Mind, Brain and Society: Interdisciplinary Issues in Neurosociology. (SOCY 391 honors), Winter/spring 2007.

Instructor: David D. Franks, Professor Emeritus of Sociology
Department: Wilder School of Government and Public Affairs/Sociology

Location and Time. Wilder School (Scherer Hall, Rm 401) on the east corner of Franklin and Harrison Mondays 4:00 PM to 6:40
Streets.
Office hrs.: Mondays and Wednesdays 12:00. E-mail: daviddfranks@comcast.net

Goals for the Course:
1.) To explore the social nature of the human brain
2a.) To demonstrate the unity of liberal arts by revealing the overlaps between brain science and western epistemologies, the effects of culture and socialization on the structure of neuronal circuitry, and the implications of neuroscience findings for a contemporary social psychology.
2b.) To identify points where brain science can inform public policy, our own lives, and make our institutions more effective.

Required texts: (VCU Book Store)

Leslie Brothers, 1997. *Friday's Footprints: How Society Shapes the Human Mind.*
NY: Oxford University Press.

Rita Carter, 1998. *Mapping the Human Mind,* Berkeley: University of California Press.
Chapters and articles by the instructor and others on electronic library reserve.

Extra Credit: Malcolm Gladwell, 2005. *Blink*. New York: Little, Brown and Co.

This Syllabus … is an important part of this course. It presents major points I want to make in class discussion. You are not expected to understand everything in it at first glance. I try to use common sense to go beyond common sense in order to learn something genuinely new. Thus,

what I say may sometimes seem strange at first, but by the end of the weekly lecture and class discussion, the course content and the syllabus should be making sense. If not, the syllabus will allow you to identify where you need clarification and you can talk to me or e-mail me for clarity. So keep track of the syllabus and use it as a weekly review and a review for tests.

Assessment of learning. In conjunction with the instructor, each student will select a topic of interest around February. 23. The first 10 pages of a 20-page term paper on this subject is due February 26. The next draft of the paper, 15 pages long, is due April 2. The final 20-page paper is due April 30. Students will also make a brief presentation of their paper to the class during the last weeks of class. I will comment on each draft and suggest directions for the next one. Students are encouraged to pursue their subject in depth with independent library research. Where possible the paper should go beyond class assignments and discussion. Throughout these drafts, implications of neuroscience for other academic fields and public policies should receive attention.

There will be three 30 minute short answer and multiple choice tests. See dates below. Tests will count 50 % and papers will count 50%. Class performance will decide very close calls. Reading *Blink* will give you 5 points out of 100. I do not take attendance, but tests reflect class lectures and papers must reflect your knowledge of what went on in class. I would advise you to attend regularly.

Suggested areas of interest for papers:

How the brain shapes society *and* how society shapes the brain
Mind /body issues in current neuroscience
The implications of brain research for western theories of knowledge, self consciousness and the "new unconscious"
Mirror neurons and their implications for the social nature of humans
Autism and the inability to create other selves (Theory of Mind)
Issues in animal research and implications for the human brain: commonalities and differences
Neuroscience and the discovery of the human self
Plasticity, brain development and socialization
How children learn language
Brain research and the problem of human agency (free will)
The place of emotion in rational thought; lessons from Damasio's patients

Aspects of contemporary American socialization and brain development: an assessment
Social constructionism and the revisionist brain
Evolutionary views of brain-driven emotion and the social construction of emotion
Strange abnormalities of brain traumas
Brain and gender differences
I can get you started on reading material but you should do some on your own

Course Content and Assignments

Part I: Epistemological and Sociological background

If the brain is the organ by which we know, epistemology, which is the study of how we know the world, has to be compatible with empirically available knowledge of the brain.

Week 1. Jan 15 No class: Martin Luther King Day

Week 2. Jan 22. The Professor will be out of the country for the first class. Mr. John Goodwin will present a video on evolution and the emergence of tool use, mind and language, along with a list of questions to guide class discussion when I get back.

The assignments for this week are to prepare you to recognize that the brain is an awesome combination of things that we are taught do not mix--ideas, emotions, society and cells. Ideas are intangible and lack material substance; cells are material and substantive even if some are infinitely small. If you think that ideas or mind can not move cellular matter you will find that in very controlled situations it can, indeed! (See Edelman2004 and 2006 for elaborations and qualifications here.) It is unfortunate that more of us are not aware of this, sad because then we do not know what it is to be human and we are missing out on some of the most awesome discoveries of out times. First, you need to learn about what comprises human ideas, namely, the cognitive and symbolic, and then you will be in a position to learn about your brain and its mind.

