

This timely discussion seeks to further break down the divisions between biological sciences and sociological sciences. Some of the media research in the 1960s and 1970s focused on finding whether media had direct physiological effects on people. When these effects weren't found, this type of research practically ceased. In the 1980s, these measures re-emerged via inspiration from psychology. "Researchers ... did not view these indicators of change in physiological states caused by media but rather conceptualized them as indicators of cognitive and emotional events," (Lang, Potter and Bolls, 2009, p. 186). Embracing these methods meant an acceptance of psychophysiology as a research paradigm.

Instead of applying these measures to media research in the same ways as their predecessors, "the blending of the new discipline and the old led to a new kind of thinking that has revolutionized the way some media researchers think about communication," (Lang, Potter and Bolls, 2009, p. 186). With the application of neuroscience to ethical decision-making issues, the field of media research stands at a similar crux.

## CHAPTER 2. THE NEUROLOGICAL SIDE OF SOCIAL SCIENCE

Brain patterns can be measured by electroencephalography through blood flow in the brain to different regions with several methods, including the changing of blood oxygen levels in response to stimulus as observed by fMRI (Racine, Bar-Llan and Iiles, 2006, pg. 124). "Alterations in magnetic signal behavior due to changes in the concentration of oxygenated blood are used to give indirect evidence of brain tissue activity," (Huber, 2009, p. 342). This brain tissue activity can be used as evidence to determine what areas of the brain are active during contemplation of an action or in response to an action. The primary questions are, what does this data mean? How can this data be applied to media ethics?

Much of this data points to the role of raw emotion in ethical decision making, a notion challenging moral philosophy's foundations of human reasoning in ethical decision making. Bargh & Chartrand found the bulk of human actions are conducted via instantaneous and often subconscious mental process (1999), and these decisions are not usually infused with moral reasoning. Heuristics, "mental short cuts and rules of thumb that we deploy, usually without realizing we are doing so," often determine the direction of a decision (Levy, 2010, p. xvii). The brain, then, develops heuristics to streamline mental load.

In studies on brain processes and moral reasoning, Green et al and Haidt found that many of the judgments made to maximize welfare involve reasoning, while others are "swamped by raw emotion ... We assume that we reason our way to moral judgments, but in fact our reasons are just rationalizations" (Levy, 2010, p. xx).

Examining the roles raw emotion and instantaneous response impulses play in decision-making offers a fresh and vital perspective to how people rationalize. Applying this type of evidence to philosophical theories of rationalization involves the recognition of the base chemical reactions fueling all human actions.

The steady expansion of studying thought processes, emotions, racial attitudes, personality traits, religious experiences and moral reasoning via functional magnetic resonance imaging (fMRI) as well as other brain activity measurement tools has led to a cross-section of psychology and neurology to form the field of neuroethics. The term neuroethics includes both the "ethics of neuroscience," or the ethical issues raised by neurotechnology; and the "neuroscience of ethics," or the understanding of moral reasoning with the help of neuroscience observations (Racine, Bar-Llan and Iiles, 2006, p. 125). It is the latter study that offers implications for the media technology world, both in measuring how audiences respond to media and in describing how media creators handle ethical situations.

In further defense of the use of technology to assist in theory and model building, Hanneman advocated for the use of computer-based technologies to build social science modeling and dissect the complicated dynamics involved in communication (Shoemaker, Tankard and Lasorsa, 2004, p. 141). This application of formal scientific modeling could refine how modeling processes (and theories) are created and applied to the field.

According to Hammerman's late 1980s discussion, representing social dynamics with computer-assisted modeling and properly interpreting that data was slated to change the



social science think-tank. Flash forward 20 years, and the application still invigorates academic understanding of human behavior.

