

**Preliminary Schedule for MgS 8130
 Summer 2005 , Monday-Wednesday 4:45-7:30 224 Aderhold**

[Click here for Syllabus](#)

Send me email at **8130 [at] WHALENs [dot] org**

[Accessing Assigned Readings in Library Reserves](#)

1; 6/13		<p>Course Introduction; What is Decision Science; Herbert Simon's Normative Problem Solving Model intelligence -- design -- choice -- implementation</p> <table border="1"> <tr> <td>Taxonomy of Problems</td> <td>Disturbance</td> <td>return to normal & prevent recurrence</td> </tr> <tr> <td></td> <td>Opportunity</td> <td>maximize something</td> </tr> </table> <p>Assign cognitive style test on Internet Group Project Individual Take-Home Final Exam</p>	Taxonomy of Problems	Disturbance	return to normal & prevent recurrence		Opportunity	maximize something
Taxonomy of Problems	Disturbance	return to normal & prevent recurrence						
	Opportunity	maximize something						
2: 6/15	<p>Nominal, Delphi, Interacting</p> <p>"Effectiveness of ..." in eReserve</p>	<p>Harnessing Heuristics: Confirmation, Groupthink, Motivational Videos Groupthink Challenger and Columbia Encouraging Creative Conflict Structured Dialog</p>						
3: 6/20		<p>Come to class with your type scores Rational, Idealist, Artisan, Guardian Cognitive Style & Management Summary of Kiersey Types</p>						
4: 6/22		<p>Video: Apollo 13: "Houston, we have an Opportunity"</p>						

[Printer-Friendly Version](#)

Intelligence Phase

5: 6/27	<p>The hidden traps ...: in eReserves Early Group Behaviors" in eReserves</p> <p>Hidden Traps (Cognitive Biases)</p> <p>Intelligence Phase</p>	<p>Come to class with your type scores group assignment Overview Of Heuristics and Biases Real Differences and Random Differences Random vs. Assignable Deviation Prospering in an "Information Economy" Harnessing Heuristics: Representativeness, Availability Full Moon Effect Drug Testing Example</p>
6: 6/29	<p>Early Group Behaviors</p> <p>Jones Box & Label case</p>	<p>Harnessing Heuristics: Selective Perception & Availability Heterogeneous Groups Diagnostic Worksheet Curious incident of the dog in the night Diagnostic Worksheed:: Jones Box & Label</p>
7/4		
7: 7/6	<p>"Can you analyze this problem" case</p>	<p>Diagnostic Worksheet, continued: The Case of the Burred Panels</p>

Design Phase

8: 7/11	"Creatiivity in ..." case on eReserves Creativity& Decision Making Ryan Dornbos Case	Harnessing Heuristics: Anchoring, Concreteness Pyramid of ideas "Creativity Techniques" - a contradiction? Creativity Techniques	Discussion group exercise: Intelligence phase (Ryan Doornbos)
9: 7/13	Creativity and Sleep	Objectives, Alternatives, Consequences Consequence Matrices , Payoff Matrices	Nominal group exercise: Silent writing, round robin, idea clarificati

Choice Phase

10: 7/18	"Even Swaps" on eReserves Even Swaps	Even-Swap Tradeoffs , Weighted-Sum Tradeoffs	Nominal group exercise cont'd: discussion & approval voting
11: 7/20		Harnessing Heuristics: Motivation, Function, Authority Social Choice Social Choice Videos Vroom/Yetton Theory of Leadership Aristotle's Nichomachean Ethics	Delphi group exercise Part 1 Instruction (Choice phase)
12: 7/25		Ecclesiastes 9:11 Harnessing Greed and Fear Which Flight? Janet's Summer Party	Delphi : review the results of Round 1 and the requirements for Round 2

Implementation Phase

13: 7/27	Implementation phase	Implementation & Counter-Implementation Resistance to Change: Article Slides	Delphi : review the results of Round 3 and the requirements for Round 3
14: 8/1		Video: 12 Angry Men Summary of the Course	Turn in: Group writeup on structured dialog
8/3		Trun in (email) individual Take-Home Final Exam	

MgS 8130, Problem Solving

Preliminary Syllabus:

Summer 2005 MW 4:45-7:30PM 224 ALC [Click here to see the schedule for the semester](#)

[Dr. Thomas Whalen](#) 840 RCB office: 404-651-4080; Send me email at **8130 [at] WHALENs [dot] org**

email me anytime; you will usually get a reply within 24 hours, usually much faster. I very strongly prefer emails to phone messages.

Catalog Description:

"This course focuses on how managers, individually and in groups, make decisions. It covers the major descriptive and normative models of managerial problem diagnosis and alternative generation. By comprehending how managers solve problems, students will be prepared to build computer- based support tools. Cases and mini-examples are used to apply the concepts and methods to real-world problems."

The website <http://www.gsu.edu/~dscthw/413-813/05Summer.html> is the most important "textbook" for the course, and it may develop and the term progresses -- check it frequently.

Some of the Assigned Readings are on electronic Reserves at the GSU online library.

To access them, go to <http://reserves.gsu.edu/courseindex.asp>

Select my name from the list

Click on Problem Solving

Enter the password WD8130RTP

Study Nominal, Delphi, and Interacting Group paper before the June 13 class

Study The Hidden Traps in Decision Making before the June 27 class
Early Group Behaviors

Study Creativity And Decision Making before the July 11 class

Study Even Swaps before the July 18 class

Grading:

40% Take home Final

40% Group Project Report

10% Group exercise deliverables

10% Pop Quizzes

If you do not participate in each and every one of the group exercises

on June 24, July 6, July 8, July 13, July 15

you will not receive an A regardless of your numeric grade.

Opportunities to make up are not guaranteed.

Class participation will be a fudge factor in assigning final letter grades; also, people who don't take an active part in class usually aren't as well prepared when the exam comes. Asking questions in class is a plus -- "Dumb" means silent, so the only dumb question is the one you don't ask!

In general, a grade of

B on any assignment or test question means you have you have thoroughly and correctly summarized and/or applied the material from the readings and lectures;

C or below means that something is lacking or incorrect in your summary or application, while

A means you have satisfied the requirements for a B and also shown creative insight or special depth of understanding.

A final course grade of "A" will not normally be assigned for students whose average score is below the majority of the members of the class.

