Mind Mapping

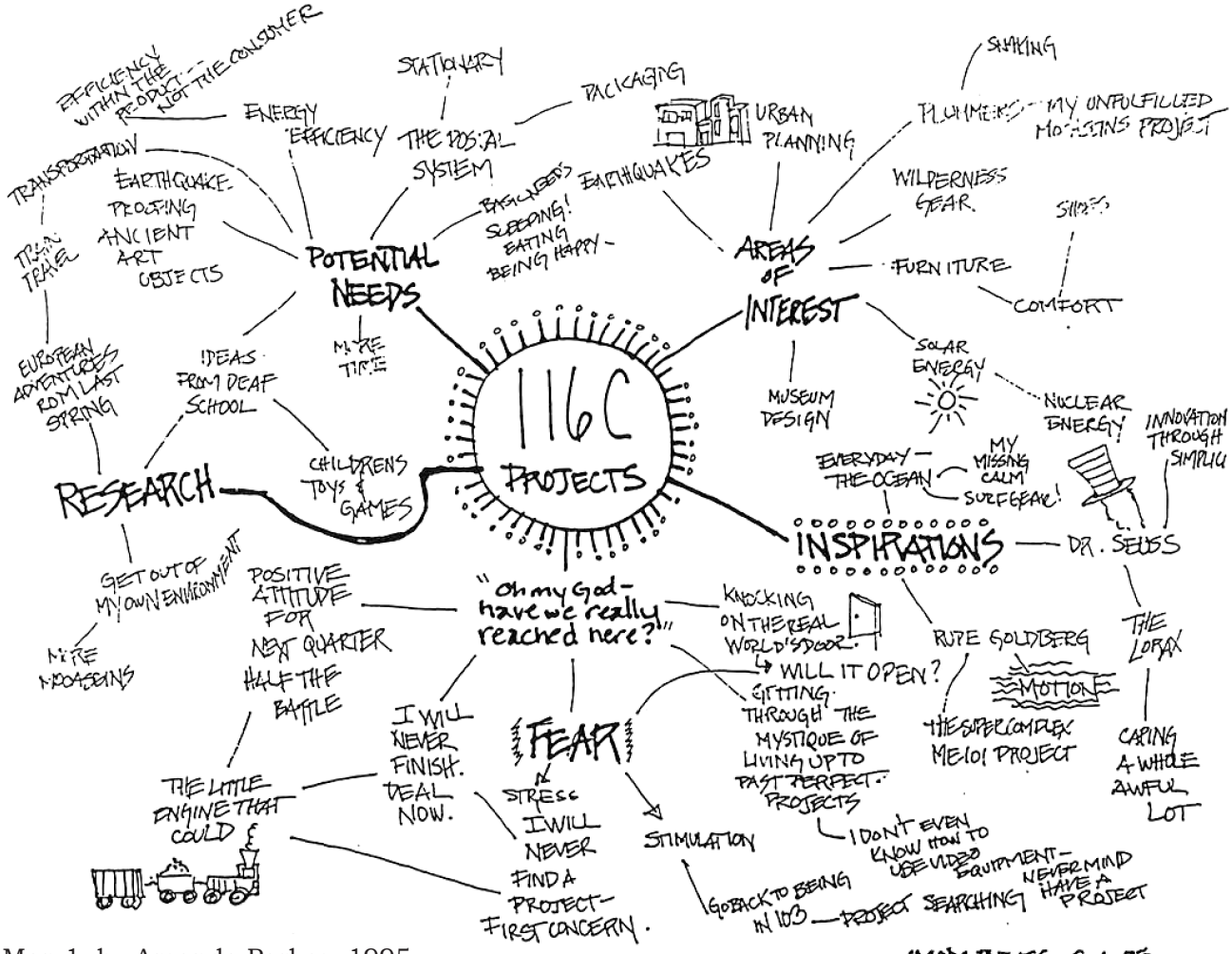
Rolf Faste, 1997

What is a Mind Map?