The highly esteemed tradition of building theory by pulling from the thoughts of other fields is prevalent in media studies. Media ethics traditionally relies on philosophical pondering to build theory and design research projects. In the 19<sup>th</sup> century, science and philosophy diverged and developed their own methodologies and foundations. During the decade of the brain from 2000-2009, neurobiology research exploded in thought, practice and tools, inspiring an inside look into social science issues. Neuroethics is a response to the separation of philosophy and science, built on the bridges extended by advancing neurotechnology. “Drawing together science and philosophy promises to contribute to our understanding of human life, of our philosophical questions, to a degree unmatched by either alone,” (Levy, 2010, p.xiii).

Once applied, the tools of technology can assist media ethicists to further pursue the understanding of philosophical assumptions in light of tangible scientific evidence. Theory building in media studies is one way to assist the critical assimilation of descriptive data into explanations of ethical behavior and solid theory building.

### **CHAPTER 3. DECISION MAKING FROM THE INSIDE-OUT**

The analysis of social behavioral changes following brain injuries has been studied via neuroimaging and brain lesion analysis to fuel rapid advances in the sophisticated cognitive models of human moral abilities. Examining the neurological pathways that contribute to moral judgments, emotions, behaviors, social concepts and attitudes has led to an understanding of the brain regions that support ethical decision making through the involvement of the cortical and sub-cortical structures.

Functional neuroimaging and brain lesion analysis have created sophisticated cognitive models and tools to fuel the rapid advance of understandings of human morality - they rely on partially overlapping abilities, such as the capacity to make moral judgments and experience moral emotions, and to behave according to moral standards (Moll and Oliveira-Souza , 2007, p. 319).

When a person suffers a brain injury, doctors and researchers can usually pin down what area of the brain was affected by the injury. Then, if the person experiences a personality or behavioral change, researchers are able to understand more about how a particular region of the brain correlates with that personality trait or behavior.

Moll et. al sought to answer a few debates about moral cognition, a raging philosophical discussion in media ethics, with fMRI. They asked questions such as “how do cognition and emotion interact to produce moral judgments and decisions?” and “Do sophisticated moral capacities stem from ancient motivational systems?” and “What neural bases contribute to moral knowledge, moral sentiments and moral values?” The study focused on evidence possibly showing the neural representation of moral motivations and their relationships to moral knowledge (2007).

Perhaps this descriptive data offers fertile ground for a new angle on how moral development is fostered. If emotional response plays a large role in moral cognition, is the philosophy of careful ethical deliberation negated?

Greene, Nystrom, Engell, Darley and Cohen addressed this shift of moral psychological thought.

For decades, moral psychology was dominated by developmental theories that emphasized the role of reasoning and 'higher cognition' in the moral judgment of mature adults. A more recent trend emphasizes the role of intuitive and emotional processes in human decision making and sociality, a shift in perspective that has profoundly influenced recent work in moral psychology (2004, p. 389).

Personal moral judgments are driven primarily by social-emotional responses, while impersonal moral judgments are driven more by cognitive processes that contrast with emotion. In moral psychology's past, moral reasoning was seen as a slow and deliberate process involving abstraction. Personal moral judgments were theorized as driven by direct action and authorship from an agent. The authors claimed that fMRI research could revise these psychological claims by revealing the role of emotions and instantaneous neurological firings as guides in moral decision-making (2004, p. 398). This concept of emotional moral decision-making further challenges the notion that moral reasoning is generated primarily from higher-level thinking processes.

The 2007 Fehr and Camerer's study on peoples' motivations to care about other human beings offers the groundwork for analyzing how media practitioners neurologically act out the minimization of harm and public service in their professional encounters.

Decisions to prioritize honesty, transparency and respect may stem from dual processes of emotion and reason. Discovering the many influential facets of decision making requires both a knowledge of basic neurological firings and the workings of higher cognitive reasoning.

## CHAPTER 4. SOCIOLOGICAL DECISION MAKING

Previous research indicates the differing power levels of mediatory social pressures on individuals involved in ethical dilemmas. These pressures range from society-wide expectations to immediate peer groups. How do base genetic responses interact with these social pressures? Clearly, there is a need to explore more sides of the story.