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Select my name from the list

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Study Even Swaps before the July 18 class

Stages of Problem Solving/Decision Making

Type	Disturbance Problem	Entrepreneurial Opportunity	Apollo 13: straight home or around Moon?
Example	Patient is Sick	New Product Decision	
Intelligence (Problem & Objectives; Uncertainty)	Where does it hurt? Is there fever:? Abnormality in blood? How long has patient been sick?	What does it do? Cost? Potential market? Competition?	INCO, TELMU
Design (Alternatives & Consequences)	appendicitis? hepatitis? gall bladder? cancer?	Sell Patent? Subcontract Manufacture? Make it Ourselves? Sit on the Patent?	RETRO. FIDO, GNC, CONTROL
Choice (Tradeoffs & Risk Toeance)	Further tests indicate gall baldder	"Subcontract Manufacture" has highest expected utility	Kranz
Implemen- tation	Gall bladder surgery	Select subcontractor and negotiate contract	Astronauts

Characteristics of Problems

Well Structured Ill Structured
Operational Control Strategic Planning
Disturbance Entrepreneurial
Crisis Leisurely
Quality Acceptance
Individual Bureaucratic
Simple Complex
Certain Uncertain
Single Criterion Multiple Criteria
Static Dynamic
Human Technical
Zero Sum (competitive) Nonzero Sum (cooperative)
Design Choice
.....
.....

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Group Project on Ryan Doornbos Painting

Begin each of the following on a new sheet of paper, even if there's just one line on the previous page. Do not use a report cover.

1. Compare and contrast what the [table comparing decision processes](#) has to say about interacting groups ("discussion groups")
with
your personal experience with an interacting group in the Objectives phase of the Rogue Division problem,
2. Compare and contrast what the [table comparing decision processes](#) has to say about nominal group processes
with
your personal experience with a nominal group in the Alternatives phase of the Rogue Division problem,
3. Compare and contrast what the [table comparing decision processes](#) has to say about Delphi group processes
with
your personal experience with a Delphi group in the Consequences phase of the Rogue Division problem.

Note that writing a "compare and contrast" essay is NOT the same as writing one essay summarizing what the web resource say and writing a disconnected essay summarizing your personal experiences. Write some paragraphs about how the website and the experience are similar, and some paragraphs on how they are different, plus a concluding paragraph. I already know what interacting, nominal, and Delphi group processes are; so don't bore me with a rehash. I want to know how the **specific details** of the theory jive with your own **specific** experience.

I will assign heterogeneous teams on the basis of cognitive style. If you miss class for ANY reason at all on a day there is a group exercise, you leave your original team and move to an "expansion team," which is required to get together on their own to do the exercise they missed, and remain together as a new group thereafter. I may merge expansion teams created after two sessions, keep them separate, or even merge an expansion team into one of the original teams that has lost too many members. If this sounds complicated, you can avoid the complication by coming to class for each group exercise!

An individual who misses an exercise and does not make it up cannot get an A on this project no matter how good the group's written work is.

Comparison of Qualitative Differences Between Three Decision Processes Based upon Evaluations of Leaders and Group Participants

Dimension	Interacting Groups	Delbecq -- Van de Ven Nominal Groups	Dalkey Delphi Technique
Overall methodology	Unstructured face-to-face group meeting High flexibility High variability in behavior of groups	Structured face-to-face group meeting Low flexibility Low variability in behavior of groups	Structured Series of questionnaires & feedback reports Low variability in respondent behavior
Role orientation of groups	Socioemotional group maintenance focus	Balanced focus on social maintenance and task role	Task-instrumental focus
Relative quantity of ideas	Low; focused "rut" effect	Higher; independent writing & hitch-hiking round-robin	High; isolated writing of ideas
Search behavior	Reactive search Short problem focus Task-avoidance tendency New social knowledge	Proactive search Extended problem focus High task centeredness New social & task knowledge	Proactive search Controlled problem focus High task centeredness New task knowledge
Normative behavior	Conformity pressures inherent in face-to-face discussions	Tolerance for nonconformity through independent search and choice activity	Freedom not to conform through isolated anonymity
Equality of participation	Member dominance in search, evaluation, & choice phases	Member equality in search & choice phases	Respondent equality in pooling of independent judgments
Method of problem solving	Person-centered Smoothing over and withdrawal	Problem-centered Confrontation and problem solving	Problem-centered Majority rule of pooled independent judgments
Closure decision process	High lack of closure Low felt accomplishment	Lower lack of closure High felt accomplishment	Low lack of closure Medium felt accomplishment
Resources utilized	Low administrative time and cost High participants time and cost	Medium administrative time, cost, preparation High participant time and cost	High administrative time, cost, preparation Low participant time and cost.
Duration	Hours	Hours	Days to Months

Problem Solving Final Exam, Summer 2005 -- Work Individually

Do not copy from another person's essay. Do not allow another person to copy from your essay.

Do not work together on a common rough draft that you both copy from.

Do not claim that you did not read or understand these instructions

Suppose that a heterogeneous group of four people, with one member from each of the following four temperaments

[NT Rational](#), [NF Idealist](#), [SP Artisan](#), [SJ Guardian](#)

will work together on one problem, going through each of Simon's four stages of problem solving:

[Intelligence](#), [Design](#), [Choice](#), [Implementation](#) with a different member serving as group leader in each of the four phases.

The NT member will lead the group in the Intelligence phase,

the SP member will lead the group in the Design phase,

the NF member will lead the group in the Choice phase, and

the SJ member will lead the group in the Implementation phase

Answer the following questions, **VERY CLEARLY LABELING** the answer to each questions. Begin your answer to each question at the top of a new page even if there's only one line written on the previous page. Turn in your answers with a single staple in the upper left corner. Do not use a report cover or paper clip.

(4 points for following each and every one of these instructions. No partial credit for following just some of them).

1: Discuss what **SPECIFIC** aspects of each of each of the four phases dovetail with **SPECIFIC** characteristics of the corresponding cognitive styles to make the assignments of members to leadership in phases a good one. (Alternatively, you may chose a different assignment of members to phases and discuss what **SPECIFIC** aspects of each of each of the four phases dovetail with **SPECIFIC** characteristics of the corresponding cognitive styles to make your assignments of members to leadership in phases a better one than the one I gave.) Warning: the strengths of a particular cognitive style are only relevant insofar as they match the demands of the corresponding phase better than those of some other phase. It's not an answer to the question to show that a cognitive style is a good leader or a good problem solver; you need to show that those persons belong in leadership in one phase rather than another phase. (16 points, 4 for each combination of phase and cognitive style.)

