

FIVE MINDS FOR THE FUTURE

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Harvard Business School Press, 2007

- I. ***The Disciplined Mind***: Employing the ways of thinking associated with major scholarly disciplines and major professions; capable of applying oneself diligently, improving steadily, and continuing beyond formal education
- II. ***The Synthesized Mind***: Selecting crucial information from the copious amounts available; arraying that information in ways that make sense to self and to others
- III. ***The Creating Mind***: Going beyond existing knowledge and syntheses to pose new questions, offer new solutions, fashion works that stretch existing genres or configure new ones; creation builds on one or more established disciplines and requires an informed “field” to make judgments of quality and acceptability.
- IV. ***The Respectful Mind***: Responding sympathetically and constructively to differences among individuals and among groups; seeking to understand and work with those who are different; extending beyond mere tolerance and political correctness.
- V. ***The Ethical Mind***: Abstracting crucial features of one’s role at work and one’s role as a citizen and acting consistently with those conceptualizations; striving toward good work and good citizenship
 - In the sciences, younger workers are more likely to achieve creative breakthroughs, while older ones typically pen syntheses.
 - In general, we look to leaders, rather than to managers, for examples of creativity.
 - Individuals without synthesizing capabilities will be overwhelmed by information and unable to make judicious decisions about personal or professional matters.
 - Most individuals in most schools or training programs are studying subject matter. That is, like many of their teachers, they conceive their task as committing to memory a large number of facts, formulas, and figures.
 - Disciplines represent a radically different phenomenon. A discipline constitutes a distinctive way of thinking about the world. Scientists observe the world; come up with tentative classifications, concepts and theories; design experiments in order to test these tentative theories; revise the theories in light of the findings’ and then return, newly informed, to make further observations, redo classifications and devise experiments.
 - To the extent that examinations or feedback focuses on factual information the student may be well prepared to become a certain kind of professor, but not a practicing professional.
 - The training of disciplinarians takes place through the identification of mutual interests and gifts, the modeling of ways of thinking, the successful completion of certain signature assignments, the provision of timely, useful feedback on earlier disciplinary efforts, and the passing through successive hoops en route to becoming a master of the discipline.
 - Four steps to achieve a disciplined mind:
 1. Identify truly important topics or concepts within the discipline. Some of these will be content, others will be methodological.
 2. Spend a significant amount of time on this topic.
 3. Approach the topic in a number of ways.
 4. Set up performances of understanding and give students ample opportunities to perform their understanding under a variety of conditions.

- Arthur Rubenstein stands as an example of someone who was ultimately able to wed the two meanings of discipline: mastery of a craft, and the capacity to renew that craft through regular application over the years.
- Nobel Prize winning physicist Murray Gell-Mann has asserted that the mind most at a premium in the 21st century will be the mind that can synthesize well.
- Types of syntheses:
 1. Narratives
 2. Taxonomies
 3. Complex concepts
 4. Rules and aphorisms
 5. Powerful metaphors, images, and theme
 6. Embodiments without words
 7. Theories
 8. Metatheory
- Any effort to synthesize entails four loosely ordered components:
 1. A goal: a statement or conception of what the synthesizer is trying to achieve
 2. A starting point: an idea, image or, indeed, any previous work on which to build
 3. Selection of strategy, method and approach.
 4. Drafts and feedback
- It is inappropriate to characterize work as genuinely interdisciplinary unless it entails the proper combination of at least two disciplines. Moreover, the two disciplines should not merely be juxtaposed; they should be genuinely integrated. Such an integration should yield understanding that could not have been achieved solely within either of the parent disciplines.
- Children may well benefit from carrying out evocative classroom projects or from pursuing a unit on generative topics like “patterns” or “water” or the “cradle of civilization.” But these endeavors do not involve disciplines in any legitimate sense of that term. In making a diorama or a dance, in thinking of water or cities in a variety of ways, students are drawing on common sense, common experiences or common terminology and examples. If no single discipline is being applied, then clearly interdisciplinary thinking cannot be a true work.
- Interdisciplinary work is motivated by one of three considerations:
 1. A powerful new concept has been developed, and it is inviting and timely to test the reach of that concept.
 2. An important phenomenon has emerged, and a full understanding of that phenomenon calls for, or even demands, its contextualization.
 3. A pressing problem emerges, and current individual disciplines prove inadequate to solve that problems
- The young child overgeneralizes; the older child prefers to resist generalizations even when they may be apt.
- Can one develop a disciplined mind while at the same time keeping alive the potential for synthetic thinking?
- In most cases, educators fail to invoke explicit standards in judging which connections, which integrations, which syntheses are valid, and in which ways they are or are not meritorious. To judge a project, one must invoke criteria that come from the appropriate domain as well as criteria that suit the subjects of the project.