Extensive research over the last century has categorized the moral frameworks developed over time as people evolve socially and professionally. According to cognitive-affective personality system theory, “stable units of personality consist of mental representations whose activation or inhibition leads to the behaviors displayed,” (Mischel, Shoda and Mendoza-Denton, 2002, p. 51). The authors call these mental representations cognitive-affective units (CAUs), the building blocks of each person's dreams, beliefs, expectations, strategies and standards. “Each individual is characterized by a relatively stable activation network among the units within the system, reflecting the culture and subculture as well as the individual’s social learning history, genetic endowment and biological history,” (Mischel, Shoda and Mendoza-Denton, 2002, p.53). These CAUs are shaped as a person progresses through the stages of moral development. Besides stages of development, extensive research points to the additional roles of genetics and biology in shaping moral decision making. Someone who has progressed to a professional status may have the facilities and training to make high-level moral decisions, but they may not always operate within their full potential to rationalize at all times, suggesting other factors at play in the decision-making scenario. Narvaez and

Lapsley further propose that all people (even moral exemplars) don't always operate at their highest level of functioning, and even those at lower levels can access higher-level functions at different times (2005, p.150).

In a study of situation-behavior as the center of personality, Mischel, Shoda and Mendoza-Denton examine how “if...then” patterns of behavior shed light on decision making. Yes, individual differences define personality, but “these 'if...then...' profiles constitute behavioral 'signatures' that provide potential windows into the individual's underlying dynamics,” (2002, p. 51). Humans construct social survival skills primarily by relying on past experiences. These CAUs can reflect stable, distinct organization in personality. As individuals encounter a range of situations with different psychological challenges, even if the “ifs” change, so do the “thens” of the scenario, and the relationship remains the same (2002, p. 53). This data suggests the flexibility yet stability of CAUs, patterns formed early on in sociological development and very influential even with the addition of higher-level processing techniques and the evolution of moral beliefs.

Schema theory is psychology's primary explanation of the existence of automatic processes and the realities people build in order to function in different social worlds. A schema is “a cognitive structure that represents organized knowledge about a given concept or type of stimulus,” primarily acquired from past life events (Fiske and Taylor, 1984, p. 139). Schemas help people “manage the deluge of new information,” and create “an efficient process with which to handle the information acquired through daily human interactions,” (Major and Coleman, 2008, p. 317). Schemas can build subconscious filters

for processing information automatically, and perhaps even determining the outcome of an ethical dilemma.

In cognitive psychology, the speed with which a person accesses CAUs and schemas can increase with memory practice, according to memory-based processing theories of automaticity. Broadly defined, automaticity is “the processing of information that can occur without conscious control,” (Shtyrov, 2010, p. 255). Other researchers narrow the focus down the speed of processing “due to a shift from an item-general algorithmic process to an item-specific memory-based process,” (Wilkins, 2011, p. 208). A growing body of neuroscience research focuses on the control of daily actions by automatic cognitive pathways. Bargh and Ferguson found that “Higher mental processes that have traditionally served as quintessential examples of choices and free will – such as goal pursuit, judgment, and interpersonal behavior – have been shown recently to occur in the absence of conscious choice or guidance,” (2000, p. 926). This automaticity is a key component to any expert or master of a trade.

A variety of experience and a large amount of time invested (i.e. someone who is an expert) contributes to the speed and accuracy of decision-making and the establishment of automatic behaviors. Narvaez and Lapsley explained how automatic processes make everyday life actions function with clockwork, and “very little human behavior stems from deliberative or conscious thought and far less receives moral deliberation ... much of human behavior is governed by cognitive systems that are characterized by varying degrees of automaticity,” (2005, p. 144).

Automaticity can still operate as an intentional factor in decision-making. Bargh defined three levels to automaticity – preconscious, post-conscious and goal-oriented. The preconscious level concerns social filters, such as schemas and stereotypes, prompted automatically by events. “Preconscious activation of chronically accessible (frequently activated) constructs exerts a pervasive interpretive influence over social information-processing and underwrites social judgments of all kinds,” (Narvaez and Lapsley, 2005, p. 144). Bargh found these scripts to trigger strong feelings of validity about these social judgments, even though they are preconscious reactions (Bargh, 1989). Narvaez and Lapsley suggested that automaticity builds a schema of morality for everyday life, an intersection where neuroethical considerations thrive.