2. Discuss two **specific cognitive biases from the list on this link** that the NT leader's **specific** temperament might suffer from in dealing with the **specific** needs of the intelligence phase. (10 points) You must tie in specific characteristics of the leader with specific characteristics of the phase to justify your choice of which cognitive biases are most problematic. (10 points)

3. Discuss how the **specific** temperaments of the other three group members can help to overcome those two **specific** potential cognitive biases of that the NT leader's **specific** temperament in dealing with the **specific** needs of the intelligence phase. (10 points)

4. Discuss two **specific cognitive biases from the list on this link** that the SP leader's **specific** temperament might suffer from in dealing with the **specific** needs of the design phase **specifically**. You must tie in specific characteristics of the leader with specific characteristics of the phase to justify your choice of which cognitive biases are most problematic. (10 points)

5. Discuss how the **specific** temperaments of the other three group members can help to overcome those two **specific** potential cognitive biases of that the SP leader's **specific** temperament in dealing with the **specific** needs of the design phase specifically. (10 points)

6. Discuss what **specific cognitive biases from the list on this link** that the NF leader's **specific** temperament might suffer from that are problematic in dealing with the **specific** needs of the choice phase. You must tie in specific characteristics of the leader with specific characteristics of the phase to justify your choice of which cognitive biases are most problematic. (10 points)

7. Discuss how the **specific** temperaments of the other three group members can help to overcome those two **specific** potential cognitive biases of that the NF leader's **specific** temperament in dealing with the **specific** needs of the choice phase. (10 points)

8. Discuss what **specific cognitive biases from the list on this link** that the SJ leader's **specific** temperament might suffer from that are problematic in dealing with the **specific** needs of the implementation phase. You must tie in specific characteristics of the leader with specific characteristics of the phase to justify your choice of which cognitive biases are most problematic. (10 points)

9. Discuss how the **specific** temperaments of the other three group members can help to overcome those two **specific** potential cognitive biases of that the SJ leader's **specific** temperament in dealing with the **specific** needs of the implementation phase. (10 points)

Work individually. Do not copy from another person's essay.

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Groupthink

Groupthink is a concept that was identified by Irving Janis⁹ that refers to faulty decision-making in a group. Groups experiencing groupthink do not consider all alternatives and they desire unanimity at the expense of quality decisions. Learn more about groupthink and then complete the interactive exercise at the end of the discussion.

Conditions

Groupthink occurs when groups are highly cohesive and when they are under considerable pressure to make a quality decision.

Negative outcomes

Some negative outcomes of groupthink include:

- Examining few alternatives
- Not being critical of each other's ideas
- Not examining early alternatives
- Not seeking expert opinion
- Being highly selective in gathering information
- Not having contingency plans

Symptoms

Some symptoms of groupthink are:

- Having an illusion of invulnerability
- Rationalizing poor decisions
- Believing in the group's morality
- Sharing stereotypes which guide the decision
- Exercising direct pressure on others
- Not expressing your true feelings
- Maintaining an illusion of unanimity
- Using mindguards to protect the group from negative information

Solutions

Some solutions include:

- Using a policy-forming group which reports to the larger group
- Having leaders remain impartial
- Using different policy groups for different tasks
- Dividing into groups and then discuss differences
- Discussing within sub-groups and then report back
- Using outside experts
- Using a Devil's advocate to question all the group's ideas
- Holding a "second-chance meeting" to offer one last opportunity to choose another course of action



[Interactive Activity](#)



[Quick Quiz](#)



[Small Group Communication](#) | [Interpersonal Communication](#) | [Teaching Resources](#) | [References](#)

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Interested in contributing to this website? CAIperAB@aol.com

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Video Tape [HD30.23 .G76 1991](#)

Title: Groupthink [videorecording] / written and produced by Kirby Timmons ; produced by Melanie Mihal.

Publisher: Carlsbad, CA : CRM Films, c1991.

Description: 1 videocassette (25 min.) : sd., col. ; 1/2 in. + 1 leaders guide (12 p.)

Notes: Summary: Presents case histories of tragedies like space shuttle Challenger, Pearl Harbor and the Cuban Bay of Pigs which resulted from the natural tendency to achieve agreement for the sake of group unity. Features interviews with Dr. Irving Janis and Dr. James K. Esser and gives groupthink symptoms to avoid.
VHS.

Subject(s): [Decision making.](#)
[Group relations training.](#)
[Thought and thinking.](#)
[Social groups.](#)

Location: Pullen Video Tape (LS 2)

Call Number: Video Tape
[HD30.23 .G76 1991](#)

Number of Items: 2

Volumes Owned: video+guide

Institution Name: Georgia State University Libraries

Location: Pullen Video Tape (LS 2)

Call Number: Video Tape
[HD30.23 .G76 1991](#)
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Number of Items: 2

Status: Not Checked Out

Volumes Owned: Video, Guide

New York Times, March 9, 2003

NASA'S CURSE?

'Groupthink' Is 30 Years Old, and Still Going Strong

By JOHN SCHWARTZ and MATTHEW L. WALD

HOUSTON — At NASA, it really is rocket science, and the decision makers really are rocket scientists. But a body of research that is getting more and more attention points to the ways that smart people working collectively can be dumber than the sum of their brains.

The issue came into sharp focus in Houston last week at the first public hearing of the board investigating the Columbia disaster last month. Henry M. McDonald, a former director of the NASA Ames Research Center, testifying before the board, said that officials at the space agency want to do the right thing, but cannot always get the facts they need.

Referring to the shuttle program manager, Ron D. Dittmore, he said, "I have no concern at all that people like Ron Dittmore, presented with the facts, will make the right decision." But, he said, "the concern is presenting him with the facts."

In fact, NASA's databases are out of date. For example, it cannot easily collect its data on damage to the shuttle on previous flights, and then search the material for trends and warning signs.

Investigators are also questioning the quick analysis by Boeing engineers that NASA used to decide early in the Columbia mission that falling foam did not endanger the shuttle, though it is now considered one of the leading candidates for the craft's breakup. The analysis satisfied important decision makers, but some engineers continued to discuss situations involving possible problems related to the impact — a routine process NASA calls "what-if-ing."