Rather than look like normal writing, mind maps look like explosions of writing, or star bursts of thought fragments, or perhaps like someone cut sentences into strips and threw them onto a page. (See Map 1 below, and Map 2, *Mind Mapping*) Their most distinctive feature stems from the fact that they start in the center of an empty page with a key phrase, issue or question. It is to this organizing theme that the map maker returns over and over again. As ideas come up, they are recorded radially, traveling outwards from the center. Lines are used to connect these thoughts together and record the branching and forking that takes place. Every time a train of thought is exhausted, the map maker jumps back to the center and begins again. When new thoughts are related to previous thoughts, they may be inserted near the old location, or lines may run across the page to connect the two ideas together. The result does, in fact, look something like a map. It shows how the map maker got from one idea to another. Its form reveals the nonlinear, jumpy nature of the thinking process. Its contents record the brain's wonderful ability to make connections between ideas, and to create new ones.

Mind maps are thus quite different from typical writing forms that start at the top left of a vertical page and proceed in a linear fashion. Mind maps are most closely related to outlines, but have a very different intent. Outlines express certainty, reflecting the way something is or how it is going to be. They are after-the-fact records that organize thought in a linear fashion. Few people are capable of sitting down and immediately writing a coherent outline that addresses a complex issue. Making a mind map logically precedes the making of an outline. Mind maps have their focus on revealing the structure of the thinking process in real time. Mind maps are organic and allow the structure to reveal itself.

While maps can be used for communication, they are better suited to creative thinking tasks like idea generation and pattern recognition. They are superb for asking questions and revealing connections between seemingly unrelated ideas. In the information age, or rather, the deluge of information age, mind maps provide life buoys to help stay afloat.



Map 1, by Amanda Parkes, 1995

Why Mind Map?

There are many reasons to use mind maps. (See Map 3, *Why Mind Map?*) When addressing an issue they may be used: to reveal your thinking to yourself and perhaps to others; to flesh out the components of the subject; to figure out what is going on; to remember what you know about something, and to explore what you don't know; to contextualize a situation, problem or need; to explore what is left out, taken for granted, assumed, overlooked, or intentionally obscured; to find patterns, recurring themes, surprising connections; to explore where action is needed, or a new design might make a contribution; to reveal conventional wisdom, then to question it; to use as a tool that can be tentative, exploratory, and not draw definitive conclusions; to hang out with ideas; to organize thoughts prior to presenting them in a linear format such as an essay or a speech.

In *The Mind Map Book*, Tony Buzan has championed mind maps for studying, remembering and learning. Many of his examples show notes taken from a lecture, or maps made from memory in preparation for an exam. He makes a wonderful observation when he says, "Neat notes are messy, conceptually. Messy notes (mind maps) are neat conceptually." By this he means that most students try to take notes going from the top of the page to the bottom. While they may be very neat, they don't convey the structure of the lecture. Even students who try to take notes in an outline form rarely succeed in capturing the overall concepts that are being conveyed. On the other hand, notes taken from a mind mapping mode may look incredibly messy, but the overall structure of the lecture can easily be discerned. After class, mind maps can be used to reconstruct the entire lecture.

Others have championed mind maps as a means to organize thoughts prior to writing essays or creative fiction. In English classes I have heard this activity referred to as cluster diagramming, or webbing.

At Stanford, we use maps to help teach design. My students use mind maps to explore need areas to better understand projects they are working on. We also ask them to mind map reading assignments. The intent here is not to record or duplicate the content of the author's message, but rather to reveal their thinking about the material, to ask questions and stimulate making connections to their own ideas and memories. When they have done this, they are well prepared to actively participate in class discussions.

Mind maps can be private or public. Maps can record personal thinking done with no intention of being shared. They can be made in private, but knowing that they will be shared with others. They can be made in private, then reorganized and redrawn for others. Or maps can be the result of a team working on a problem together.

To summarize, mind maps can be used when persons want to do any of the following activities:

To learn
To record a talk or lecture
To prepare for a talk or paper
To study for an exam
To ask questions
To exercise the brain

To generate creative ideas
To get started quickly
To brainstorm alone, or with others
To search for patterns and connections
To search for what is missing
To speculate: to ask, "what if?"
To reveal and explore personal values
To dream and create a personal vision
To merge poetry and design
To "walk on a moonbeam" (Einstein)

To communicate
To reveal the nature of your thinking to others
To demonstrate a structure or pattern to others
To organize your thoughts for a talk
To record a meeting
To generate enthusiasm and involvement

To make decisions
To get everyone's input
To analyze a problem
To get organized, or organize information
To separate the important from the extraneous
To be sure you are working on the right problem
To reach a consensus or a vision
To record everyone's ideas in one place

Getting Started

Media
While maps can be done on letter sized plain white copy paper, the process is enhanced by having more space to work on. Treat yourself to large sheets of quality paper. 11"x17" or A3 is a nice size because it can be easily photocopied and, folded in half (or Z folded), it can fit in normal notebooks. Beyond this, the only the limit is the size of your biggest table, or wall. People tend to look at maps over and over again. Maps are often hung up for reference or review by others. It is a good idea to use high quality paper that will hold up to repeated use.

