

MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
Department of Brain and Cognitive Sciences

SPRING TERM, 2005

9.68  
**Affect:**

Neurobiological, Psychological and Sociocultural Aspects of "Feelings"

Image of painting removed due to copyright reasons.

Tchelitchew, Pavel, (1898-1957) *Hide and Seek* (1940-42)

# syllabus

Stephan L. Chorover and Jovan Ristic (Instructors-in-Charge)

Spring Term 2005

## 9.68

### Affect: Neurobiological, Psychological, and Sociocultural Aspects of "Feelings"

# Syllabus

Instructors-in-charge: Stephan L.Chorover & Jovan Ristic

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## II. Introduction

Why study "feelings?"

Look closely at the picture on the cover. Spend at least a sustained five minutes or so inspecting it carefully. What do you see? Does your experience of encountering it have an affective dimension? Does it change over time?

This image demonstrates (among other things) that the serious student of any subject requires patience and fortitude. In this class, learning is something much more than and different from a mere spectator sport. It takes time and effort to make sense of the world and its contents – including ourselves. What do you perceive in the cover image? Are any noteworthy relations involving humanity and nature discernible?

The following advertisement for this subject appears on page 451:the current ('04-'05) "Courses and Degree Programs Issue" of the MIT Bulletin:

### 9.68 Affect: Biological, Psychological, and Social Aspects of "Feelings"

Prereq.: 9.00 U (Spring)  
3-0-9 HASS

Affect is to cognition and behavior as feeling is to thinking and acting, or as values are to beliefs and practices. Subject considers these relations, both at the psychological level of organization and in terms of their neurobiological and sociocultural counterparts.

Stephan L. Chorover & Jovan Ristic

Based on your knowledge of the "MIT system" and applicable nomenclature, what do you make of the foregoing description?

And, so we begin.

"Who are we? Where do we come from? Where are we going?"

Image of painting removed due to copyright reasons.

Paul Gauguin (French; 1848-1903):  
D'ou Venons Nous? – Que Sommes-Nous? – Ou Allons Nous?, 1897

We need to do some initial stock-taking.

Who is here? What are our backgrounds? Where are we coming from?

What is our present situation?

Where are we heading or hoping to go? (What are our objectives and destinations?)

How do we envisage our personal/social (e.g. academic and professional) trajectories?

What are we hoping/expecting to get out of this class (gradewise and otherwise)?

What are we ready, willing and able to put into it?

### **III. Conduct and Administration of Subject**

It is our hope and expectation that we will together make 9.68/05 a scientifically credible, pedagogically sound and practically effective collaborative learning system.

Over the years, our efforts to enable and evaluate learning in this context have taught us how important it is for us to communicate as clearly and concisely as possible with each other and with you regarding key substantive and procedural issues. We encourage you to make a comparably "serious" effort to aim for constructiveness, conciseness, coherence and clarity in your exchanges with each other and with us regarding the subject matter before us.

#### **INSTRUCTORS**

We have been responsible for conducting this class for a long time, learning, little-by-little over the years, what it might be like if we ever succeed in "getting it right." We're committed to doing everything we ethically can to help make 9.68/05 the best possible learning experience for everyone involved. We hope you enjoy the experience.

We welcome your feedback. In addressing s emails to each other, within or between study groups, please feel free to cc. groupmates and classmates and us as appropriate; direct questions and comments to either (or, better yet, both) of us.

Also feel free to voice your opinions regarding substantive or procedural issues directly, to each other and to us either publicly (if appropriate), in study group, in class, or privately during office hours as necessary, by special appointment or at other times.

## ATTENDANCE AND PARTICIPATION

Beginnings are important. Here is some good advice from Alexander Bain and John Stuart Mill:

"Take care to launch yourself with a strong and decided initiative as possible."

"Seize the very first possible opportunity to act on every resolution you make, and on every emotional prompting you may experience in the direction of the habits you aspire to gain."

"Keep the faculty of effort alive in you by a little gratuitous exercise every day."

"Pedagogical soundness lies in teachers learning to connect matters to be newly learned with the sort of material with which the pupils minds are likely to be already spontaneously engaged."

It starts with "being there." Full and timely attendance and conscientious participation is expected of all at all regularly scheduled 9.68 activities..

9.68 is advertised as a 3-0-9 subject. However we meet together in this classroom for only two hours weekly. That affords you two additional collaborative contact hours per week to participation in study group meetings with peers. The remaining eight (not 9) additional hours is to be devoted to doing "homework."

We are here asking you to reconsider your "default assumptions" in order to make it possible for you to work together with each other and with us within stipulated time/effort limits toward the attainment of some commonly shared and explicitly stated subject-related objectives. It follows that we need to determine – insofar as possible – what we expect of ourselves and each other in terms of situational demand characteristics. Is this a situation in which everyone will be ready, willing, and able to make the stipulated commitment of time and effort? The importance of asking and answering this question will shortly become more clearly apparent as you find yourselves randomly assigned (why randomly?) to your own self-organizing, self-directing and self-evaluating study group.

It is our intention that the quality of your final (letter) grade be a fair and accurate reflection of the quality of your participation in the 9.68 learning process. Of central importance to our inquiry will be our adoption of a working hypothesis according to

which the "quality" in question is one that you cannot help but be in a good position to evaluate from your own particular personal and social point of view. Your participation in the evaluation process is a key to our method of procedure. Ultimately, the quality of your respective and collective performance in this class will be decisive in determining the quality of the learning experiences of everyone involved.

## STUDY GROUPS

We view the process of study group formation as a prototypical instance of the organization and development of myriad human social systems. From beginning to end, the system development process goes through a lifecycle whose trajectory comprises a characteristic sequence of more or less fixed and invariant stages or phases (e.g. birth, infancy, childhood, adolescence, maturity, old age, death or entering, forming, norming, storming, performing, exiting). By an hypothesis that is readily confirmed, each stage is marked by the need to resolve certain crises (e.g. Approach/Avoidance Conflict, Basic Trust/Basic Mistrust, Power and Control, Autonomy/Interdependence; competition/collaboration; Generativity or Stagnation).

You should take some time at the outset considering the suitability of the "social architecture" of your meeting place, getting comfortable in it, and becoming suitably acquainted with each other. Who are you? Where are you coming from? Where are you heading? Why are you taking this class? Try to go beyond your past or present MIT courses of study, MIT living groups, MIT classes, etc. What else do you have to say to each other? What is special or unusual about you?

9.68 is what you all have in common here, and all of you have just completed the benchmark questionnaire. The instructors claim to be trying to proceed in accordance with the demand characteristics of a somewhat unorthodox pedagogical approach (aka "collaborative learning"). What do you think about that? Wouldn't this be a good time to talk together with your groupmates and classmates in terms immediately relevant to expectations for better or worse, regarding what you are all getting yourselves in for?

What are your default assumptions – your hopes and fears (if any) -- regarding the likely developmental of the 9.68 collaborative learning system and your own involvement in it?

How might what there is to be learned through participation in this class fit into or interfere with your plans for personal and social (e.g. scientific, professional) development?

As you introduce yourselves, think about the terms in which you and your peers "normally" define yourselves in MIT undergraduate academic contexts such as this one. Try to identify some of the explicit and implicit loyalties (both "visible" and "invisible") in the study group and the class as a whole. Compare/contrast your "first impressions of this class". How are these commonplace efforts at "impression management" influencing your interactions with each other? What is your view of the "other study groups?" Why is the class being defined as "collaborative" and being thus organized

into "study groups?" Are these arrangements cooperative or competitive? Are there any "serious" students in this subgroup? What do we mean by "serious" in this context? At every meeting, share (insofar as you honestly can) your "feelings about the class thus far". Identify class and study group organizational issues that need to be discussed. Prepare to listen to each other.

Of course, no two human systems (no two people, families, groups, 9.68 classes, etc. etc.) become organized and develop in exactly the same way.

Not every classroom learning system is based on the collaborative model that informs and gives shape to itself in recurrently transgenerational fashion. Such a system gives to each participating student (and hence all the study groups, and the class as a whole) both the power and the responsibility of determining its own pedagogical quality. Each constituent subsystem seriously and sincerely commits itself to putting into the 9.68 learning process the necessary and sufficient kind and quantity of the time and effort

What quality and amount of time/effort are you ready, willing and able to put in?  
What final grade are you hoping and expecting to get out of it?