Because the engineers directly connected to the process were satisfied that the foam was not a risk, they did not pass the results of their discussions up the line, even though they suggested the material could potentially cause catastrophic damage. But other engineers who had been consulted became increasingly concerned and frustrated.

"Any more activity today on the tile damage, or are people just relegated to crossing their fingers and hoping for the best?" asked a landing gear specialist, Robert H. Daugherty, in a Jan. 28 e-mail message to an engineer at the Johnson Space Center, just days before the shuttle disintegrated on Feb. 1.

The shuttle investigation may conclude that NASA did nothing wrong. But if part of the problem turns out to be the culture of decision making at NASA, it could lead to more group dynamics and words like groupthink, an ungainly term coined in 1972 by Irving L. Janis, a Yale psychologist and a pioneer in the study of social dynamics.

He called groupthink "a mode of thinking that people engage in when they are deeply involved in a cohesive in-group, when the members' strivings for unanimity override their motivation to realistically appraise alternative courses of action." It is the triumph of concurrence over good sense, and authority over expertise.

It would not be the first time the term has been applied to NASA. Professor Janis, who died in 1990, cited the phenomenon after the loss of Challenger and its crew in 1986.

The official inquiry into the Challenger disaster found that the direct cause was the malfunction of an O-ring seal on the right solid-rocket booster that caused the shuttle to explode 73 seconds after launching.

But the commission also found "a serious flaw in the decision-making process leading up to the launch." Worries about the O-rings circulated within the agency for months before the accident, but "NASA appeared to be requiring a contractor to prove that it was not safe to launch, rather than proving it was safe."

Groupthink, Professor Janis said, was not limited to NASA. He found it in the bungled Bay of Pigs invasion of Cuba and the escalation of the Vietnam War. It can be found, he said, whenever institutions make difficult decisions.

David Lochbaum, a nuclear engineer at the Union of Concerned Scientists, has studied nuclear plants where problems have gone uncorrected because of internal communications failures and poor oversight. His list includes the Davis-Besse plant near Toledo, Ohio, where in March 2002 technicians discovered that rust had eaten a hole the size of a football nearly all the way through the vessel head. Only luck prevented what might have become an American Chernobyl.

"As you go up the chain, you're generally asked harder and harder questions by people who have more and more control over your future," Mr. Lochbaum said. The group answering the questions then tend to agree upon a single answer, and to be reluctant to admit it when they don't have a complete answer.

Engineers, he said, can also become complacent in the face of a potential problem that has not gone badly wrong before.

"In the Challenger thing, where they had O-ring problems on previous flights, it got to be an annoyance, but not a symptom of a disaster," he said. Nuclear plants suffer from the same false security, he said; six plants had previously suffered minor corrosion, but none was discovered in a condition like Davis-Besse.

It is only common sense that large institutions should try to make sound decisions, said John Seely Brown, a former researcher at Xerox and a co-author of "The Social Life of Information." But it can be bewilderingly hard to do in practice.

"Often it takes tremendous skill in running a brainstorming session," Mr. Brown said. "Every once in a while, the random way-out idea needs to have more of a voice."

But giving the dissenting voice or voices greater influence turns out to be tricky. "You've got to figure out something in a finite amount of time," Mr. Brown said, or find yourself, as NASA is now, "swimming in a sea of hypotheses."

Promoting (creative) Conflict

1. Encourage Critical Thinking
2. Avoid Proselytizing by High Status Members
3. [Use Devil's Advocate or Alternative Worldviews Method \(Dialectic\)](#)
4. Make Sure Everyone Participates
5. Reality Test Ideas (Rational Argumentation Model)
6. Have a Second Look Meeting
7. Take Time for Group Self-Assessment

Methods for Dealing With Conflict

Important Goal; Assertive Style	Demand Go over their head "My way or else!"	Rhetoric Persuasion "My way is best"	Interact Seek Synergy "Our way"
Moderately Important Goal; Moderately Assertive Style	Arbitration "Let Joe decide for us"	Compromise, Negotiate, Bargain "Give a little, get a little"	Mediation "Let Joe help us decide"
Unimportant Goal; Unassertive Style	Withdraw "I only work here"	Toss a Coin "Some you win, some you lose"	Concede "We'll do it your way"
	Unimportant Relationship; Low Cooperation	Moderately Important Relationship; Moderate Cooperation	Important Relationship; High Cooperation

When you disagree, try to use Irish Diplomacy:

The art of telling someone to go to Hell in such a way that he looks forward to the trip.

Structured Dialog

Discussion Group

Ideas are discussed in the order they come up in conversation.

Little or no formal structure. Leadership is often informal, but status differences can easily cause anchoring and self-censorship. Senior and/or extroverted members do most of the talking.

Parliamentary Procedure

All speech is addressed to the chair. Clear order of precedence of business. A motion is debated until it is decided or tabled.

Delphi Technique

Primarily for reaching numerical consensus (forecasts, budgets, etc.)

All communication is in writing, not face to face.

Each member sends preferred number, with a written justification, to the Delphi coordinator

Coordinator averages the numbers & summarizes the justifications without revealing who wrote what; distributes result to members

Each member modifies the numbers and/or arguments based on input received from the coordinator.

Process continues until time is up or coordinator is satisfied the group is as close to consensus as it will get.

Ringii

Similar to Delphi but without coordinator; no anonymity. A document circulates among the group for written comments & proposed revisions.

Nominal Group Technique

Silent Writing, Round Robin, Idea Structuring, Discussion, Voting

Comparison Table: Interacting, Nominal, Delphi Groups

Nominal Group Technique

Silent Writing	Members generate ideas before comparing with others.
Round Robin	Share ideas but do not debate them. Each person gives one idea then the next person gives one idea and so on, going around the circle until everyone is out of ideas. Low status introverts speak first, leader goes last or not at all
Idea Structuring	Merge similar ideas but do not debate them; If A can stand alone but B only makes sense with A, have "A but not B" and "A&B" as two entries on list Do NOT eliminate silly ideas since this requires debating which are and are not silly, and it's not time for that yet!
Discussion	Compare ideas and debate their pros and cons. An idea is good or bad as is is helpful or harmful (or simply useless) with respect to one or more SPECIFIC OBJECTIVES. (Note debate is NOT allowed before the discussion stage!)
Voting	Secret ballot helps avoid groupthink or "Abilene paradox."

Note that the nominal group technique can be used at various stages of decision making, depending on what the "ideas" in the table above refer to.