My philosophy regarding materials is always to use the best possible. To some extent this is at odds with the non precious mind-set that a mind mapper needs to adopt while exploring an idea. Bigger sheets of paper have more white space, which can be intimidating. If this is a concern for you, start with small sheets of paper. It is always OK to add on paper any time an idea is about to run out of room.

I advocate the use of ink pens rather than pencils. Pencils encourage erasing, which is both unrequired and a waste of time. Since "being correct" isn't an objective of creative mind maps, there is no need to erase. Quite the reverse, it is really useful to record the entire thinking process including dead ends and intuitive leaps. Maps and drawings done with pens also are more legible and photocopyable than those done with pencils. Black pens work best. A later section will explore the possibilities that arise when color is utilized.

Space
Mind mapping doesn't require a special space. It should simply be pleasant to be in and well lit. Ordinary chairs and solid tables are fine. The table should support working at the desired scale.

If several people are going to work on the map, there must be room for everyone to reach the map comfortably. They don't have to be able to reach the map from one side—they can be distributed around it. Maps don't have to have one side up. They can have no sense of gravity whatsoever. This may make them hard to read, but it allows people to come at the issue from all directions. The map can be redrawn with a single orientation later.

Time
You need as much time as is appropriate for the task. A one minute map can greatly improve a 15 minute essay. A thoughtful one hour map will make a useful contribution to any project. An all day map making session may be appropriate for a research group trying to summarize the status of a project, or deciding where to allocate resources.

It is best if you can get all your main thoughts onto a map in one work session. It is hard to come back to a half finished map and pick up both the nature and spirit of a train of thought. Your first attempt at a map doesn't have to be perfect. One of the nice features of maps is that you can always come back and add more ideas. As we will see, maps require a certain level of richness in order to become useful. This takes time. Start a map only when you will have enough time to finish it.

Basic Principles

The basic principles of mind mapping are: (see Map 4, *The How of Mind Mapping*)

1 Create a Center Statement.
2 Develop ideas radially outward.
3 Capture ideas quickly.
4 Use lines to show connections.
5 Create train-of-thought structures.
6 Follow an idea as far as it will go.
7 Work from the known to the unknown.
8 Return to the center when ideas are exhausted.
9 Increase density to create richness.
10 Avoid being judgmental.
11 Have fun with the form.

1. Create a Center Statement. The title in the center should state the topic, issue or question that is being addressed. The key thing about the center statement is that you will be continually returning to it. Not only will you be returning to it, but you will be returning to it when you have run out of things to say during your previous stream of thought. So this center statement should be something that you really want to come back to. If you simply want to explore a topic, write it down. In the attached example, "Mind Mapping," written big and bold, indicates clearly what the map is going to be about. When your issue is an aspect of a bigger topic, write the aspect. These titles may be simple and straight forward, or snappy according to your preference. If you address issues that excite you, fascinate you, or that you can generate some emotion about, making a map will be fun. The best maps are maps you want to make. The title should foster this enthusiasm.

The center statement may also be a whole sentence. Problems are often best written this way. I'll say more about this later. Likewise, If you are addressing a specific question, write the question. Questions or complete sentences tend to tighten up the exploration and give a map more focus.