Humans do progress in moral awareness. The very heart of moral autonomy in the cognitive development tradition stems from a belief in the large amount of cognitive resources required to entertain moral deliberations. “Moral freedom is grounded in the rational capacity to discern options, make decisions, and enact intentions,” (Narvaez and Lapsley, 2005, p. 140). Looking at habits and patterns from a neurobiology perspective is a key bridge to understanding ethical decision-making from both a philosophical and empirical perspective. An examination of how media research is embracing neuroscience methods will highlight the need for future studies addressing the roles of automaticity and schemas in human response to ethical dilemmas.



## **CHAPTER 5. LITERATURE REVIEW OF NEURSCIENCE AND MEDIA APPLICAITONS**

In an essay linking biological and cultural cues to news surveillance and content formation, Shoemaker addressed the human cognition processes behind news-seeking and media response. Biological codes prompt humans to survey their surrounding environments to assess safety and make decisions regarding survival. A biological perspective applied to philosophy examines the human response to danger in ethical scenarios. Neuroscience is one tool to explore how these initial decisions are filtered through cultural expectations. Cultural schemas build the framework for how people respond to news, and vivid images increase the chances of a person remembering news information (1996, p. 37). Many psychologists integrate biological signals with cultural schemas by classifying behavior as a product of “nature interacting with nurture” (Malamuth, Heavey & Lenz, 1993, pg. 67). Teasing out the interactions of biology, emotions and reasoning in behavior fuels the quest of joining media ethics with neuroscience. Why do we really do the things that we do?

Shoemaker expressed that each newborn human life is not a blank behavioral slate “to be written upon solely by culture, but rather is, through genetic heritage, programmed with the potential of behaving in certain ways. Through cultural socialization, these potentialities are either encouraged or discouraged, ” (1996, p. 42). This interaction of emotion and reasoning, biology and philosophy, builds a new foundation for examining ethical behaviors.

Weber and Johnson found that, in addition to deliberative processes, automatic processes have received considerable research attention. Psychological process models provide natural predictions about individual differences and lifespan changes and integrate across judgment and decision making (JDM) phenomena. JDM research leverages knowledge about psychological processes into causal explanations for important judgment and choice regularities, emphasizing the adaptive use of an abundance of processing alternatives (2009, p. 53).

Exploring these cognitive resources of both emotion and reason defines the field of neuroscience, especially in the application of observing responses to ethical situations. For the media ethics field, neuroethics offers a critically important look into the world of cognitive processing through a variety of research elements that can be paired with observed behavior.

Adolphs studied the visual system in primates and the aspects of social cognition closely related to emotion. He explored studies that have begun to show the roles played in social cognition by specific neural structures, genes and neurotransmitter systems. Several brain regions "all participate in linking perception of such stimuli to motivation, emotion, and cognition," (2001, p. 231). These studies opened up a world of questions concerning the overlap of emotion, communication and social cognition.

In a recent annual review of psychology, Adolphs explained how the neuroscience perspective accounts for social behavior and makes inferences about people's intentions, feelings, and thoughts.

Most schemes divide social information processing into those processes that are relatively automatic and driven by the stimuli, versus those that are more deliberative and controlled, and sensitive to context and strategy. These distinctions are reflected in the neural structures that underlie social cognition, where there is a recent wealth of data primarily from functional neuroimaging (2009, p. 693).

Results in neuroscience indicate that different levels of cognitive processing operate on many levels during stimulus, revealing the complexity of response in the human brain to social stimulus. Experimental designs regarding behavior must reflect these complexities. Impulses, previous experiences, cognitive development and reasoning are some of the layers of causality involved in decision-making.