Other classes are based on adherence to other values. These are the values that we have inherited from past generations of 9.68 classes and which we will continue to use in guiding our work together this term. Don't look to us for "right answers." Pertinently, you should expect to encounter some of what social psychologists call "cognitive dissonance" as you become involved in the process of organizing your own efforts to make explicit your own images of "what is best?"

The process of formative evaluation that we must rely on requires all of us to define and monitor the amount of time, and the quality of the effort per week that we put in to making the collaborative learning system work as it is intended to.

The workload is not intended to be light weight. The syllabus presumes a readiness, willingness and ability for everyone to devote neither more nor less than the officially stipulated modicum of time and effort to the task of doing-to-completion the assigned work. In order to be successful in this class you must: a) do the assigned readings (and additional reading as assigned or appropriate), and b) regularly make quality time available alone and in study group meetings for serious and sustained reflection/meditation on the subject material and its theoretical and practical implications. Serious students will devote substantial time and effort to achieve high quality in their writing of the assigned "reaction papers."

In addition, you are expected to begin at once keeping your own 9.68/05 Journal. It is up to you to determine what to put into it, but it is also incumbent upon you to make clear to each other and to us the form that your Journal will take and the manner in which you propose to keep track of and evaluate the quality of your 9.68 experience, including (but not necessarily limiting yourself to) and account of the quality and amount of the time and the effort that you will actually be putting into 9.68.

The quality of class and study group discussions will be largely determined by the attitudes and behavior of each and all of the participants. All serious students will understand the importance of carrying their fair share of the task of realizing these desiderata. For our parts, we (the instructors) will constantly be goading you to improve the overall academic quality of your participation, and expect you to be encouraging yourselves and each other to be "serious students" of the subject before us.

Doing weekly assignments in a timely and conscientious fashion means doing them before the applicable study group and/or class meetings. Your study group should discuss and agree on a schedule that ensures timely completion of required tasks.

### THE MFA FIELD TRIP

According to the official MIT calendar there will be **no class meeting on Tuesday, February 22**. Following the observance of Presidents Day holiday (Monday, February 21), the MIT administration has defined Tuesday the 22 as a Monday!

This calendar change is actually a handy one for us because one of our key learning activities involves going together on a Field Trip to the Boston Museum of Fine Arts (MFA) and, as it happens, it is only on Wednesdays that the MFA has evening visiting hours. Accordingly, **the MFA Field Trip will take place on Wednesday evening, February 23, from 7-10 pm.**

**Departure will be promptly at 7:05 pm** with arrival at the MFA around 7:25.

We will remain at the museum until closing time (9:45 pm) and then reboard the bus to go back to MIT. Drop-off stops will be at Beacon Street/Massachusetts Avenue and in front of 77 Mass. Ave. The last stop will be back at our starting point – around 10:20 pm.

**The Field Trip is an essential 9.68 activity in which all students are expected to participate. PLEASE MARK YOUR CALENDARS ACCORDINGLY NOW.** In case of any irreconcilable conflicts, the problem must be worked out to the mutual satisfaction of your entire study group and the proposed resolution must be approved by one or both instructors-in-charge at or before the second class meeting, on February 8.

### REQUIRED TEXT

We will begin as 9.68 classes have been doing for more than two decades: with several weeks of reading (perhaps many of us re-reading) and discussing Robert M. Pirsig's *Zen and the Art of Motorcycle Maintenance* William Morrow and Co., 1974. (Notably, ZAAMM is a book whose subtitle identifies it as *An Inquiry into Values*).

You should acquire your own personal copy of this text to have and to hold (and to mark up as need be).

As befits a work that has become something of a "cult classic", ZAAMM is also the subject of many websites. (Not all of them equally trustworthy.) A useful list of links to relevant web resources has been prepared by a professor at Kansas State University and will be found at: [http://www.ksu.edu/english/baker/english287/Links-Pirsig\\_ZAMM.htm](http://www.ksu.edu/english/baker/english287/Links-Pirsig_ZAMM.htm)

Some interesting information on Pirsig and the Chatauqua movement will be found at: [http://www.univie.ac.at/Anglistik/easyrider/data/zen\\_and\\_the\\_art\\_of\\_motorcycle\\_ma.htm](http://www.univie.ac.at/Anglistik/easyrider/data/zen_and_the_art_of_motorcycle_ma.htm)

There is a useful "*Guidebook to Zen and the Art of Motorcycle Maintenance*" by Ronald L. DiSanto and Thomas J. Steele. Several excerpts well worth downloading from the web will be found on line at:

[http://www.amazon.com/gp/reader/0688060692/ref=sib\\_dp\\_pt/104-0892926-8394300#reader-page](http://www.amazon.com/gp/reader/0688060692/ref=sib_dp_pt/104-0892926-8394300#reader-page)

In particular, it is recommended that you download the Chronology, Map, and Index pages.

#### ADDITIONAL READINGS & VIEWINGS

You will need Adobe Acrobat Reader. For help with certificates, browsers, plug-ins and helper apps (such as Adobe Acrobat) contact the ComputingHelp Desk.

The videos that have to be viewed (and subsequently discussed in study groups) will be broadcast - **channel #WILL BE CONFIRMED** before the first program

They will be running continuously around the clock from Tuesday to Monday evening.

You can always check the schedule.

#### OTHER ASSIGNMENTS

##### Journal-keeping

Arguably, we don't really know what we think and feel until we hear (or read) what we have to say (or write). If you are about to do some learning in this class, and want to be in a position to formatively and summatively evaluate it, you'd better start keeping track of the experience. In this connection, you are advised to get yourself a hard-bound "composition book" in which to make regular entries. If some would prefer to use a portable computer and electronic workfile we will need to have some further discussion before accepting that as a substitute for a hardcopy notebook. Arguably, if you decide to keep part of your journal electronically, it makes a difference whether or not you also maintain a hard copy version.)

Diligent journal-keeping will help you to keep track of your own progress through the

9.68 learning experience. It will also facilitate your progress by enabling you to formulate pertinent comments and/or relevant questions for study group and/or classroom discussions. In this way, the quality of your interventions in the proceedings will be enhanced and likewise the quality of class and group discussions. Use your Journal to jot down ideas and questions that come to mind while you are reading (and at other times). This will also be useful in planning and writing assigned reaction papers. Keep track of your thoughts and feelings about the class, the instructors, your classmates and groupmates, the form and content of the subject matter, the relevance of the collaborative learning process to you.

It is important for all of us to take this most personal aspect of the workload absolutely seriously. We will not normally require you to submit your journal to us for examination. However, as a "serious" student you are expected to keep it handy, to use it consistently, and to have it with you at all 9.68 activities (class and study group meetings, fieldtrips, etc.) Get used to using it on a regular basis.

Our assurance about our intentions regarding the privacy of your journal entries reflects our desire to enable you to be as faithful, creative, truthful and forthright as possible (under the circumstances) in reflecting on the material. Avoid "ad hominem" Journal entries. This is a class. And your study group is supposed to be a **study** group. Your classmates and groupmates (not to mention the instructors) are at least as bright, highly motivated and hard-working as you are. We expect you to regard and respect them as you would have them regard and respect you. Focus on the task and the group process (see "Working Groups" handout). Our aim is to encourage you to feel safe enough to take some real-world personal risks without fearing unwonted self exposure.

The only foreseeable circumstances under which we would ask to see the contents of your journal would be in the unlikely event that you end up feeling or believing that our evaluation of the quality of your overall performance (as reflected in the final letter grade) seriously underrates the quality of your actual performance and this becomes a seriously contested issue between us.

### Performance Tracking/Recording

Many people find this a difficult discipline to adopt, but our experience tells us that it is very important to keep a TIMESHEET. To help you keep day-to-day, week-to-week, quantitative/qualitative track of the overall time and effort of your 9.68 performance in real time, a printed form is appended. You should make entries no less frequently than three times per week (even if you need to consciously force yourself to do so). Learn to use it conscientiously: make timely and truthful entries and please bring it with you to class and be prepared to make it available for occasional inspection.