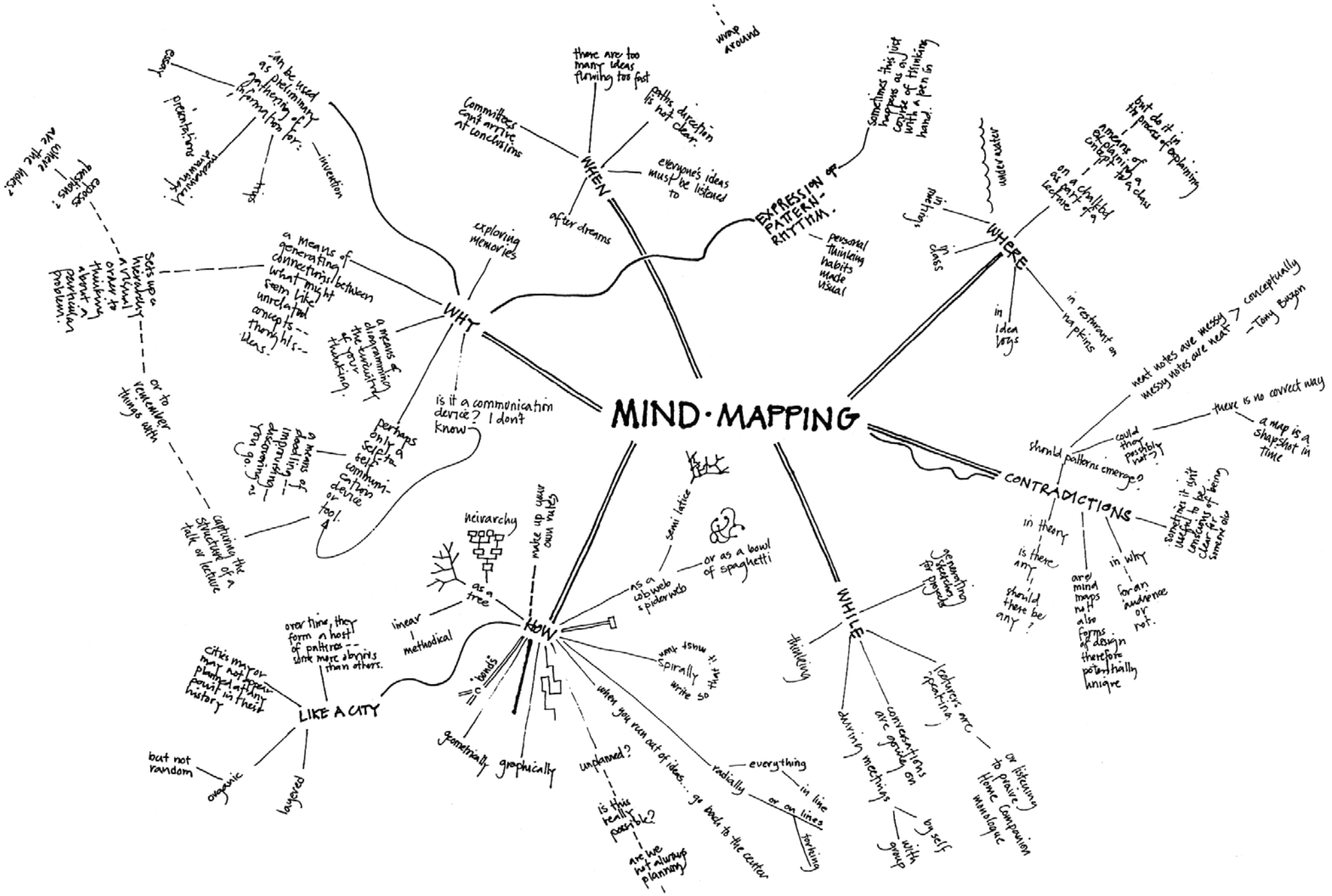
The beauty of writing the issue in the center of the page is that you are no longer facing a blank sheet of paper. When you start at the top, you are still facing an empty page. Worse, the empty page is really demanding that the most logical next idea be written next. When you start in the center, the paper is already messed up. Furthermore, it doesn't matter where you go next. This makes it much easier to get going. The ice is truly broken.

2. Develop ideas radially outward. The next step is to look at this statement, think of the first thing you want to say, draw a line away from the statement and say it. When I start, sometimes I look at the center and realize that there are several categories that will need to be addressed. In our own example, these were the obvious ones: how, where, when, and why do we mind map? I could draw several lines out in different directions, and write these words down. I find this often leads to organization problems because I can't predict how much room each issue will require. So I often put them down in a clump, or take notes on scratch paper so I won't forget them. That way, when I address the next issue I can put the key word in a location that provides enough room to explore it.