You can have one nominal group session to decide on the Problem scope and definition, another to decide on Objectives or "measurbles,"

a third to decide on a list of Alternatives to be considered.

The Consequences phase is probably the least suited; Delphi is ideal for this.

But nominal groups could be very good for the Tradeoffs phase.

"Houston, we have an opportunity"

The hero of the story: **Gene Kranz**, flight director or "FLIGHT"

Important people providing data to Kranz and implementing his decisions (alphabetically)

Charlie Dumis, Electrical and Environmental Command Officer or "EECOM"

Bill Fenner, Guidance Officer or "GUIDO"

Alan Glines, Instrumentation and Communications Officer or "INCO"

Fred Haise, Lunar Module Pilot

Willard Hawkins, Flight Surgeon

Bob Hesslmeyerm, LEM Telemetry, Electrical, EVA, Mobility Unit Officer or "TELMU"

Tom Kelly, Lunar Module Engineering officer, Grumman Corporation

Jim Lovell, Command Pilot

Ken Mattingly, prime command module pilot, grounded due to measles exposure

Bobby Spencer, Retrofire officer "RETRO"

Bill Stoval, Flight Dynamics Officer or "FIDO"

Bill Strabley, Guidance, Navigation, and Control Officer or "GNC"

Larry Strimple, LEM Guidance Officer or "CONTROL"

Jack Swigert, Command Module Pilot

[Things to Watch For in the Movie](#)

Great Lines:

"Houston, we have a problem"

"Let's work the problem, people. Let's not make things worse by guessing."

"What have we got on the spacecraft that's good?"

"I want you all to forget the flight plan. From this moment on we are improvising a new mission."

"I don't care about what anything was designed to do. I want to know what it *can* do."

"We never lost an American in space. We're sure as hell not going to lose one on my watch. Failure is not an option."

"I don't want another estimate. I want the procedure. Now!"

"With due respect, sir, I think this will be our finest hour."

Things to watch for in *Apollo 13*

1. The failure of the #5 engine is successfully treated as a "**disturbance** problem;" the mission is brought back to its planned trajectory by burning the other four engines a little longer.
2. For a short period, the loss of electrical power is treated like a disturbance problem to be overcome so they can get back to normal operation. Watch as the focus of activity shifts from "repair the problem" to "**maximize the opportunity** to get home alive." This is why I title this lecture "Houston, we have an opportunity."
3. Gene Kranz, Mission Control, uses most or all of the [Vroom/Yetton leadership styles](#) During the countdown, he is like a **consensus-seeker** because the decision to launch must be unanimous. When he says "We never lost an American in space. We're sure we're not going to lose one on my watch. Failure is not an option." he is a **pure autocrat** -- he does not need anyone's input in making this command decision. The rest of the time he sometimes shares the aspects of the problem with individuals (**Consultative Autocrat 2**) and sometimes with groups (**Consultative Autocrat 3**), while sometimes he just asks for specific information (**Consultative Autocrat 1**). President Nixon acts like a Consultative Autocrat 1 when he demands numeric odds of success.
4. The representative from Grumman (the builders of the Lunar Module) is caricatured in the movie as an example of **functional fixedness**, in contrast to Kranz' line "I don't care about what anything was designed to do. I want to know what it can do."
5. While the decision making is always under **time pressure**, note that some decisions must be made within seconds, like shutting down the fuel cells. Other decisions have a time frame of minutes (like shutting down the computer in the command module), hours (the carbon dioxide buildup), or days (the mission as a whole).
6. Kranz says he wants people to consult the engineers who designed every circuit, switch, and lightbulb in the two spacecraft, and the man in the factory who installed it. Fortunately, he had a couple days to do that. Before the Challenger space shuttle exploded, two low-level engineers at Morton Thiokol, the builders of the solid rocket boosters, tried to stop the launch because they suspected the O-ring seals would fail on what was, for Florida, an extremely cold morning. They could not get the attention of the decision makers, so the shuttle was launched and blew up.

The Sixteen Jung/Myers-Briggs/Kiersey Cognitive Styles

Artisans: SP

Operators STP		Entertainers SFP	
<u>CRAFTERS" (iStP)</u>	<u>PROMOTERS" (eStP)</u>	<u>COMPOSERS (iSfP)</u>	<u>PERFORMERS" (eSfP)</u>

Guardians: SJ

Administrators STJ		Conservatives SFJ	
<u>INSPECTORS (iStJ)</u>	<u>SUPERVISORS (eStJ)</u>	<u>PROTECTORS (iSfJ)</u>	<u>PROVIDERS (eSfJ)</u>

Rationals NT

Engineers NTP		Coordinators NTJ	
<u>ARCHITECTS (iNTp)</u>	<u>INVENTORS (eNTp)</u>	<u>MASTERMINDS (iNTj)</u>	<u>FIELDMARSHALS (eNTj)</u>

Idealists NF

Advocates NFP		Mentors NFJ	
<u>HEALERS (iNFp)</u>	<u>CHAMPIONS (eNFp)</u>	<u>COUNSELORS (iNFj)</u>	<u>TEACHERS (eNFj)</u>

ARTISAN'S QUOTES

Winston Churchill {Promoter Artisan}

"... We shall go on to the end, we shall fight in France, we shall fight on the seas and oceans, we shall fight with growing confidence and growing strength in the air, we shall defend our island, whatever the cost may be, we shall fight on the beaches, we shall fight on the landing grounds, we shall fight in the fields and in the streets, we shall fight in the hills; we will never surrender. "

Alan Shepard {Crafter Artisan}

"Let's light this candle." [Just before his liftoff into space]

Bruce Lee {Crafter Artisan}

"When you need it, ITS THERE." [On the subject of practiced skill]

"Be water, my friend." [On the subject of flexibility and adaptability]

Pablo Picasso {Performer Artisan}

"Taste is the enemy of creativeness."

Mae West {Promoter Artisan}

"I believe that it's better to be looked over than it is to be overlooked. "

Jean-Jacques Rousseau {Composer Artisan}

"Censorship may be useful for preservation of morality, but can never be so for its restoration."

"General and abstract ideas are the source of the greatest errors of mankind."

F. Scott Fitzgerald {Promoter Artisan}

"Forgotten is forgiven."