### Reaction Papers

These will normally be 1-2 pages in length on topics to be assigned. You are responsible for proofreading and printing your own papers. Insofar as possible, all assignments and reaction papers for 9.68 should be written in the voice of the first person singular and

be the product of your own mind and hand (*mens et manus*). Please do not misunderstand. We are not trying to discourage you from consulting or discussing or quoting from or otherwise relying on the work of others. On the contrary, conscientious reliance on the work of others is both a necessary and a desirable hallmark of all serious scholarship. Insofar as the views of others are relevant in this connection, you should feel free to use their ideas and words as frequently and freely as necessary; just make it a point to acknowledge your sources in each case.

A Caveat: The advent of the internet and the ease of access to information of dubious credibility via the world wide web presents us with the problem (to put it crudely) of "distinguishing shit from shinola." Some entries (not to mention whole web pages) are here today and gone tomorrow. Generally speaking, it is advisable to be extremely cautious in evaluating such information. You will surely get into trouble in this regard if you don't carefully check and cross-check both the credibility of the source and the validity of the information.

Papers are to be carefully composed (conventionally footnoted where necessary) and legibly typed/printed and made available to the instructors in both electronic and hard copy form. Please, submit no handwritten papers unless absolutely necessary and unavoidable (and approved by us).

Unless otherwise arranged in advance, all students will personally submit their own assignments to the instructors by hand, at weekly class meetings. Please, no proxies. The use of group-mates as surrogates to hand in YOUR hardcopy is not permitted, except by prior arrangement. Ideally, you will write your reaction papers in time to be brought to (and circulated at) study group and class meetings, and used, as appropriate, to advance the ongoing discussions – before handing them in to the instructors. Occasionally, we will ask you to read and comment on each other's papers.

Except for the final term paper (see below) no letter or number grades will be assigned to the written work that you turn in. However, it is our intention to carefully and completely read all timely submissions and to provide prompt feedback, in writing, on the quality of form and/or content. All papers received on time will be read, commented upon, queried and critiqued as needed, before returning them to you (if possible), at or before the following class session. Tardy submissions will be received and recorded as such and may be returned unread. Without objection, we will occasionally redirect and redistribute all or part of submissions with the intention of facilitating the sharing of perspectives and hence advancing the learning process.

Each element of the curriculum is designed to be approached in a particular way – with everyone encountering each activity in the same sequential order. Insofar as possible, please do the indicated assignments/activities in the order listed.

#### WHAT IS COLLABORATIVE LEARNING?

"Collaborative learning promotes active learning among students. It can take place in a semi-structured or unstructured environment. When implemented properly, it shifts

the authority from the teacher to the students. teachers allow the students to master material on their own through active discovery. In the classroom the teacher steps down from center stage and helps to facilitate learning.

Collaborative learning is shared learning process that gives students an opportunity to engage in discussion, take responsibility for their learning which eventually leads them to become critical thinkers. Collaborative learning is group based. Interaction in small groups allows students to talk and think through the material with peers, and to learn how to solve problems, as well as how to interact with other in searching for solutions. Collaborative learning promotes higher cognitive processes – active learning, critical thinking, conceptual understanding, long-term retention of material, and high levels of student satisfaction.” (abridged from Toward a New Departure in MIT Undergraduate Education: A 9.06/96 Collaborative Project – End-of Term Report)

Quality collaborative reaction papers (and term papers/proposals explained below) are welcome; HOWEVER, don't be tempted to engage in collaborations with expectations conducive to mere dilution (rather than meaningful concentration) of effort all-around. Quite the reverse should be the case.

Several heads are only better than one if there are no freeloaders and all are "operating on all cylinders". To be worthwhile, the process of producing collaborative projects or papers should involve more than merely stitching together a series of separate sentences written by different people. Meaningful collaboration means working together to achieve a high degree of both effectiveness and interdependence. Accordingly, expect it to require significant co-operation between and among authors for papers to exhibit a high level of internal consistency, coherence, and continuity.

#### PLANNING/PRODUCING END-OF-TERM PROJECT OR PAPER

This can be on almost any topic, and take almost any tangible form (which must include documentation) provided only that its **form and contents be clearly and coherently relevant to the subject matter learned and discussed in 9.68**. Generally speaking, the choice of topic should be based on your own personal/social (e.g. academic/professional) experience and interests. It is up to you to show in your proposal how your term-paper topic relates to an aspect or aspects of the material dealt with in this class during the term.

Term papers are not to exceed 15 double-spaced pages in length, including notes and references.

Term project/paper proposals are to be submitted for prior approval. Proposals (not to exceed 2 pages in length) are to be turned in via email on or before Tuesday, April 19 at 6pm (no class on that day). Proposals will be reviewed and returned to you with comments regarding acceptability on or before Friday, April 23. With luck, you will thus have almost three weeks to work on your term paper.

The deadline for submission of fully completed term projects/papers is the beginning of the final regularly-scheduled class (i.e. 7 pm – Class Meeting 13, May 11). Extensions will be granted only by prior arrangement and only under extreme circumstances.

#### EXPECTATIONS AND EVALUATIONS: INTERIM AND FINAL GRADES

Final grades will be based on the instructors' evaluation of the quality of individual term-long performance in the subject, including our assessment of the timeliness, conscientiousness and skill with which assignments have been undertaken and completed, our perception of the overall quality of your (1) written work, (2) study group involvement, (3) classroom participation (in general) and (4) final term paper/project (in particular).

In evaluating your 9.68 performance, we will generally rely on a five point scale (excellent, very good, good, fair, poor or failing). It's the Amount and Quality of your own personal participation that matters.

## IV. Detailed Syllabus

### Class Meeting **1**

February 1

Theme: **Introduction and Overview: Why Study "Feelings?"  
Conduct and Administration of Subject**

#### HANDOUTS:

- 1 Syllabus
- 2 Preliminary Information Form and Benchmark Questionnaire
- 3 Timesheet
- 4 Study Group roster form

#### INTRODUCTION:

Distribution of preliminary information and benchmark questionnaires.

Completion and redistribution of preliminary information and (pseudonymous) benchmark questionnaires.

We introduce ourselves and state our business.

Who/what/where/when are we?

And what is going on here?

"Everything that is said is said by someone." (Humberto "Chicho" Maturana).

What does that **mean** in this context?

Why draw attention to the issue of "perspective" or "point of view at the outset?"

We call a SHORT BREAK to enable people not yet finding themselves ready, willing and able to commit to the process of participating in 9.68 as "serious students," to leave. This will hopefully leave us with at least a few people remaining. To you, the instructors pledge a good faith effort to do what we can to make 9.68/04 into the best possible learning experience for everyone concerned.

"Everything that is said is said by someone." (Humberto "Chicho" Maturana).

What does that mean in this context?

Why draw attention to the issue of "perspective" or "point of view at the outset?"

#### STUDY GROUP FORMATION:

Toward that end, we next randomly divide up the class and organize ourselves into a number of study groups.

Continuing our line of inquiry, we define the groups that we have formed (and their individual members) as 9.68 subsystems. This leads into a discussion of the "systems approach" to be taken.

We introduce some evolutionary, experiential, neuropsychological, psychodynamic, literary, poetic, dramaturgical and sociological aspects of affect in human systems; identify some historically significant developments associated with the names (among others) of:

Hippocrates, Socrates, Plato, Aristotle and Galen; Rene Descartes and Blaise Pascal, Gall Herbert Spencer, Charles Darwin, William James, Claude Bernard, Walter B. Cannon, Sigmund Freud, John .F. Fulton & C.B. Jacobsen, Paul MacLean, James W. Papez, Heinrich Klüver, Karl Lashley, Daniel S. Lehman, Donald O. Hebb, Karl Pribram, Hans-Lukas Teuber, James Olds and Peter Milner, Mortimer Mishkin, H.Enger Rosvold, Larry Weiskrantz, Allan F. Mirsky, Arthur Kling William H. Sweet, Vernon H. Mark and Frank R. Ervin.

#### FOCUS ON THE PRESENT SITUATION:

The whole context of our remembered experience of the meaning of this situation is in process of conditioning and constraining our present thoughts and feelings and conduct.

By the same token, what will happen in this context – for example, whether or not and if so to what extent you will learn anything here that turns out to be useful in leading your life -- is bound to depend on your background, experiences and attitudes and will definitely be conditioned and constrained (for better/ worse) by the habits of thinking feeling and acting that you bring to the learning process.