Spitzer, Fischbacher, Herrnberger, Grön and Fehr explored the brain systems involved in forced norm compliance. They hypothesized that "humans have developed elaborate neural mechanisms for social cognition that produce appropriate responses to the threat of peer punishment," (2007, p. 185). To measure this effect, real monetary stakes were combined with the requirement for participants to curb immediate self-interest to obey a fairness norm. Functional magnetic resonance imaging was used to study how a threat of punishment enforced this norm compliance and also to examine how people act with the social pressures are removed (2007, p. 186). The study concluded that the presence of social context can activate specific brain areas (2007, p. 191), contributing to the behavior resulting from the ethical dilemmas at hand.

Clearly, peer-pressure and social survival skills shape the development of behavioral schemas. Experiments revealing such layers to decision-making highlight the need for more research in media ethics to help shape and refine the field. How do reporters determine whom to interview and what questions to ask? How does a newsroom

operate when jobs and business budget are on the line? How do media professionals build an exemplar business and personal lifestyle as they shape media content? Perhaps a new perspective of how biology, social pressures, personal growth and beliefs intertwine will suggest new directions for the field.

A possible construct to help explain the range of moral reaction in individuals is moral motivation, a concept explored primarily via reasoning and moral emotion. Moral motivation is a complex process used in psychology to explain why people make the decisions that they do. There is much room in the literature to empirically explore the factors behind ethical decision-making. A building body of literature explores identity as an additional source of moral motivation. Blasi's pioneer work on identity examines how moral identity and moral concerns are “integrated with one's motivational and emotional systems; are made the object of agentic processes, including responsibility, and are finally taken as a basis for the construction of one's self-concept and identity,” (1995, p. 233-234).

The evolution of the moral self is central to the idea of automaticity. Blasi expounded on levels of moral development by asserting the powerful key of identity. In his 1983 Self Model of moral functioning, the precursor to moral action is the realization and potential ownership of responsibility at hand, a decision made solely by the bearer (p. 198). The importance of the moral action, according to Blasi, is based on an individual's determined hierarchy of values and goals and a developed focus on maintaining equilibrium with those core self goals, a life schema that theoretically matures over time (Hardy and Carlo, 2005, p. 236). Blasi's model of moral identity paves the way for

discovering how schemas and the automatic processing deeply influences moral decision-making, with room to account for how social pressures bend those decisions. Our complex personalities and moral development seem to collide with adherence to core-personality demands as we navigate this world.

One well-studied way of measuring moral development is through Rest's Defining Issues Test, based on Kohlberg's Cognitive-Developmental theory. This pioneering work in media ethics explores the roles of schemas in moral thought and has been applied to multiple professions with consistent results. The DIT offers an examination of higher-level moral reasoning. In media applications, journalists (Coleman & Wilkins, 2004), advertising professionals (Cunningham, 2005) and Public Relations professionals (Coleman & Wilkins, 2009) have all exuded higher-level moral reasoning when administered the DIT.

Rest's DIT (1979) utilized Kohlberg's theories of moral development to create a test measuring individual moral development. The test harvests a P score measuring how much time people utilize universal principles in their reasoning. "A P score of 40 means the highest stage is used about 40% of the time, with lower stages being used 60%," (Coleman & Wilkins, 2009, p. 320). Rest re-cast Kohlberg's stages of development with schema theory by describing how people hold schemas for response to ethical problems that they apply to unfamiliar situations. The key here is the involvement of schema theory. Rest postulated that schemas activate situations stored in long-term memory as the cognitive resources for processing new scenarios. "If a person has acquired a schema for the highest stage of ethical reasoning, statements at that stage on the DIT will activate

those schemas; otherwise lower stage schemas are used,” (Coleman & Wilkins, 2009, p. 320). The DIT was constructed as a moral judgment instrument integrating four sets of types of decisions. One set looks at the developmental features of moral development. The second set of hypotheses details the collection of data that will minimize the integration of outside determinants into the data. The third set of data concerns an “algorithm for integrating the bits of information from various items so as to yield a general score of moral development,” (Rest, 1979, p. 15). The fourth portion of the study addresses validation of data collection and processes of the instrument.