- Those individual who can generate several representations of the same idea or concept are far more likely to come up with potent syntheses than those who are limited to a single, often attenuated representation of that idea.
- The Theory of Knowledge course, offered during the final year of the IB, represents one promising effort in regard to developing interdisciplinary thinking.
- We live in a time where our most talented minds know more and more about increasingly narrow spheres.
- In most human societies, throughout most of human history, creativity was neither sought after nor rewarded.
- Creativity is the occasional emergent form the interaction of three autonomous elements:
 1. The individual who has mastered some discipline or domain of practice and is steadily issuing variations in that domain.
 2. The cultural domain in which an individual is working, with its models, prescriptions and proscriptions
 3. The social field, those individuals and institutions that provide access to relevant educational experiences as well as opportunities to perform.
- The acid test for creativity: has the domain in which you operate been significantly altered by your contribution?
- An expert is an individual who, after a decade or more of training, has reached the pinnacle of current practice in her chosen domain.
- Prodigies rarely turn out to be creators. Since early childhood prodigies have been rewarded for doing precisely what the adults in their domain were doing; and so it require a remaking of self, a sharp change in goals, orientation and motivation, to set off in new, uncharted directions. A wit said of Camille Saint-Saens, an aging musical prodigy who never fully realized his early promise: He has everything but he lacks inexperience.
- All of us fail, and because they are bold and ambitious, creators fail the most frequently and, often, the most dramatically.
- Pablo Picasso famously declared, I used to draw like Raphael; it has taken me my whole life to learn to draw like a child.
- As students enter adolescence, they become capable of envisioning possibilities that are quite different from and may, indeed, invert their current realities. Especially in those settings where such envisioning has not been encouraged, elders have a responsibility to introduce instances and systems that operate according to different rules – utopias, dystopias, alternative numerical systems, counterfactual historical accounts competing economic systems, and the like. The adolescent mind can take it from there.
- Only a masochist craves criticism; but the rest of us must learn to deal with it and, as much as possible, to internalize and anticipate criticism, so that we may ultimately become our first and our sharpest critics. Often, I have observed, these dispositions are developed more readily in art classes than in the standard college-prep curriculum.
- The question arises about whether ideas about creativity need to be refashioned to take into account the increasing number of projects and realms where the individual contribution seems less critical, the group mind more crucial.
- The synthesizer seeks order, equilibrium, closure; the creator is motivated by uncertainty, surprise, continual challenge, and disequilibrium.
- No society can be composed solely of creators; they are by nature destabilizing.

- By the time that young persons become adolescents or young adults, their attitude toward others is pretty well fix; barring extremely unusual circumstances, one's stance toward other groups is unlikely to change fundamentally.
- Signposts toward the achievement of good work
 1. Mission
 2. Models
 3. Mirror test – individual version
 4. Mirror test – professional responsibility.
- Moliere: We are responsible not only for what we do but for what we do not do.
- At a time when the US is calling on other societies to adopt democratic institutions, it behooves us to model an engaged citizenry. Otherwise, advocates of “democracy elsewhere appear to the rest of the world simply as hypocrites. Good work may begin in the bosom of the individual, but ultimately it must extend to the workplace, the nation, and the global community.
- Skunk Works: Cutting edge interdisciplinary team. Members are granted considerable latitude on the assumption that they will exit their habitual silos and engage in the boldest forms of connection making.