Assignments: (all articles and drafts below are on electronic reserve at the library)

1. Leslie White, "The Use of Tools in Primates," from *The Science of Culture*.

Most humans live in an expansive symbolic world of ideas stretching from the past to into the future, other primates live in a narrow world of the immediate here and now given by the senses. "Symbolic" means linguistically-formed, ***extra- sensory*** *idea. See if all this makes sense after the readings. If not, ask me about it when I return.*

2. Ian Robinson, "The Social Construction of Reality," from *An Introduction to Sociology*

The term "reality" may imply concrete in everyday usage, but the term is actually a gigantic abstraction. The brain itself is revisionist and constructionist, reconstructing incoming raw data before it can make sense to us humans. We have no way of making sense out of the world "as it is", independent of how the brain reforms it. The human, cultural world of symbolically formed ideas just carries this reconstruction further.

3. David D. Franks, "Neurosociology," in George Ritzer's *Encyclopedia of Sociology* (2006) Blackwell Press.

This is a short overview of a field of study we introduced into sociology in 1999. The human brain formed largely through the requirements of social cooperation in hunting and gathering. The ability to cooperate made a small, slow animal into a mighty human force. Neurosociology explores its social nature. Social here does not imply "sweetness and light." It is as social to have enemies as it is to have lovers. A social act starts in one person and ends in another.

4. Not required but relevant: Rita Carter, *Mapping the Mind,* Chapter 5, "A world of one's Own" (perception) and Chapter 6, "Crossing the Chasm". (The chasm is between people)

Week 3. Jan. 29 Class time will include a talk and discussion about the social nature of the self. A video discussion among neuroscientists about the development of self will be shown.

The video includes an appearance by Leslie Brothers, MD, the author of Friday's Footprint on the social nature of the brain. (See pg. xii) As she puts it, a functioning brain can only exist through its connection with other brains. This connection is more than physical and is made possible by everyday human talk, i.e. language. Brains are not self-sufficient organs. They need an environment--both social and physical.

Important sociological concepts are Cooley's Looking Glass Self and George Herbert Mead's theory of self awareness and role taking. Note that role taking is a theory of very flexible <u>self</u>-control of behavior. In conditioning, some external process drives behavior. In role taking the person drives his or her own behavior.

Assignments:

1. David D. Franks, "Three components to perception" (Perception is how the world appears to us, not necessarily what actually is.). Major components are: sensation, cognition and emotion. (I argue that to the extent that emotion is "what we see the world in terms of", it is a part of perception.)

2. David D. Franks, "On the Fragility of the Hypothetical Human Self: Cooley and G.H. Mead."
"Each to each a looking glass reflects the other that doth pass." What we gain in our flexibility --namely our capacity to change according to the "dictates of reality-testing"-- makes us very sensitive to identity-concerns and self- doubt that we then tend to deny. We will see that the brain's ***amygdala*** *plays a large part in this. It is our social panic button and makes us a wee bit "antsy" as a species . . . more of that later. While it is inevitable that human groups will have different beliefs we are very threatened by these inevitable differences.*

Week 4. Feb. 5 Last week's reading on the three dimensions of perception provides a foundation for understanding the relationship between mind and brain.

The brain and cognition contribute their own sizable part to what we end up seeing. The objective world initiates sensation but we attend to this selectively and our brains construct the world's appearance. We do not just see the world "as it is", independent of us. Understanding this is critical.

*The gestalts I show in class are supposed to show how cognition can interpret the same facts (dots on paper) very differently. Neither gestalt is right or wrong, they are simply different -- but that will not stop the human species from fighting to the death over it. Power often "decides" which arbitrary interpretation will take hold in the public's mind. Such differences attack our "intersubjective" beliefs and threaten us deeply. The senses are "**transducers**" that change the character of stimuli to accommodate the brain. This drives a stake into the heart of common sense, individualistic correspondence epistemologies and "copy theories" of knowledge. Goodbye, absolute idealism and realism. (The world is not simple and/or clear-cut; we humans are in denial.)*

What does this do to our understanding of empirical "fact"? There is a theoretical element that is necessary for strictly scientific fact: facts do not speak for themselves, people speak. Facts are empirically verifiable statements about phenomenon in terms of a conceptual scheme. The breakdown of the categorical divide between fact and theory; implications for neuroscience's dependence on correlations alone -- let's think critically.

Assignments.

1. David D. Franks and Victor Gecas, "Autonomy and Conformity on Cooley's Self Theory: The Looking-Glass Self and Beyond".
How can we develop a solid sense of self and be less "antsy" if we are merely the reflection of other people's response? This article says, 'Good Question!' One that Cooley addressed but sociology forgot.