The existence of an introspectively observable succession of mental events (WJ's "stream of consciousness"; our "thoughts" and "feelings"– along with the inconcussible fact of our overtly observable behavior (actions; what we actually and visibly may be

said to do) – is the primal fact for anyone who aspires to comprehend (let alone to predict and or to control) the organization and development of human systems at the psychological level of organization.

#### SOME PROBLEMS OF LANGUAGE AND COMMUNICATION:

Some relations involving "meaning" and "power" (and why they "matter")  
How is human psychology (mental life and behavior) organized?  
Of what are our mental lives comprised?

What is introspection?

How do the inwardly experienced aspects of mental life relate to outwardly expressed aspects of human behavior?

What would we have if we had an understanding of these things?

Our inquiries will lead us – perhaps not unsurprisingly – to the idea that systematic (and recursively cyclical) relationships among the cognitive, affective and expressive/receptive aspects of our mental lives and behavior; that our ways of "thinking, feeling and doing" are systematically interrelated. But how? This is the question to which we next turn.

## Class Meeting **2**

February 8

Theme: **ZAAMM Part I**  
**Human Systems:**  
**Levels and Aspects of Organization and Development**  
**Affective Aspects in Human Systems from Cells to Societies**

#### PREPARATION:

##### **reading assignments:**

2-1 this syllabus and accompanying handouts  
ALSO ON MIT SERVER

##### **writing assignment:**

#1: What is Good, (Phaedrus)? And What is Not Good? Do We Need Anyone to Tell Us These Things?  
(1-2 page "reaction paper")

##### **reading assignments:**

2-2 Adler, M. J., How to Read a Difficult Book  
ON MIT SERVER

2-3 *Zen and the Art of Motorcycle Maintenance...* (hereafter ZAAMM)  
Part I: Chapters 1-7 (pages 1-93)

CLASS NOTES:

What would we have if we had an understanding of affect?

What is "an Understanding"?

What is "affect"?

What do we (I, you) have when we have "an understanding" of something? Some might answer in terms of having the power to predict and/or otherwise command and control it. For our part, we would rather view it in a "Systems" Perspective.

What is that?

Nominally "begins" with the perception of something as a composite unity (figure/ground) in a given context. This leads to several questions regarding this ability or tendency to make figure/ground distinctions and to seek conceptual and/or material coherence.

What is its constitutive composition (what is it made of?)

What is its structure? its mode of organization? (of which principal parts is it composed? how are its constituent elements related to each other?)

How does the human system in question behave in relation to itself and its surroundings – including others of its own kind? (What does it do? How does it function?) Where does it come from? How did it get to be what it is? When and where did it originate?

How does it behave in relation to itself and its surroundings – including others perceived to be of its own kind (other kinds?)? What does it do? How does it function?

What is the scope and pattern of external/internal synchronic/diachronic relations

Take note of "healthy" systems rule: semipermeability of living systems – relative openness/closedness of boundaries; relations to (exchanges of matter/energy and information with – persons, organizations, things other than – external to – itself neurobiological, psychological, sociocultural; mental and behavioral).

NOTES ABOUT ASSIGNMENTS:

Insofar as possible, please follow the indicated order of activities. Also, everyone is to do solo homework – reading and writing assignments *before* meeting together as a study group.

## 2-1 this syllabus and accompanying handouts

Read carefully. Underline important passages. Do you feel a need for clarification on any of the issues mentioned? Do you have any questions? Comments? Take note of them in the margins. Write about them in your Journal. Discuss them with your groupmates – via email or at your first study group meeting. Bring list of significant resolved and unresolved issues to class next time.

### writing assignment #1

Before much more time passes and you begin to get too "contaminated" by the opinions of others, let's try to get a preliminary fix on your present view of those ancient and still abiding questions: "What is good? What is better? What is best? What is not good? What is quality? Who is to say? How do we know? What is an emotion? How do we know? Sez who?"

## 2-2 Adler, How to Read a Difficult Book

You are about to begin reading a difficult book (*Zen and the Art of Motorcycle Maintenance*).

## 2-3 ZAAMM Part I: Chapters 1-7

And now we embark (in a way that is "virtual" in a textually mediated mental movie sense) with Robert Pirsig's nameless narrator on what is – on one level – a literal account of a cross-country motorcycle trip. But this is no ordinary travelogue. Before long we also meet up with the narrator's (author's?) mysterious and ghostlike former self and alter ego, and are thus led through an "Inquiry into Values"

And now we embark (in a way that is "virtual" in a textually mediated mental movie sense) with Robert Pirsig's nameless narrator, his son Chris, and a couple of friends, the Sutherlands on what is – on one level – a literal account of a cross-country motorcycle trip. But this is no ordinary travelogue. There be ghosts! And, before long we also meet up with the narrator's (the author's autobiographer's?) mysterious and ghostlike former self *and episodically alter ego*, "Phaedrus" while the author deftly leads us through what he will teach us to see as the "high country of the mind." Using the machine as a metaphor for our "selves" we encounter many and varied (some very much down to earth and concrete, and some extremely philosophically esoteric and altogether intellectually abstract) things and events on this part of our own "inquiry into values"

Try to get as much of the reading as possible done before your first study group meeting; without fail be sure to complete the assignment before next class meeting. We expect all group members to come to class prepared to discuss the assigned portion of the text. (NOTE: We will be reading Parts I, II, III, and IV of ZAAMM in four successive weekly installments between now and March 8.).

## SOME QUESTIONS TO THINK ABOUT AS YOU READ:

- a.) In Pirsig's Author's Note he says "much has been changed for rhetorical purposes?" Is he saying the book is fact or fiction? How does his use of a first person narrator make this a complex question? What is your initial view of the relationship between author and narrator?
- b.) At the beginning of their trip, the narrator reports having had a conversation with John in which the former had referred to education as "mass hypnosis." John objects. By way of a rejoinder the author has his narrator reply that Newton's law of gravity is "nothing more than a human invention – like laws of logic, mathematics, and ghosts. What do you think of this argument?
- c.) As you proceed with your reading, think about this episode from time to time. Why does this dialogue take place at the outset of the book, as opposed to somewhere in the middle or the end of the trip? How is Pirsig preparing the reader for the book's future scenes?
- d.) In setting out the topic for his Chautauqua, Pirsig compares the current (circa 1970s) consciousness of his (our) culture to a stream that has gotten out of control and is overflowing its channels, causing destruction and havoc ... "There are eras of human history (he writes) in which the channels of thought were too deeply cut and no change was possible, and nothing new ever happened, and 'best' was a matter of dogma, but that is not the situation now. Now the stream of our common consciousness seems to be obliterating its own banks, losing its central direction and purpose . . . Some channel deepening seems to be called for" (p. 8). Can you relate to and explain this metaphor? What sorts of change is he referring to? What does he mean by "channel deepening?" Is the image compelling? Do you find merit (value?) in his analysis? (cf. William James: "The stream of consciousness.")
- e.) As a writer of technical manuals, the narrator decries the current situation in which the idea of who a person *is* has become separated from what s/he *does*. He claims that in this separation are clues to "what the hell has gone wrong with the twentieth century." How does this concept strike you? How does it relate to the classical/romantic dichotomy?
- f.) Despite his disclaimers, the title and theme of Pirsig's book clearly reflect the author's interest in Zen Buddhism – a tradition that is notable, among other things, for its celebration of the oneness of the universe and all of life. Here we aim to bring the matter still closer to home: How do you feel about the quality of the relationship between who you are and what you do? Is the person that you are at one with the academic/professional career path that you are following? Explain why or why not. If not, what prevents you from feeling totally identified with what you are training to do for a living? Would you feel more or less satisfied, or be a better/worse student/worker, if you did feel that connection more completely?

g.) The narrator repeatedly divides human understanding into two categories: romantic and classical. Discuss the distinction between the two. How do you relate to this dichotomy? Give examples of any tendencies that make you think of yourself as either a classical or romantic person. Is there any sensible alternative to thinking about people in such *either/or* terms? (Are you familiar with "Aronson's First Law" or what social psychologists call the "ultimate attribution error"?)

h.) Who (what?) is *Phaedrus*? How does Pirsig have his narrator introduce and develop the character of the latter's former self (or *alter ego*)? Can we rely on the narrator (author?) to offer a valid and accurate picture of *Phaedrus*' "insanity"? Why or why not?

i.) What do you think of the narrator's description of his past and present relationship with his son, Chris? Does Chris seem to you to be a particularly troubled boy? Or is he just a typical kid impatient with his father's behavior? Who do you think was a better father to Chris – *Phaedrus* or the narrator?