Rest analyzed over one hundred separate studies that utilized the DIT. From the results, he described moral development as progressive and closely related to age and social development. The processes of moral reasoning were also determined to be cognitive and showed that the “measure of moral judgment preference and recognition is related to conceptual comprehension of moral judgment, to intelligence and other cognitive variables,” (Rest, 1979, p. xii). While people can make decisions utilizing one major stage of development, they can also shift to operate in the stages below and above them (Rest et. al., 1999).

To examine the cognitive pathways involved in ethical decision-making, a study utilizing an fMRI lab would add descriptive data of the brain areas involved in decision-making to pair with the consistent results of the DIT. Utilizing the current understandings of automaticity in decision-making, creating an experiment to examine factors of expertise and the areas of the brain involved in decision-making suggest basic information about how the brain chemically makes decisions. When paired with other

physiological data (such as heart rate or galvanic skin response), philosophy can draw from well-researched biological response to help academia interpret how and why people make decisions.

## CHAPTER 6. RESEARCH QUESTIONS AND STUDY DESIGN

Based on the consistent results available for the DIT, a study measuring brain response via an adaptation of the test for fMRI could potentially yield extensive empirical data regarding moral decision-making processes. The study will examine a large sample size of people with varying degrees of professional newspaper experience in order to cross-examine how the variable of professional experience may or may not affect decisions made during the DIT. The potential study of measuring the timing (or potential automaticity) of decision-making, as well as the areas of the brain involved in the processes, could offer a look at how people make decisions. Because this is such a new research area, there is not yet enough evidence to posit a strong hypotheses regarding the role of automaticity (and any potential biological evidence of schemas) in decision-making. Based on the very strong results of the DIT in measuring moral reasoning development, the following research questions consider the potential data reaped from a study utilizing both physiological and fMRI measures:

RQ1: Will newspaper professionals with many years of professional experience exhibit automaticity in their moral dilemma decision-making, referencing their life experiences and core moral personalities to quickly access their pre-determined schemas?

RQ2: Will professionals at the beginning of their newspaper careers exhibit a similar automaticity to seasoned professionals in their decision-making?

RQ3: What lower-level brain processes are involved in determining response during the DIT?

RQ4: What higher-level brain processes are involved in determining response during the DIT?



## **Study Design**

There are seemingly innumerable layers to ethical decision-making. Neuroscience methods offer a new perspective to examining how people make decisions and the role of emotional response in these scenarios. The first phase of this study is to gather willing responders. With a snowball sampling technique, newspaper professionals from Colorado papers ranging in size and associations (from college to business status) would be targeted as the potential respondents. The initial study would kick off with a phase of effect detection to help determine the length of decision-making matched with experience, education and background. Because this study is not looking to measure a moral development score, only the optional journalism scenario specific questions developed by Renita Coleman and colleagues would be used to search for response time and examine the brain areas involved in moral decision-making (Coleman & Wilkins, 2009, p. 320).

Utilizing basic behavioral study methods via the traditional use of the DIT, control group response would be established. A separate randomly chosen group from all willing candidates acquired during the snowball sample would complete the DIT while attached to a BioPAC MP150 Data Acquisition System to measure heart rate and galvanic skin response during the measurement. These physiological methods would build a case for the potential existence of the types and speeds of brain response involved in ethical-decision making. This portion of the study would build on the extensive literature concerning the correlation of specific neurological responses to particular emotions (L. Troup, personal communication, April 18 2012). This physiological data

would create a recommendation for an fMRI study with the purpose of examining the underpinnings of physiological response to ethical scenarios in the brain and an attempt to further explain relationships between brain response and personal actions.

The phase of an fMRI study would collect data from candidates willing to take another version of the DIT study formatted for auditory reception and simple answer responses via a button push while undergoing an fMRI brain scan. A researcher would read the DIT scenarios to each professional, and brain images measuring the areas involved in the decision making process would help map out what types of brain processing is occurring during ethical deliberation. At this point in the survey, the purpose of the DIT tool would be to simulate ethical dilemmas and measure brain response. Because participants in the fMRI scanner must make as little movement as possible to capture the images needed, written responses will not be an option. The technicians would also time the space between brain response and the spoken answer of the participant. What will be measured is how long it takes for each professional to respond to each question as well as the brain areas involved in the processing.