John F. Kennedy {Promoter Artisan}

"If scientific discovery has not been an unalloying blessing, if it has conferred on mankind the power not only to create but also to annihilate, it has at the same time provided humanity with a supreme challenge and a supreme testing. "

GUARDIAN'S QUOTES

Harry Truman {Inspector Guardian}

"The buck stops here. "

"A politician is a man who understands government, and it takes a politician to run a government. A statesman is a politician who's been dead 10 or 15 years. "

Mother Teresa {Protector Guardian}

Let no one ever come to you without leaving better and happier.

George Washington {Provider Guardian}

"I hope I shall always possess firmness and virtue enough to maintain what I consider the most enviable titles the character of an 'Honest Man'."

"To be prepared for war is one of most effectual means of preserving peace. "

Vince Lombardi {Supervisor Guardian}

"The harder you work, the harder it is to surrender. "

"I will demand a commitment to excellence and to victory, and that is what life is all about."

Judge Judith Sheindlin {Supervisor Guardian}

"Take responsibility for your life. If you're a victim, it's your fault. Stop being a victim. Get a grip!"

Jack Webb {Supervisor Guardian}

"Just give me the facts, ma'am "

Thomas Hobbes {Supervisor Guardian}

"Prudence is but experience, which equal time equally bestows on all men, in those things they equally apply themselves unto."

"Words are wise men's counters, they do but reckon by them; but they are the money of fools. "

"The passions that incline men to peace are fear of death, desire of such things as necessary to commodious living, and a hope by their industry to obtain them."

"Such is the nature of men, that howsoever they may acknowledge many others to be more witty, or more eloquent, or more learned, yet will hardly believe there be man so wise as themselves. "

"Science is the knowledge of consequences, and dependence of one fact upon another."

Oscar Levant

"It's not what you are, but what you don't become that hurts."

RATIONAL'S QUOTES

Albert Einstein Architect Rational

"To me it suffices to wonder at these secrets and to attempt humbly to grasp with my mind a mere image of the lofty structure of all that there is. "

Francis Bacon

"I have taken all of knowledge for my province. "

"Knowledge is power"

Thomas Jefferson Architect Rational

"Error of opinion maybe tolerated where reason is left free to combat it."

Rene Descartes Mastermind Rational

"It is not enough to have a good mind; the main thing is to use it well."

Neils Bohr Mastermind Rational

"Never express yourself more clearly than you think."

Bill Gates Fieldmarshal Rational

"But I'm not using those lessons just for theorizing about the future, I am betting on it. "

Richard Feynman Inventor Rational

"What I cannot create, I cannot understand. "

David Hilbert

"We must know, we will know." (Wir müssen werden, wir wollen werden)

Jacob Bronowski

"The progress of science is the discovery at each step of a new order which gives unity to what had seemed unlike."

When Thomas Henry Huxley [Mastermind Rational] was chided by a friend for abandoning the traditional solace of religion he replied: "Had I lived a couple of centuries earlier I could have fancied a devil scoffing at me ... and asking me what profit it was to have stripped myself of the hopes and consolations of the mass of mankind? To which my only reply was and is -- Oh devil! truth is better than much profit. "

Robert Rosen

"Ideas do not have to be correct in order to be good; its only necessary that, if they do fail, they do so in an interesting way."

IDEALIST'S QUOTES

Hermann Hesse

"It is not our purpose to become each other; it is to recognize each other, to learn to see the other and honor him for what he is."

Mohandas Gandhi

"It is easy enough to be friendly to one's friends. But to befriend the one who regards himself as your enemy is the quintessence of true religion. The other is mere business. "

Albert Camus

"Intelligence in chains loses in lucidity, what it gains in intensity. "

Thomas Paine

"Character is much easier kept than recovered."

Margaret Mead

"The solution to adult problems tomorrow depends on large measure upon the how our children grow up today. There is no greater insight into the future than recognizing when we save our children, we save ourselves. "

"Never doubt that a small group of thoughtful, committed people can change the world. Indeed it is the only thing that ever has."

Anne Morrow Lindbergh

"To give without any reward, or any notice, has a special quality of its own."

Ralph Nader

"A leader has the vision and conviction that a dream can be achieved. He inspires the power and energy to get it done. "

MBTI Types

Based on Ancona, Kochan, Scully, Van Maanen and Westney. 1996. *Managing for the Future*. South-Western College Publishing

Introduction

The MBTI (Myers-Briggs Type Indicator) is a personality test based on the psychological theories of Carl Jung. It looks at differences in personal style in four different areas:

- Interacting with others (extravert versus introvert)
- Understanding the world (sensing versus intuition)
- Making decisions (thinking versus feeling)
- Time allocation (perceiving versus judging)

For more information on the basic dimensions click [here](#).

Distribution of Types in Management

Two poles for each of 4 dimensions yields 16 basic personality types. Each combination has detailed explanations of its views and values in the Myers Briggs Handbook. For example, the "INTP" type is often considered to be the most "academic" of all the types, while the "ESFP" is seen as the most sociable.

Margerison and Lewis (1981) surveyed 849 managers attending business school short courses, and obtained this distribution of types:

Extrovert		Total	Introvert	
ESTJ	20.7%	44.5%	23.8%	ISTJ
ESFJ	5.9	12.4	6.5	ISFJ
ENTJ	8.8	15.3	6.5	INTJ
ENFJ	1.6	4.0	2.4	INFJ
ESTP	3.9	8.2	4.4	ISTP
ESFP	1.2	2.4	1.2	ISFP
ENTP	4.2	7.1	2.9	INTP
ENFP	2.9	6.0	3.1	INFP

The "STJ's" form the largest chunk of the senior and middle managerial ranks. This is probably because these types are particularly attracted to managerial roles, and also because these types are selected for those roles

If we just look at the two middle dimensions, the breakdown is as follows:

Total	ST	SF	NF	NT
849 Managers	52.8%	14.8%	10%	22.4%

(a) *Managerial Style and Decision Making*

A number of authors have discussed the need for different types of conceptual skill and style within the managerial context. For example, Mintzberg [3] in his article "Planning on the Left Side, and Managing on the Right" describes the implications of research on the human brain. It has been suggested that the human brain is specialized with logical, linear functions occurring

in the left hemisphere and holistic, rational functions occurring in the right. Managers with the left hemisphere more developed would, Mintzberg suggests, be much better at planning and analytical work, managers with the right hemisphere developed better at imaginative overall control. This appears to reflect the sensing/intuitive dimension postulated by Jung.