2. Anthony G. Greenwald. "The Totalitarian Ego; Fabrication and Revision of Personal History".
This is a classic from psychology. Much of the brain works in lightening fast ways to fool us about ourselves. We don't admit our faults even though everyone has them. I think the big question is, why do we need such defenses in the first place and what is a wise and more adequate definition of human strength than the common-sense one? A student once gave a report on this article and said it didn't really have anything that was new to him in it. I want you to know what he missed in the article and why I told him to read it again.

3. Chapters One and Two in Leslie Brothers, *Friday's Footprint*. "A Failure to Connect" and "Building an Experience of Mind" (pgs. 1-30).

Dr. Brothers shows how our brains help us in the symbolic constructions of persons--ourselves and others. The material from week one gives the foundation needed to understand the symbolic nature of what she is calling the person. We don't just respond to bodies, we respond to persons --bodies that have a mental life of hopes and fears and desires, motives and emotions. That is, bodies have "subjectivities"-- private mental existences. How does the brain help conceive these other existences? What abnormalities cause this ability to break down? The discussion of role-taking above should help with understanding chapter two on "Building the Theory of mind". This is about how children attribute mental sates to others. They all construct their very own theories of mind.

Part II: Selected Issues in Neuroscience

Week 5. Feb. 12.

Much of what I am interested in about neuroscience is the exact opposite of the determinism that people frequently (and I think mistakenly) consider so much a part of brain science or science in general. A lot of it is deterministic, but a lot of it isn't and I do not find any scientific field that has more to say about human will and "agency" than neuroscience. It is our minds rather than our bodies that give us the ability to chose and impose our wills on our own behavior-- even though the mind emerges initially from the very body it can control. There are some parts of these chapters that you may not understand; a lot of it you will. Ask me about what you don't.

Discussion of assignments below

Assignments.

1. David D. Franks. "Mirror Neurons".
This is about our deep, unconscious connectivity with others. What is the source of this connectivity? Why does what happens to others affect us biologically? Are we necessarily conscious of this? What do mirror neurons have to do with attributing subjectivities to others? What does this add to our theory of role taking?

2. David D. Franks. "The Sociobiology of Mind over Matter".
(The book from which this is taken blew me away. Some say that mind, being intangible, is not real. But if it can be shown that intangible mind can

cause the neuronal structures of the brain to change, it has to be considered real. An unreal cause is not much of a cause. Here is the story of how this was discovered. Roger Sperry as the father of split-brain research and the emergent theory of Mind. (See Carter, *Mapping the Mind* for OCD pictures pgs. 59-63). Also see Edelman above on refinements on this issue).

3. Leslie Brothers, *Friday's Footprint*, Chapter three," The Brain's Social Specialization". pgs 31-48.
This describes the discovery of how special cells decode, or make sense out of social features.
4. Rita Carter, *The Mapping of Mind)* Chapter one, "The Emerging Landscape". pgs. 10-33.

Part II: Selected Issues in Neuroscience

Week 6. Feb. 19

Some generalities About the Brain:
a) emotion as an organizer of brain processes (LeDoux)
b.)the brain as reactive;"use it or lose it".
c.) the brain as imperfect tinkerer, constrained by its past
d.) the brain as flexible, for example, phantom limbs
e.) the brain as revisionist, and insisting on sensibility even when there is none
f.) the brain as infinitely nosey- mostly about itself and the rest of the body
g.)emotion and the total weave of lived experience as organizer of brain processes.
h. Indivudaul variation is endemic in the human brain. Everyone is different--even twins.

Discussion of "scientific reductionism," emergence" and agency/ voluntarism and "free will". Benjamin Libet on how the body gears up to do what we want it to, before we know we want it to . . . and still, he's arguing for free will! The brain is gearing up to act 1/10 of a second before one's awareness of us having the intention. What are the implications here for self- monitoring and ethical responsibility for one's action?
...Catching up

Assignments

1. David D. Franks, 2006. "The Neuroscience of Emotions", Chapter Two in the Handbook of the Sociology of Emotions. Pgs. 28-53 up to "The Unconscious etc..