There are limitations to all types of technologies involved in brain study. Because of movement limitations in the fMRI, responses to complicated ethical issues must be transferred to simple yes or no scenarios, perhaps creating a sense of a binary world within a complicated reality. Also, a control measurement for emotional and physical arousal simply caused by the act of entering the environment of the fMRI scanner must be established for each participant before measuring response to proposed scenarios. If there is not enough of a response to measure a difference between these base line levels

and potential response levels, the study will not be worth attempting. Perhaps people with previous fMRI experience could be recruited for the experiment, however this narrows the field and does not afford the possibility of random selection and expansion to media professionals across the country.

To interpret results, the physical profiles, brain maps and physiological responses of each person would be compiled for comparison charts. This data would help answer research questions regarding the timing of question responses as well as the involvement of high and low level processes in these decisions. The extensive demographic information provided by the DIT would also help draw potential associations of professional experience length and depth with physiological and emotional response. Any brain structure differences between respondents will be noted, as well as what areas of the brain were involved in decision-making with the purpose of seeking out if different areas of the brain respond in different people to the same ethical dilemma scenarios.

## CHAPTER 7. CAUTIONS

Before racing full throttle into the merging of neuroscience and media theory, a few cautions are in order. Huber and Huber extensively studied the epistemological considerations of neuroimaging as a crucial prerequisite for neuroethics. While research offers a large commentary on imaging techniques and interpretations of neuroimaging, preconditions are not usually mentioned.

When interpreting neuroimaging data, researchers determine the results based on the current state of knowledge and hypotheses, leading to interdependence between hypotheses and data. Neuroimages are often regarded as self-evident and conclusive. In reality, other mediating social theories are needed to translate these visual representations of thought so that dysfunctional theories do not evolve in the field (Huber & Huber, 2009, p. 340). This further identifies a need for theory building to establish a cross-section of research between neuroscience and media studies.

The nearly singular focus of social science research utilizing fMRI may skew the information available from neurophilosophy. The correlation of brain areas with mental processes places primary attention on cortical processes and not measuring the sub-cortical processes that occur simultaneously during brain response.

The brain area that 'lights-up' may only be playing a role in a much larger process that includes cortical and sub-cortical processes, and in which timing is crucial ... fMRI is notoriously insensitive to the *timing* (emphasis that of the author) of brain processes (Ellis, 2010, p. 67).

Ellis further argues that a focus on input brain processes shifts brain processing paradigms into a primarily passive and piecemeal process, nearly disregarding the concept of consciousness and an organism's ability to act upon environments, not just receive from them. So this brain research must be treated with one eye open and should serve as a diving board for plumbing the depths of the brain, not as the end-all word on brain processing. As academia seeks how to train up an ethically competent society structure, creating experiments that explore the timing of thought compilations and actions is pivotal to studies of ethical dilemmas.

After examining a decade of media coverage about brain imaging, Racine, Bar-Ilan and Illes identified several articles addressing the ethics of brain imaging. New considerations of privacy and health are needed, they concluded. For example, brain scans delivered via technology such as fMRI have been used in court as evidence, creating a need to deliberate the ethics of mental property. "The suggestion that brain scans could reveal not just our future health, but the intricacies of our personalities and how we might behave in a given situation is unsettling enough to some scientists that they want legislation to stop brain-scan records from falling into the wrong hands" (2006, pgs. 133-134).

Is the media research world ready to handle such implications? Neuroscience could deeply alter media ethics literature or at the very least come alongside the literature to both contend and support current theory bases. Neuroscience is forcing the media field to reconsider everything by providing a way to watch the brain function from an inside perspective. The opportunities are endless for exploring connections between these fields.