Leavitt [4] also contrasts the analytical approach to management as exemplified in America by the MBA student with that of a more imaginative integrated approach based upon "consciousness raising". He comes to the conclusion that "we need to integrate wisdom and feeling with analysis". Again one can see some parallels with the typology through the need to integrate the thinking and feeling functions. McKenney and Keen [5] have also developed research on cognitive styles concerned with the differences between management scientists and general managers. They said management scientists were more logical and analytical than general managers who operate by the seat of their pants.

By far the majority of the work in this context has been done by Kilmann and Mitroff [6] using the four conceptual types outlined earlier. Their work has a tremendous number of applications. One of these is the preference of the different types for certain stages in decision making. Essentially:

1. The NF type prefers ambiguity, creating, feeling, problems/opportunities.
2. The NT type prefers defining problems/opportunities, identifying basic objectives and policies, establishing criteria for success.
3. The ST prefers defining solutions and planning their implementation.
4. The SF type prefers to be practical but work on the basis of what he feels to be the right way to go.

This suggests that cognitive styles will be different between staff and line managers, as each has to concentrate on different parts of the decision-making process. Kilmann and Mitroff go slightly further; not only do they postulate *the existence* of these different types of managers but they make three further propositions.

1. All types are necessary for an effective balanced solution that is implemented.
2. The views of each type, being so essentially different, will lead to difficulties in communication between them.
3. Not only their way of working will be different, but also their long-term goals.

If we consider the sample of managers, we can see that managers are predominantly the "ST" type. They will be concerned first and foremost with practical and logical problems. They will also prefer problems that are concrete and specific rather than ambiguous and abstract, hence, their impatience and distrust of issues that to them seem nebulous and not based on tangible factors. This is not to say that some managers do not prefer problem exploration and definition. As can be seen from the table, all the basic types are represented. However, it is also of interest to note that the types most concerned with people problems are outnumbered 3:1 by those most concerned with technical problems. Perhaps this explains the need for "interpersonal" skills courses for managers. The "SFs" are a low proportion - these are the types which act as "lubricant" to the social mechanism of management and again perhaps their low proportion explains some of the industrial relations problems that occur in organizations.

(b) Organization Structures

One of the constant themes of our work has been that people see and organise their world, including the world of work, in very different ways. This is why we are concerned with the mapping of personal spaces. Following the preferences given earlier it might be expected that the types of organizational structures set up will reflect these preferences. Again Kilmann and Mitroff have investigated this aspect. Table I gives a summary of some of their findings.

Table 1.

Areas\Types	Practical (ST)	Social (SF)	Idealistic (NF)	Theoretical (NT)
Structure	Practical bureaucratic, well defined hierarchy, central leader	Friendly but hierarchical	Completely decentralized, no clear lines of authority, no central leader	Complex organization, flexibility, changing authority, task forces
Emphasis in Interactions	Task orientation, complete control, specificity, fixed rules	Human qualities of people doing work as individuals	Humanitarian, general concern for development of employees	Goals, clients, effect of environment
Organizational Goals	Productivity, work flow	Good interpersonal relations	Personal and humanitarian	Macro-economic, theoretical

It can be seen that NFs prefer an organizational structure which is decentralised, which has no clear line of authority and no central leader. On the other hand, ST's prefer an authoritarian and bureaucratic organization with a well defined hierarchy and central leadership. The reasons for this stem from the nature of the work preference types. The NF person requires a high degree of autonomy and freedom in order to exercise his preferences and feeling. He prefers making contact with people regardless of their level and organization before he can work effectively. The ST type, on the other hand, prefers a well defined structure because this enables him to get on with what he enjoys doing-practical, everyday matters at hand. Discussions with people about feelings and intuition are often seen by ST people to be a waste of time and barriers to getting the task done.

Richek [71] found that sensing types had more positive attitudes to authority than intuitives. He also found that reality was perceived in different ways ranging from tangible material reality to intangible imaginative reality. One of the findings of the Aston studies was that the organizational structure of the company studied and the data collected were very much dependent on the attitudes of managers in each function. For example, the accountants often saw the organization very differently from the marketing people and also had different wishes for the type of structure they wanted. Handy [8] also examines this link between structure and individual most amusingly and instructively in *Gods of Management*.

Most managers are ST's and NT's with the thinking-judgmental style predominating. Organizations in which they worked, therefore, would be expected to follow a hierarchical principle and this appears to be true of most industrial organizations. On the other hand, there exist organizations such as the theatre or to a certain extent academic institutions in which there is relatively little hierarchy. Our own work [9] examined the preferences of academics in a business school and shows that their dominating preference was intuition, which accords with a loose form of organization.

What is being said, therefore, is that as people perceive organizations in different ways they will tend to try and reinforce this perception by creating organizational structures that will leave them free to work in the way they most prefer. This is one of the main motivating forces behind the action of individual in organizations. It has major implications for top manager selection and development that people select others in their own image.

(c) Approaches to Change

One of the major issues of importance in behaviour is the individual's responsiveness to change. This is reflected in his or her attitude towards time.

It had been suggested by Mann et al. [10] that the different Jungian types react to time and change very differently, that is:

- Sensation types - present orientation
- Intuitive types - future orientation
- Feeling types - past orientation
- Thinking types - time as a linear continuum

These approaches appear to have been borne out by some of the work that Kilmann and Mitroff [11] did in getting some groups within the American Bureau of Census to plan ahead to the year 2000. They concluded that:

To summarise ST's can be characterised as real-time, operational-technical, problem- solvers; NT's are future-time, strategic-technical problem generators; and SFs are real-time operational-people problem solvers related to intuitives, the planning horizon of sensing people is extreme; however the extreme sensing people are not interested in planning at all. They do not believe that one can talk sensibly about the future because one cannot sense **it** directly.

Again, if we look at the distribution of managers we can see that the majority (the sensing-thinking types will be concerned with the present here, and now. They will not be interested in long-term theoretical issues but those of immediate value. Hence, from a study of the types, it would be expected that for management educators to try to get managers to concentrate on theoretical ideas of general interest will not work. There is a reluctance to examine issues that are not directly pertinent to the current job.

(d) Creativity and Innovation

It might be expected from the preceding section that innovators would essentially be the intuitive types. However, this must depend on how creativity and innovation are viewed. Certainly, intuitive types predominate in creativity that involves redefinition of the problem with new and different ideas. The work of McKinnon [12] has shown a preponderance of intuitives in "creative" professions such as architecture and novel writing. However, creativity can and does also involve coming up with

many different solutions and alternatives rather than redefining the problem area. Kirton [13] defines these two different types of creativity as adaptor innovator. The adaptor can find many different ways of solving a problem but within the context of the rules and system-the innovator goes outside the accepted system and comes up with one or two radical proposals. Thus all types may be said to be creative but in different ways.