2. David D. Franks. 2007. Emergence and the Connection between Determinism and Free-will. Class Handout.

3. Rita Carter. Chapter Two: The Great Divide. pgs. 34-54.
We have two brains -- the left and the right. They support each other and communicate to each other. The right is more emotional and the left more cognitive--usually. The right side communicates by chemicals and electricity in ways that the left side understands. Usually the left side is logical and linguistic, though these differences are not neat and categorical. When the two brains are separated by surgical means, you can tell the right side to do something but the left side won't know about it. All of a sudden you will start doing what it was told to do, but you will not know why. You just do it. Later, when asked to explain what you did, you make up a reason that makes sense to you post hoc. You are the only one that believes your explanation. This is the work of the left side "interpreter", which insists on making things sensible to you even when they are not. You have no idea that your explanation was contrived. This is the foundation of the notion that the mind is not unitary (of one piece), but a compromise of many tensions from the impulses of many modules.

4. Michael S. Gazzaniga, "The Split Brain Revisited" pgs. 129-138

5. Rita Carter, Mapping the Mind. Chapters 3, "Beneath the Surface" and Chapter 4, "A Changeable Climate", pgs 79-105

Extra: "The Self as Responding-- and Responsible ---Artifact", Daniel Dennett In *The Annals of The New York Academy of Sciences,* 2003. pgs. 39-50.

Week 7 . Feb. 26

This week is a review and a 45 minute, short essay and multiple choice test. Video and class presentations on split brain research and how this confirmed the symbolic interaction notion of accounts. *See my section on this in Mutual Interests and Different Lenses: Current Neuroscience and Symbolic Interaction. (2003) Impulses, modules and constant tension balanced by the*

left brain executor. We are not our impulses (necessarily). Free will is often a matter of controlling them not denying them.

The great debate about the limbic system as the seat of human emotion. a,) LeDoux verses MacLean. b.) Why the limbic system, seen as the heart of primordial, primitive emotion, broke down. c.) The amygdala, the panic button and scanner of the social environment. d.) Some wise words from Panksepp, dealing with ambiguity. e.) The limbic glow and social control.

Assignments.

1. David D. Franks, The Neuroscience of Emotions, Chapter Two in the *Handbook of the Sociology of Emotions*. Pgs. 28-55.

2. Leslie Brothers. *Friday's Footprint*, Chapters 4 and 5. "The Editor Speaks" and "The Shift to a Social Perspective". Pgs. 49-79.

Week 8. March 5.

Review of test and catch-up.

Assignments.

1. Leslie Brothers, *Friday's Footprints*, Chapters 6 and 7, "Talking Faces" and "Worlds We Create," pgs. 80-110
2. David D. Franks, (2003)"Mutual Interests, Different Lenses: Current Neuroscience and Symbolic Interaction, in *Symbolic Interaction, Vol.26, #4 pqges 613-630.*

Spring Break: March 10-18
\
Week 9. March 19
Neuroscience and the New Unconscious. What do we make of the fact that probably 98% of what the brain does is unconscious? Remember we are talking about a system with 30 billion neurons and one million billion connections in a 3 lb space. So is 2% of that worth our attention? Sure! The unconscious as automatic processes (like digestion). This is not big news. The unconscious as assumptions and unknown beliefs that guide the conscious mind. This ***is*** *news. When we talk of the unconscious we usually*

mean the latter. How unconscious emotion affects cognitive belief. An evolutionary view of the advantage of self consciousness.
How the Old Unconscious Became Suspect.

a. On the Freudian misuse of the unconscious and why it gained a bad reputation.

b. "Mentalism" and cultural biases against unconscious motivations for behavior.

c. LeDoux and Damasio's argument for emotion as automatic and unconscious. Emotions as initial reactions to critical situations forged through evolutionary trial. Thus, other animals have emotions too. Yep, this is news to some! The autonomic indications or markers of emotion. The psychological product of such emotion as conscious feeling, i.e. what we usually, and mistakenly, call emotion. Feelings and emotions as separate brain processes, i.e. conscious and unconscious processes are separate in the brain.
Hard evidence from neuroscience and psychology on unconscious fears. Evidence from patients and the lab.

Assignments

1. David D. Franks, "The neuroscience of Emotion" in *The handbook of the Sociology of Emotions*, review pgs 51-55.
2. Ap Dijksterhuis, et.al, "The Power of the Subliminal: On Subliminal Persuasion and Other Potential Applications" from T*he New Unconscious*" 2005, Hassin et al. eds. Pgs. 77- 100
3. Susan M. Anderson et. al. "The Unconscious Relational Self" from the *New Unconscious* 2005. pgs. 421- 465 (I'll have to work on making this shorter).

Week 10 March 26.