## CHAPTER 8. CONCLUSIONS

Although there is ground-level research regarding the interpretation of brain patterns into the non-verbalized thoughts and imagination of people, at this time one of the best ways to determine why someone makes the decisions he or she does stems from post-experiment verbal explanations (L. Troup, personal communication, April 18 2012). A potential extension of the proposed study would incorporate a response sheet asking why people made the decisions they chose. However, the further in time a person is removed from their decision, the less accurate their interpretations of the response will be (L. Troup, personal communication, April 18 2012). Such a survey could lend information to other variables, such as respondent perception about when and how they make ethical decisions. This perception data could be paired with the brain response data to increase knowledge of why people make the decisions they do and how they perceive those decisions at a later point in time.

The purpose of this thesis is to illuminate threads of creative theory building opportunities by exploring how the field of neuroscience is posing challenges to the current understandings of ethical motivations in media. At this cross-section of philosophy and empirical work, limitless areas of studies exist. Some of the potential areas ripe for exploration: the role of emotions in reasoning; empirically searching for the existence of free will and autonomy; the brain processes behind moral development; and the potential shift of teaching methods regarding ethical development.

Due to several limiting factors, fMRI cannot be considered the holy grail of cognitive work; however, building experiments to lay groundwork with the available

neurobiology technology is essential to the advancement of the social sciences. These experiments will lay a foundation for the exploration of ethical theories with current and future technologies. Directly correlating biological responses with thoughts and actions is a simplistic biological lens. Kinsbourne expressed the tension neurophilosophy must explore, because “there is no hard and fast interface between conscious and unconscious brain, but a plentiful scatter of representations throughout the cortex, the contents of which may rise to the conscious level,” (2000, p. 546). No one is able to step inside the brain and map a response grid or rigid “if...then” patterns of response. The goal of neurophilosophy is to highlight the whys and hows of biological and soul interactions, exploring the dance between animal impulses and human reason. Perhaps human biology will help to answer complicated ethical questions through studies carefully designed to examine all the layers of influence involved in decision-making. The foremost need is to define the factors involved in ethical decision-making. Then, research into each of these factors, such as the emotions involved in making these big-impact ethical decisions, is necessary to complement the philosophy driving ethics.

Moral development issues have spanned several eras of psychological thought. Beginning with Piaget and expanding with Kohlberg and then Gilligan's care theory, curiosity regarding why humans make the decisions they do reaches nearly every stream of literature in academia. Ethical actions sprang from character, Aristotle believed. This character was exercised daily, not developed. This view held until Freud began to document the steady growth phases of the human psyche, what he called developmental processes. Development results from a human living in a dynamic external environment, according to Wilkins and Coleman. In this context, moral development is the "notion that

how people think about ethical issues will change over time, partly in response to the development of other portions of the individual psyche (e.g., the intellect) and partly in response to the social and cultural environment in which people find themselves" (2005, p. 3). A neurobiology study examining the potential changes in brain response over a lifetime of professional work would increase understanding of moral development and professional communication.

Discovering how people develop morally from a neuroscience perspective could potentially shift how ethics are taught. Unlocking brain mysteries would not create a one-size-fits-all policy for ethical development and required response. The goal for neurophilosophy should be to identify the biological variables integral to ethical decision-making. Studies could examine how these variables interact with social and cultural schemas. Perhaps as a professional society, journalists will learn to face ethical dilemmas head-on with specific knowledge regarding the hows and whys of decision-making. This is an essential component to the media world navigating changing technologies, cultural expectations and the future of information exchange.

Hot topics in media studies (and popular media outlets) often revolve around issues of free will and autonomy. Are journalists really able to achieve a state of professional engagement where they are able to report with rational, informed and non-obligated view-points? Is there ever a state of mind (and thus reporting and editing styles) where bias does not exist?



If neuroscience and studies on exemplar behavior get to weigh in on the issue, perhaps there exists a tug of war between careful rationalization and biological impulse. Perhaps we give ourselves too much credit and write off the decision-making skills mother nature encoded into our very flesh. Perhaps empirical evidence is needed to spark more philosophical wanderings regarding these decisions.

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