NOTE: The length of the foregoing list of questions is partly intended to suggest that you "jigsaw" such big assignments, with each person being responsible for one (or two) of the items.

### Class Meeting 3

February 15

Theme: **ZAAMM Part II**

**Learning Means Changing – Perceiving and Responding  
Appropriately**

**Memory: Preserving and Applying the Lessons of Experience  
Relations Involving both Stability and Change**

**What Is the Aim? To maintain prevailing conditions?  
To Promote Change?**

**Evaluating Behavior. What Is Good? What Is Not Good?  
Moral Reasoning and Ethical Decision-making**

PREPARATION:

**reading assignments:**

3-1 ZAAMM Part II: Chapters 8-15 (pages 97-184)

## NOTES ABOUT ASSIGNMENTS:

**3-1 ZAAMM Part II: Chapters 8-15**

Keep going. Prepare for some rough passages through here! Hard problems will be raised; tough questions will be asked; go slow, but keep going!

- a. What is a motorcycle?
- b. What is a system?
- c. What is the scientific method?
- d. At the start of this section of the book the Chautauqua picks up on some earlier remarks about "the machine" and proceeds through a component systems analysis (what is that?) and a discussion of the scientific method. This leads back into the history of the development of scientific ideas. The section ends with a passage in which Pirsig has his narrator recall an episode from Phaedrus' past in which we find his former persona (and alter ego, the youthful university instructor he would have us believe he once was) pondering a puzzling remark that has just been made to him by a senior academic colleague. This leads him to put the question to his students and leads us directly to our own confrontation with the book's ultimate question: "What the hell is Quality? What *is* it?"

The answer that Pirsig puts in the words of his narrator and alter ego – is the very same one that Plato caused to come out of the mouth of the fabled Socrates – namely that truth and beauty are human social constructs; and that we recognize "quality" through an cognitively unknowable, inscrutable, unconscious and indescribable affect-laden mental/behavioral process of evaluation. The compellingness of the validity (psychological reality) of this process is comparable to that of Descartes' "cogito ergo sum."

In sum, the psychological reality of the fact of our affective experience is unquestionable. Accordingly, the importance of (e.g. "values") deserves to be acknowledged and inquired into -- notwithstanding its ultimately incomprehensible and indescribable character. Of course, it is precisely within the limits imposed by this affective process that we are able to rely upon ourselves in endeavoring to comprehend the world and its contents including ourselves. And it is thus the process of comprehension itself that we are aiming to explore in this class in a scientifically credible, pedagogically sound and educationally effective way.

Keep these concepts and pertinent questions that they raise (and your answers to them) "in mind" as you prepare to participate in and reflect upon the upcoming MFA Field Trip.

## Class Meeting **4**

Wednesday, February 23, 7-10 pm

NOTE DAY/DATE CHANGE

Theme: **ZAAMM Part III**

**"Things of Beauty and Beholder's Eyes":  
A Field Trip in Search of Quality at the MFA**

### PREPARATION:

#### reading assignments:

- 4-1 ZAAMM Part III: Chapters 16-26 (pages 187-326)
- 4-2 MFA Fieldtrip Guide and Workbook  
**including** the MFA Reaction Form (see writing assignment #3)  
**ON MIT SERVER (download and print out)**

#### writing assignment:

- #2: What is quality? ...  
(1-2 page "reaction paper")

Your paper **will be collected on the bus to the MFA**. We will read and comment on it during your time at the MFA and return it to you on the bus at the end of the Field Trip.

- #3 MFA Reaction Form

**Please do not fail to fill-out the form before you leave the MFA.** We will collect it on the bus at the end of the trip.

### NOTES ABOUT ASSIGNMENTS:

#### 4-1 ZAAMM Part III: Chapters 16-26

Why do you think the narrator refused to complete the trek up the mountain despite Chris's disappointment that they wouldn't be reaching the top? Is the threat of a rockslide real? Is he afraid to "meet" Phaedrus? Is he making a statement about ego relative to Zen philosophy? What is happening in the Chautauqua at this point in the book? Looking back on the parts you've already read, can you identify any other such correspondences between the contents of the Chautauqua, the description of the environment, and the characters' interactions?

#### 4-2 MFA Fieldtrip Guide and Workbook

One of the main aims of the fieldtrip is to provide everyone in the class with a chance to share the experience of hands-on involvement in a reasonably well-bounded, time-limited, value-laden exercise. Toward this end, we embark on an expedition to an

institution that serves, in effect, as a repository of objects ostensibly exemplifying "quality in the fine arts."

There, we will follow a tightly timed, roughly chronologically organized itinerary. In a relatively very short time, a significant fraction of the museum's many galleries will be traversed as you endeavor to locate, to examine (however many) objects, and to record and explain the cognitive and affective reactions (if any) engendered in you by the resulting encounter.

NOTE: the objects selected for this purpose comprise a minuscule subset of the several millions of objects of various kinds in the MFA collection. Please make every effort to carefully read the MFA Fieldtrip Guide and Workbook before the Field Trip. Be prepared to adhere, as closely as possible to the methods of procedure described in the Guide. To facilitate our follow-up, it would be most helpful for **students who have access to a digital camera to bring it with them to the museum**. For further details see the MFA Guide.

## Class Meeting 5

March 1

Theme: **ZAAMM Part IV**  
**MFA Field Trip Follow-up: Evaluating the Experience**  
**What (if anything "of Value") Did You "Find" or "Learn"?**

PREPARATION:

**reading assignments:**

5-1 ZAAMM Part IV: Chapters 27-32 (pages 329-412)

**writing assignment:**

#4 Searching for Quality at the MFA  
(1-2 page "reaction paper")

Bring a hard copy of your paper with you to class, and be prepared to read or refer to its contents as appropriate during the discussion.

CLASS NOTES:

And what did we find there? What is quality in the realm of the fine arts? The first part of our search at the MFA proceeded in a roughly chronological way through a number of genres and styles and cross-cultural contexts. In the second part, you were asked to return to something previously encountered that you found moving or which evoked in you something at least vaguely approaching an "emotional response" (This might be among the initially assigned objects or something else noted briefly in passing.

Sharing the contents of your reaction paper with your groupmates in advance of the class discussion will enable you to participate constructively in it. The aim of the discussion is to highlight BOTH the diversity of our affective responses to various artworks (encounters with other objects, individuals, situations, etc.) and the unity (consistency) of response to certain kinds of images.

The discussion during our class meeting will try to attain some clarity on your feelings about the fieldtrip and the objects encountered. A class presentation will be prepared with images including some or all of the objects singled out by fieldtrip participants in their reaction forms.

What will we be able to learn about "quality" or "feelings" or "aesthetic values" by discussing the fieldtrip experience? How was the fieldtrip experience as a whole? What was your attitude in approaching it? How did you feel when you boarded the bus? What was your impression of the mood in which others were approaching the fieldtrip? What were your "first impressions" as you entered and began to explore the museum?

What is your position on the question of where beauty "resides"? Is it localizable? If so, where? In "things of beauty?" In "beholders' eyes"? Elsewhere (in between? in relations between objects and observers?) Does your experience admit of any alternative formulation?

What (if anything) has the fieldtrip experience taught you about human cross-cultural particulars and universals (e.g. about specifically and generically human cognitive, affective and expressive aspects of art)? about our own currently prevailing (aka western; North American; Bostonian; Eurocentric) worldviews, valuesystems and lifestyles, and the aesthetic values of people belonging to entirely different ages, communities or cultures?

NOTES ABOUT ASSIGNMENTS:

#### 5-1 ZAAMM Part IV: Chapters 27-32

*Zen and the Art of Motorcycle Maintenance* is at once the story of a motorcycle journey across the country; a meditation on values and the concept of Quality; and an allegorical tale of a man coming to terms with his past. No doubt it can be described in many other ways as well. What is your definition of it?