It is also in order to look at the prime areas in which the various types usually operate well and show their strengths.

- Sensing-Thinking ST Practicality
- Sensing-Feeling SF Social Relations
- Intuitive-Feeling NF Idealism
- Intuitive-Thinking NT Theory

Creativity to an ST, for example, may well be in redesigning or building machinery, a brick wall, or sewing a dress, etc. Creativity for the SF could be selling, or making people happy. For the NT, it could be developing a new model or concept and for the NF in creative writing, or communication. This is fine as long as each type recognises the creativity implicit in each other's chosen personal space.

From our sample we can see that the majority of managers would find it easiest operating within a system and working to rules and regulations. They will not want to continually question the basic framework within which they would be operating. Hence, again with some exceptions, because of the different types, managers would be uncomfortable with radical and drastic changes coming about through innovation. They would prefer "adaption", and gradual change.

(e) Career Development, Appraisal and Training

The model of work preferences that we have been discussing is based on the original theories and ideas of Jung. In essence, he was interested in a developmental guide to the path or career that an individual follows throughout his life. This aspect has recently been examined by Sheehy [14], for example. In this context the ideas of Jung are well worth following up as they do appear to facilitate the understanding of problems of career change and development. They are extremely complex ideas if considered only in theory, but when related to individual life patterns develop clarity and simplicity.

One such idea is that of the shadow. This is the "opposite" of the preferred type of orientation and as such is an area in which the individual prefers not to work. He or she also would find it very difficult to understand others of the shadow type. For example, logical thinking types would have as their shadows feeling types. How often have "thinkers" dismissed with scorn the "softness" of feeling types and in return the feeling types characterised thinkers as cold and heartless.

The dilemma is, however, that whilst there may be misunderstanding or even hostility towards "shadow" in other people, it also exists within our personalities. In order to end up a balanced mature individual Jung believed we must develop this "shadow" self. If we do not, he argued, it will develop itself either in the form of a breakdown or over-compensation. Careers can be seen in this light.

What we are suggesting, and in fact have used, is that this concept of "shadow" is of great use in appraisal and training. The majority of managers would have their shadow in the area of "theory" if our sample is a guide. There would also seem to be from our sample a considerable need for interpersonal skills development to help understand and improve relations with others. The dilemma is that this type of training, whilst absolutely necessary for balance, may be rejected because it is in the shadow-the hidden and feared part! This may well be the cause of the unease that some managers feel with regard to participation. A knowledge of type can therefore be of immense use to the trainer.

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Material drawn from:

Ancona, Kochan, Scully, Van Maanen and Westney. 1996. *Managing for the Future*. South-Western College Publishing

ARTISAN SPs,	GUARDIAN SJs,	RATIONAL NTs	IDEALIST NFs
Mozart, Composer Clint Eastwood, Crafter Elvis Presley, Performer Franklin Roosevelt, Promoter	Harry Truman, Inspector Mother Teresa, Protector Colin Powell, Supervisor Geo. Washington, Provider	Alberrrt Einstein, Architect D. Eisenhower, Mastermind Walt Disney, Inventor Bill Gates, Filedmarshal	Albert Schweitzer, Healer Mahatma Gandhi, Counselor Bill MOyers, Champion Mikhail Gorbachev, Teacher
CONCRETE in communicating	CONCRETE in communicating	ABSTRACT in communicating	ABSTRACT in communicating
UTILITARIAN in acting	COOPERATIVE in acting,	UTILITARIAN in acting	COOPERATIVE in acting,
can become skilled in TACTICAL VARIATION	can become skilled in LOGISTICS.	can become skilled in STRATEGIC ANALYSIS.	can become skilled in DIPLOMACY
promoting and operating (SPT expediting)	supervising and inspecting (SJT administering)	marshaling and planning (NTJ organizing)	teaching and counseling (NFJ mentoring)
displaying and composing (SPF improvising).	supplying and protecting (SJF conserving).	inventing and configuring (NTP engineering)	offering and tutoring (NFP advocating)
would be virtuosos	would be magistrates	would be wizards	would be sages
proud of themselves in the degree they are graceful in action,	proud of themselves in the degree they are reliable in action,	proud of themselves in the degree they are competent in action,	proud of themselves in the degree they are empathic in action,
respect themselves in the degree they are daring,	respect themselves in the degree they do good deeds,	respect themselves in the degree they are autonomous,	respect themselves in the degree they are benevolent
feel confident in the degree they are adaptable.	feel confident in the degree they are respectable.	feel confident in the degree they are strong willed	feel confident in the degree they are authentic.
"Sensation Seeking Personality" -- trusting in spontaneity and hungering for impact on others.	"Security Seeking Personality" -- trusting in legitimacy and hungering for membership.	"Knowledge Seeking Personality" -- trusting in reason and hungering for achievement.	"Identity Seeking Personality" -- trusting intuitive feelings, and hungering for profundity.
hedonic about the present,	stoical about the present,	pragmatic about the present,	
optimistic about the future,	pessimistic about the future,	skeptical about the future,	credulous about the future,
cynical about the past,	fatalistic about the past	solipsistic about the past,	mystical about the past,
preferred time and place is the here & now.	preferred time and place is the past & the gateway.	preferred time and place are the interval & the intersection.	preferred time and place are the future & the pathway.
Major in arts and crafts,	Major in commerce,	Major in the sciences,	Major in the humanities,
avocationally for techniques	avocationally for regulations	avocationally for technology,	avocationally for ethics
vocationally for operations work.	vocationally for materiel work.	vocationally for systems work.	vocationally for personnel work.
permissive as parents, playmates as spouses, and play oriented as children.	enculturating as parents, helpmates as spouses, and conformity oriented as children.	individualizing as parents, mindmates as spouses, and learning oriented as children.	Provide opportunity for fantasy as parents, spiritual intimacy as mates, and for themselves continuous self-renewal.
between 35% & 40% of population.	between 40% & 45% of population.	between 5% and 7% of population.	between 8% and 10% of population.
ARTISAN SPs,	GUARDIAN SJs,	RATIONAL NTs	IDEALIST NFs