Emotions and Cognition as related but sometimes separate. The categorical opposition between cognition and emotion. Another dualism breaks down. Some kinds of emotional preferences are necessary for rational thought. Biases inherent in theoretical definitions and how this influences the interpretation of data. Clore and Ortony and their cognitive definition of emotion vs Zajonc and his attempt to keep the integrity of emotion as separate from cognitions. Appraisal theory of emotion. LeDoux's argument for brain-driven reasons why emotion is more powerful than cognition.

Emotion and cognition as interacting brain processes.
a.) Examples of complex interactions between cortical and subcortical regions of the brain. How the emotional amygdala feeds back cortical inputs to its own self.
b.) Damasio's 1994 Somatic Marker Hypothesis. What happens when intelligent, successful people are traumatized in the ventro-medial part of the prefrontal lobe where cognitions and emotions are integrated? They lose their ability to evaluate people and situations as well as the capacity of rational decision making. Why "felt" emotional predispositions are critical to making decisions. Contemporary replications on normal populations. On emotional realization and fully felt knowledge. What do we consider knowledge anyway? Emotion sets the agenda for thought, determines what counts, and is what we see the world in terms of. No wonder it is a major organizer of the brain. Some emotional preference is necessary for rational decision making; otherwise we can not evaluate our possible actions.

Assignments.

1. Review David D. Franks. "The Neuroscience of Emotion", Chapter Two in *The Handbook of Emotion 2006*. Review pgs. 55-60.
2. Antonio Damasio " The Somatic Marker Hypothesis" in *Descartes' Error* .pgs. 173-201.
3. Stephen Lyng and David D. Franks, "Cognition and Linguistically-given Distance", Chapter Five in *Sociology and The Real World*, 2002. pgs. 79-102
4. Rita Carter . *Mapping the Mind, Chapter 8,* "Higher Ground". pgs. 180-207.

Week 11. April 2.

The Implicit (and therefore more powerful) role of group identity in shaping the self. Unconscious preferences for one's own group. (Banaji and Greenwald here) The role of the lightening-fast amygdala and thus, the lack self aware monitoring in making this study possible. We will be taking their preference test on the web.

Assignments.

1. Ronald de Sousa, In *The Rationality of Emotion*. "What are Emotions for?": 190- 198

2. Thierry Devos and Mahzarin Banaji. "Implicit Self and Identity" in *The Self from Soul to to brain. New York Academy of Sciences 2003. pgs. 177-202.* This is about how groups that we are a part of unconsciously shape our perceptions and preferences. These are often not the perceptions and preferences that we think we should have, or want to have. Most people prefer their own kind, regardless of what they think other wise. The test makes us work so fast we cannot monitor or change our responses. The author of Blink would love this.

Week 12 April 9.

Review and student presentations

On imitation. Imitation is more than copying what you see. It has to do with conceptualizing motives and behavioral purposes of others. ***Autism*** *and the lack of this. ability. Implications for the social nature of human kind.*

Assignments:

1. Work on your papers.
2. Rita Carter, *Mapping the Mind,* Chapter 5, "A world of one's Own" (perception) and Chapter 6 "Crossing the Chasm" (Between People) pgs. 106-157
3. **Not required**: Paul Bloom, chapter Three, Word learning and Theories of Mind". in *How Children learn the Meanings of Words. pgs 55-87.*

Week 13. April 16.
We will address the important issues involving a very highly revisionist system indeed -- memories. Whatever memory is, it is not a recording of the past. We will see how memories can be implanted by others that were not part of the original event at all. Regardless of what politicians may want you to believe, all memories are revisionist. Like scientific facts, every memory is an interpreted one, guided by the interests of the present. This section is very compatible with parts of the totalitarian ego.

Collective memories are even more revisionist. Historians have a tough but very important job if the human 'race" is to reach anything near its potential for wisdom. We seem to be really showing marked strides in terms of warfare, so the potential for growth is there?! (By now you should have grown accustomed to my surly attitude.)

Assignments.
1. Review discussions of memory in Rita Carter, Mapping the Mind. (See index).
2. Daniel Schacter, " The Seven Sins of Memory: Implications for the Self". pgs. 226-239
3. Pages from Eric R. Kandel, *In Search of Memory: The Emergence of The New Science of Mind.* To be arranged.
4. "Creating False Memories", Elizabeth Loftus, pgs 119-128 in The Scientific American Book of The Brain. Lyons Press, 1999.

Week 14. April 23

1. *David Franks. 2007: Class Essay: Science and the Irreducable Nature of "Qualia".*

Review for test three and student presentation of papers.

Week 15. May 1

1. David Franks. 2007: Essay for exam review (33pgs.) On the Social Nature of the Brain.

Student presentations. Farewell speech by instructor.

Week 16. May 8. Exam