#### Some Further Questions to Think About:

a) In the penultimate chapter comes the climactic confrontation between father and son. The setting is the Mendocino coast. The episode starts in a crowded restaurant and moves to the roadside on a foggy cliff overlooking the ocean. Voices of the narrator and Chris alternate and then the *italicized* voice of the narrator's alter ego is heard. The

two male adult voices overlap and combine with the son's voice as the three voices negotiate the denouement. Do the conditions of mutual and reciprocal agreement arrived at allow for both reconciliation and differentiation? Are the concluding circumstances – as described – adequate to justify the narrators/authors relatively unguardedly optimistic final paragraph?

b) Does the book leave you (the reader) pointing in an intellectually defensible, emotionally satisfying, and practically effective/useful direction? Please elaborate. Pay particular attention to the evidently intended convergence, in the conclusion, of the narrator's monologue with its dialogical counterparts (e.g. the father/son relationship, the travelogue ("a journey through the high country"), the chautauqua.

c) How would you characterize work as a whole? Is it an informal but ambitious and wide-ranging philosophical treatise? a passionate paean to virtue, a plaintive plea for ethical lifeways and faithful scholarship, a call to honest teaching and genuine learning (e.g. "the need for caring"; the "church of reason"), a "how-to" guide a handbook for those in search of right livelihoods." Point is that ZAAMM plainly is a text of many meanings; a multidimensionally relevant treatise-in-novel-form ...

d) What significance (if any) do you read into the episode in which Chris and his father remove their helmets for the remainder of the journey?

e) The last two sentences of the book are: "It's going to get better now. You can sort of tell these things." How does this "resolution" strike you? Hopefully, you will have also read the author's Afterword, and done so after completing your reading of the text. If so, please comment on the cognitive/affective impact of having done so. With respect to the central issue of "conflicting perspectives" (differing points of view?): what are your present thoughts and feelings about the classical /romantic dichotomy with which ZAAMM has been so centrally concerned?

f) Identify and briefly describe (at least 3) "take-home lessons, key questions or issues needing to be further discussed" with which the book leaves you.

#### **writing assignment # 4**

Reflect upon your Field Trip experience in a way that enables you to draw some conclusions about your own values. Compare/contrast facial expressions and postures or gestures of affective significance in artworks from different traditions/cultures. What similarities and differences are observed? Any evidence here either for or against the idea that there are cross-cultural "affective universals?" Feel free to discuss in some depth and detail any relevant cognitive and affective aspects of your encounter(s) with specific object(s).

## Class Meeting **6**

March 8

Theme: **Wrapping up *Zen and the Art of Motorcycle Maintenance*  
(ZAAMM)  
What is Quality in Education?**

PREPARATION:

**reading assignments:**

- 6-1 ZAAMM Part IV: Chapters 27-32 (pages 329-412)
- 6-2 Smith, P., (1990) *Killing the Spirit: Higher Education in America* (excerpts)  
Chapter 1: "Mapping the Desert" (pp. 1-21); and Chapter 14: "Teaching"  
(pp. 199-222)

ON MIT SERVER

**writing assignment:**

- #5 On the Experience of Reading ZAAMM... in the Context of 9.68  
(1-2 page "reaction paper")

**writing assignment:**

- #6 Quality and My MIT Education  
(1-2 page "reaction paper")

CLASS NOTES:

### **What is quality in education?**

Particularly in its latter parts, "ZAAMM..." has rather a lot to say about this question.

How is the question relevant to our inquiry into values? In respect to last week's topic, we found and focused mainly upon the great diversity of opinion among us regarding the aesthetic value of particular works of art. This week, we ask whether a shift in focus, from something somewhat abstract, "external" and unfamiliar to something more akin to commonly shared experience (and otherwise "closer to home"), can help us to learn something about the potential for and the limitations of possible agreement. To begin with, compare and contrast Pirsig's comments on education with those of the noted historian Page Smith, whose contention it was that the crisis in American universities is connected with the trend toward research and away from teaching.

Recalling what was said earlier about the complementarity of differing perspectives, we presume at the outset (1) that everyone here has had his/her own unique educational experiences and (2) that everyone here can lay an equipotentially legitimate claim to knowledge of the quality (or lack thereof) in their own educational experiences in general and of their MIT learning experience as an MIT undergraduate student. Taking

the proverbial "step back," we will endeavor to get beneath the surface details (which are always unique and particular) and bring into focus some of the more general conceptual and material characteristics of the academic community of which we are all presently a part. This is not intended to be a "bitching session."

By hypothesis: human social systems exhibit cognitive, affective and expressive aspects that can be understood as comprising a self-maintaining and recurrently self-reinforcing "paradigm" (prototypical pattern of beliefs, values and practices exemplifying it). Do our respective and collective experiences as members of the MIT community enable us to arrive at consensual agreement regarding the beliefs, values and practices that are most central to this particular institution?

NOTE: **This is a kind of "test."** Is it possible for this particular subset of MIT undergraduates to arrive at a consensually valid definition of "the MIT paradigm"? Can you – given both your own diversity and commonalities of backgrounds including the (limited) commonality of your experiences as so many different MIT undergraduate students – meaningfully identify and effectively "unpack" at least a few of the key worldviews, valuesystems and lifestyles with which MIT is most readily identifiable and widely known? (What are the locally prevailing institutional norms? What beliefs, values and practices tend to predominate @mit.edu? are they both professed in principle and practiced in actuality? explain.) Which beliefs, values and practices tend to be subordinated in the process of "getting an MIT education."? Can you come up with at least a few cogent consensually valid observations regarding, say, the "MIT value system" or "MIT worldview" and the sorts of lifestyles (home lives, work lives) most positively (or negatively) associated therewith? What meanings do you associate with the Institute's motto: "Mens et Manus"?

In class, we will make some time available for in-depth discussion of these and other aspects of the concept of "quality" as it relates to the presumably meaningful/powerful phrase: "an MIT education".

What is quality academic and professional training?" ("what is good and what is not good in your experience of the MIT undergraduate living/learning environment?") What, more specifically, is your view of the of the value of the MIT approach to educating in light of its avowed mission of training future leaders and prospective contributors of note to fields of Science, Technology, Engineering, Architecture (and Planning), and Management?

How are "pedagogical soundness" and "educational excellence" or "instructional quality" defined? (and who defines them)? What are the presently prevailing definitions of excellence in the MIT subjects/courses with which you have (are having; have had; hope to have) direct personal experience?

Do you find these questions disturbingly intrusive? Do you see any problems in our choice of MIT as a focus of interest in this context? The answers that we give to these questions are important. Why? Because our entire approach is predicated on the epistemological, axiological and methodological necessity and sufficiency of relying on

"consensual validation" as a *modus operandi*.

What are we talking about here? What is consensual validation?  
Scientific/academic/professional communities as "consensual domains."

In the case of the collaborative learning system that we are constantly endeavoring to implement in this class, the approach is predicated on the possibility of trusting each other to be faithful in our adherence to the values embodied in a paradigm of human inquiry that accords priority to the ethical pursuit of understanding (and the advancement of science itself). By hypothesis: this is a rule-governed process that proceeds through the development, deployment and diffusion of methods of procedure conducive to the production of truthful statements about the world and its contents, including ourselves.

Of what value, in your view, is the idea of students and teachers thus striving together (vs. competitively or in mutual/reciprocal mental/behavioral opposition) to create and to maintain and to perfect the counterpart of a "scientific community" in an MIT classroom context? How trustworthy is the irreducibly human social construction process in which the apprehension of reality (facts, data, information) is variously limited and ultimately constrained by the fact that it is ultimately rooted in the direct personal experience of its many and varied participants? Do you discern any serious contradictions in or problems with this approach?

In addition to paying due attention to the implications of the limited acuity of the sensory and motor systems that both connect us with and separate us from what we are endeavoring to comprehend, it is necessary for us to acknowledge the fact that all of our best intended efforts to discover and to assert what actually is the case are further conditioned and constrained by the prevalence of multitudinous and almost infinitely varied differences in personal/social perspectives among us.

Is it possible, nonetheless to arrive, however provisionally, at broad and fundamental agreement on a range of basic propositions relating to the world and its contents, including ourselves (e.g. to human/ecological relations).?

The very fact that science exists implies a positive answer, and it remains one of our central contentions in this class that the mental and behavioral capacities of all people neurobiologically, psychologically and socioculturally like us, – are sufficient to the human social task of doing so. What grounds if any do we have for trusting (mistrusting?) such "merely anecdotal" evidence? What about the validity and reliability of conclusions arrived at in this way?

NOTES ABOUT ASSIGNMENTS:

#### 6-1 ZAAMM Part IV: Chapters 27-32

We are continuing from the previous class (#5) to read Part IV; you can revisit the notes about this last part of ZAAMM on page 25.

**writing assignment #5**

a) Relate form/content of book to form/content of the present learning situation. Which parts/aspects of the book/class have you been finding the most/least interesting? the easiest/hardest to get through/relate to? Which do you find the most challenging? The least/most credible, the least/most encouraging/disturbing, and why? What (if anything) of any immediate personal/social significance and value to you are you finding at this still relatively preliminary point in the process of undertaking this course of inquiry into affect?

b) Discuss the fact that you've been reading the book at a particular point in your own life (and/or at a particular moment of world history -- if you want to take a broader and more long-term view). Have you learned anything of use to you in dealing with your present personal/social predicament? Quality: what is it? in art? in music? in movies? in words? in gestures? in worldviews, in valuesystems? in lifestyles?

**writing assignment #6**

"Home is where one starts from." This is a topic regarding which all of you can unquestionably lay claim to equipotentially credible "expert" opinions! Thus, in your remarks, try to avoid the usual clichés as much as possible; be as precise and specifically detailed as you can about your own first-hand experience. For example, you might choose to identify and describe some aspect(s) of student life and learning during the freshman year; or focus on an activity or activities that you participated in and/or observed and which you regard as having been of spectacularly "high" or abysmally "low" educational quality. Consider (if you wish) your "homelife" experience with peers in living groups; your "real life"(sports, recreation, hobbies or other extracurricular activities), as well as your MIT "worklife." How mentally and behaviorally well prepared were you for your encounter with the first year science core curriculum? With this assignment, we're inviting you to begin making a serious effort to describe and to evaluate – in a scientifically informed and consensually credible way, insofar as you can in this context – quality – as an aspect of your own educational experience.

## Class Meeting 7

March 15

Theme: ***Problématique du changement:***  
**"Paradigms Lost and Regained"**  
**What Is a "Scientific Revolution?"**  
**Changing Beliefs, Values & Practices in Science and Society**

PREPARATION:

**reading assignments:**

- 7-1 Kuhn, T.S., (1962) The Structure of Scientific Revolutions,  
 University of Chicago Press, Chicago. (excerpts)  
 ON MIT SERVER
- 7-2 C.P. Snow (1956) The Two Cultures  
 ON MIT SERVER

**writing assignment:**

- #7 Summary and Evaluation of Kuhn's Central Argument and  
 of Snow's "Two Cultures"  
 (1-2 page "reaction paper")

CLASS NOTES:

Is the term "paradigm" clearly comprehensible to you? The prototypical case of a "paradigm shift" – as discussed by Kuhn – is the case of Copernican astronomy.

(What, precisely, was it that made heliocentric cosmology so profoundly "controversial?" What happened, for example, in the case of Galileo?)

Is it applicable to any other specific instances that you know of? Do you know of a case in which a significant conceptual and material change occurred in some other complex human system at biological, psychological and/or sociocultural levels of organization? If so, can you describe it. If not, explain why not. If so, please do.

In a recent book based on interviews with and writings by 29 astronauts and cosmonauts, Frank White shows how experiences such as circling the Earth every 90 minutes and viewing it from the moon have profoundly affected the space travelers' perceptions of themselves, their world, and the future. He also shows how the rest of us, who have been able to participate vicariously and imaginatively in these great adventures, have also been affected psychologically by what has been called "the overview effect." White argues forcefully and at length (if ultimately unconvincingly) for further space exploration and colonization – describing them somewhat hubristically as "inevitable next steps in the evolution of human society and human consciousness," but for us in the present context, the important point is that by

conceptually distancing ourselves from – and especially by rising above – our accustomed surroundings it becomes possible to think of bringing a new perspective to bear on what Albert Einstein once called "the problems of our social life."

#### NOTES ABOUT ASSIGNMENTS:

##### **7-1 Kuhn, The Structure of Scientific Revolutions**

It was our former MIT colleague, the late Thomas S. Kuhn who is generally credited with first using the word "paradigm" (from an Ancient Greek word meaning both pattern and exemplar) to denote a core set of beliefs, values and practices prevailing within scientific communities at particular points in their organization and development. This core set is conceptually and materially composite, mentally and behaviorally compound, and neurobiologically, psychologically and socioculturally complex, and all the members of a scientific community are perforce expected to subscribe to it.

Both an historian and a philosopher of science, Kuhn saw the scientific enterprise as a process evolving through successive cycles in which experiments / observations predicated on those core beliefs, values and practices begin to generate findings that simply do not fit within the prevailing conceptual and material framework (paradigm). This disparity leads, in turn to a moment or period of "crisis" in which the anomalies come to be taken seriously and participants cast about for an alternative to the prevailing framework.

This is not uncommonly a bitterly contested process. For our purposes, however, an important point to consider is whether and in which respects scientific paradigms (which are themselves human social products) exhibit cognitive, affective and expressive modes of organization and development having their counterparts in the organization and development of other human systems at neurobiological, psychological and sociocultural levels. By now it should not surprise you to learn that the answer to be arrived at generally is affirmative.

##### **7-2 C.P. Snow on "the two cultures"**

Almost two decades before Pirsig's book appeared (1974) the British scientist and academic administrator, C. P. Snow famously introduced an obvious precursor and counterpart to Pirsig's "classical" and "romantic" perspectives.

The notion that the paradigm prevailing in our own society, in its education system and its intellectual life, is seriously flawed is demonstrated, according to Snow, by the associated splitting and fragmentation of experience, sensibilities, paradigms and cultures. Plainly Pirsig's opposed "classical" and "romantic" perspectives thus owe a debt to Snow's view of the split between the arts or humanities on one hand, and the sciences on the other. And the public debate is still raging in the media (and to some extent in the academy) today.

For those of you who wish to pursue the matter further, please be advised that there is a recent reissue of Snow's "The Two Cultures" and a successor piece, "A Second Look" (in which Snow responded to the controversy four years later). The introduction by Stefan Collini, does a good job of charting the history and context of the debate, its implications and its afterlife. The importance of science and technology in policy run largely by non-scientists, the future for education and research, and the problem of fragmentation threatening hopes for a common culture are just some of the subjects discussed. 'Probably the most important statement on the role of science in society yet available.' – Discovery; 'One cannot fail to take Snow seriously or to recognise his commitment to the cause of peace, intelligent action and human betterment.' Scientific American; 'Obvious authority and moral intelligence.' The New Yorker 'Effective because of its obvious generosity of mind and basic sanity.' The Sunday Times.

### Spring Break

March 22

You might get started with assignments for the next class.

## Class Meeting 8

March 29

Theme: **The Neuropsychology of Affect;  
The Emotional Brain**

### PREPARATION:

#### reading assignments:

- 8-1 Damasio, A. (2004) Looking for Spinoza: Joy, Sorrow, and the Feeling Brain, (excerpts: Chapter 1: "Enter Feelings", pp. 1-8; Chapter 2: Of Appetites and Emotions, pp. 25-80; Chapter 3: Feelings, pp 81-133), Harcourt.

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- 8-2 Oatley, K., & Jenkins, J.J. Understanding Emotions, Chapter 5, Brain Mechanisms of Emotion pp. 133-159.

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#### viewing assignments:

- 8-3 Powers of Ten  
(videotape – viewing time 8 mins.)

#### writing assignments:

- #8 The Quality of my Learning Experience in 9.68 Thus Far  
(1-2 page "reaction paper")

#9 Three Key Ideas about the Neuropsychology of Affect  
(1-2 page "reaction paper")

CLASS NOTES:

**Neurobiological aspects of affect:**

Organisms as congeries of systems within systems; of atoms within molecules within macromolecules within organelles within cells within tissues within organs, within organ systems, (pulmonary, cardiovascular, digestive, musculoskeletal, reproductive, nervous, central and peripheral (incl. autonomic) divisions, brains and spinal cords, triune mode of organization and development, within organisms within sociocultural contexts (families, groups, collectivities) within surrounding geopolitical jurisdictions and local, regional and global environments.

We discuss the distinction between feelings and emotions as it relates to the neuropsychology of affect and look more closely at some earlier contributions to our understanding from the Ancient Egyptian embalmers, including the Ancient Greek physicians (Hippocrates and Alcmaeon) and philosophers, (Plato and Aristotle), the renaissance philosophers and scientists (Descartes and Pascal); and more modern thinkers (including Baruch Spinoza, Franz Josef Gall, John Harlow, William James, Sigmund Freud, Karl S. Lashley, Walter B. Cannon, Heinrich Kluver, John C. Fulton, James Papez, Paul MacLean, Daniel S. Lehrman, Donald O. Hebb. Hans-Lukas Teuber etc.

## Class Meeting 9

April 5

Theme: **The Science of Violence and Vice Versa?**

PREPARATION:

**reading assignments:**

- 9-1 Mark, V.H. and F.R. Ervin, (1970) Violence and the Brain, Harper & Row, New York. (excerpts)

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- 9-2 Chorover, S.L. "The Pacification of the Brain: From Phrenology to Psychosurgery", in Morley, T.P. (ed.) (1976) Current Controversies in Neurosurgery, W.B. Saunders Co., New York.

ON MIT SERVER

- 9-3 Chorover, S.L. "Physician vs. Researcher: Values in Conflict?", Wellesley, 4, 1979, pp. 21-27.

ON MIT SERVER

9-4 Chorover, S.L. "Violence: A Localizable Problem?", in Valenstein, E. (ed.) The Psychosurgery Debate: Scientific, Ethical and Legal Perspectives

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**writing assignment:**

#10 Psychosurgery: The Key Issues as I See Them  
(1-2 page "reaction paper")

**NOTE:**

Looking ahead through the syllabus at topics still to come, you should already be thinking about the topic of your term paper. Proposals no longer than two pages in length may be submitted for approval at any time between now and the proposal deadline (April 22).

**NOTE ON ASSIGNMENTS:**

Here, we're asking you to go through a lot of material. Everyone should read the first two articles. Groups feeling overwhelmed by the volume of the assigned readings should feel free to jigsaw the other two articles (9-3 and 9-4) among themselves.

**CLASS NOTES:**

What is bilateral stereotaxic amygdalotomy? What is "episodic dyscontrol syndrome? How did the former come to be proposed and actually used as a "treatment" for the latter? We consider a socially, scientifically, technically, clinically, and legally complex medical malpractice case that illustrates some of the scientific/ethical issues involved in the use of brain stimulation and/or destruction as a means of controlling human thoughts, feelings and actions. The case in point centers on the diagnosis and neurosurgical (psychosurgical) treatment during the mid-1960s, of a 34 year-old man (the late Leonard Arthur Kille; aka "Thomas R.") who was allegedly otherwise incapable of controlling his outbursts of unprovoked rage, aggression and violence.

On the one hand, psychosurgery can be described as a perfectly rational form of "therapeutic intervention." On the other hand, it has been described by some as a socially expedient neuropsychological species of crude mechanistic reductionistic biological determinism (a/k/a pseudoscience).

Articles and books promoting the former view are commonplace and plentiful, Here we will concentrate on an examination of the scientific defensibility of a particular dissenting view (reading assignments 9-2, 9-3, and 9-4).

**Class Meeting 10**

April 12

Theme: **Ethics of Science****PREPARATION:****reading assignments:**

10-1 Frayn, Michael, Copenhagen (a play): text and Postscript  
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**viewing assignments:**

10-2 Copenhagen, BBC television adaptation of Michael Frayn's play,  
adapted and directed by Howard Davies.  
(viewing time 117 mins.)

**writing assignment:**

#11 Ethics of Science in the Modern National Corporate State:  
Some Key Values in Conflict in Copenhagen, as I See Them  
(1-2 page "reaction paper")

**Patriots Day Vacation**

April 19 (No Class)

**Deadline for submission of term paper proposals via email****writing assignment**

#12 Term Paper Proposals via email  
on or before Tuesday, April 19 at 6pm.

Proposals will be reviewed and returned with comments on or before 6pm  
Friday April 22.

## Class Meeting **11**

April 26

Theme: **Environmental Values:  
What is "Sustainability?"  
What Does It Have to Do with Affect?**

### PREPARATION:

#### reading assignments:

- 11-1 Orr, David W., (1992) Ecological Literacy: Education and the Transition to a Postmodern World, SUNY Press, Albany. (excerpt: Chapter 1: The Problem of Sustainability)  
ON MIT SERVER
- 11-2 Sections 1 & 2 from the hardcopy (*WORKBOOK*) portion of an "electronic book" project intended to promote "sustainability" in a time of human/ecological crisis. (HomeWork: An Environmental Literacy Primer ©1995 Stephan L. Chorover/MIT), pp. 36-39.  
ON MIT SERVER
- 11-3 Bateson, Gregory, (1980) Mind and Nature: A Necessary Unity, Bantam, New York. (excerpts)  
ON MIT SERVER
- 11-4 Worldwatch Institute: "State of the World 2004" (excerpts) The Foreword; Preface; Year In Review, Chapter 1 (The State Of Consumption Today); and Chapter 8 (Rethinking A Good Life)  
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#### writing assignment:

- #13 Sustainability and Environmental Crisis as Emotional Issues  
(1-2 page "reaction paper")

### CLASS NOTES:

Early on in ZAMM, Pirsig has his narrator meditate on "a kind of force that gives rise to technology, something undefined but inhuman, mechanical, lifeless, a blind monster, a death force, something hideous ... " One implication is that technology has had deleterious effect on our quality of life. Another way of putting it is that technology has played a role in making material conditions of our lives unsustainable.

What is "sustainability?"

We consider the concept of "humanecological sustainability".  
What would such a thing "look like" if we had it?

How are the answers that we give conditioned and constrained by our "images of humanity and nature"?

When the sustainability (resource management) rationale is presented, it appears perfectly logical and rational. And yet it continues to appear controversial and problematical. Why?

This is our 9.68-related problem to consider.

What is **quality** of life? How do we determine it? (Orr: 9-10)

Quality of life can be perceived in resource context (economy, technology) and social-psychological context. Can you imagine quality of life without the existence of social and natural environment? Quality between individuals and community – systemic ethics (Orr:17-18); bioregional perspective (Chorover: 6)

We'll have a pertinent exercise and discussion in class.

## Class Meeting **12**

May 3

Theme: **Is "a New Way of Thinking" Conceivable?  
Is a Paradigm Shift Necessary? Desirable? Possible?**

PREPARATION:

### reading assignments:

12-1 Melucci & Chorover (1997) "Knowledge and Wonder: Beyond the Crisis of Modern Science?" in Flower, R.G., Gordon, T.F., Kolenda, N., and Souder, L. (eds.) Overcoming the Language Barrier: Problems of Interdisciplinary Dialogue, The Center for Frontier Sciences at Temple University, pp.76-90)

ON MIT SERVER

12-2 Chorover, (1990) "Paradigms Lost and Regained: Changing Beliefs, Values and Practices in Neuropsychology", in Greenberg, G. and Tobach, E. (eds.) Theories of the Evolution of Knowing. Lawrence Erlbaum, Hillsdale, NJ., pp. 87-106

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12-3 "Comparing and Contrasting Scientific Paradigms.", table from the hardcopy (*WORKBOOK*) portion of an "electronic book" project intended to promote "sustainability" in a time of human/ecological crisis. (HomeWork: An Environmental Literacy Primer ©1995 Stephan L. Chorover/MIT), pp. 36-39.

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**writing assignment:**

#14 Main Argument(s) in Melucci/Chorover Article  
(1-2 page "reaction paper")

Make comments on the main argument(s) – criticizing or supporting them, not summarizing!

**Class Meeting 13**

May 10

**Term Project/Paper Presentations  
Closure Discussion**

Last Class

**writing assignment:**

#15 Term Paper