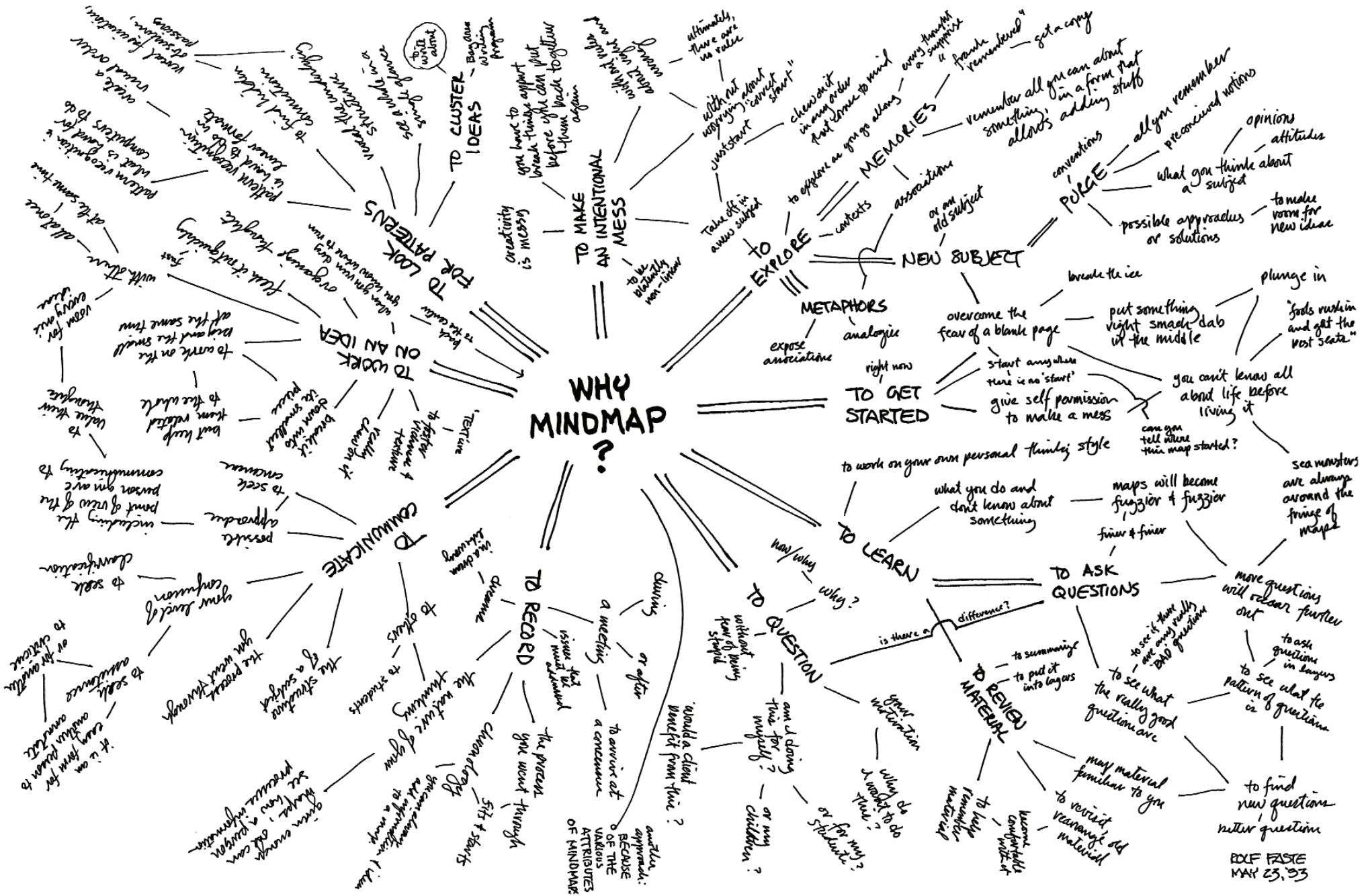
3. Capture ideas quickly. Complete sentences aren't required. Key-words, phrases and even quick sketches, drawings, diagrams and symbols are fine. Ideas often come faster than you can write them down. The trick is to record them well enough to remember what you were thinking. When you are done you can go back in with a fine pen and clarify your thoughts or add detail. Usually I find that when I am past this first level and into a sub-issue like "Why Mind map?" I am off and running. The urge to be even more organized and think of still finer categories is no longer with me. I'm sure everyone differs on this. After I brainstorm many topics I realize, "Oh, note-taking and studying for an exam are related, they both have to do with learning." So I could have had a subcategory named learning. This is the beginning of the pattern recognition stage.

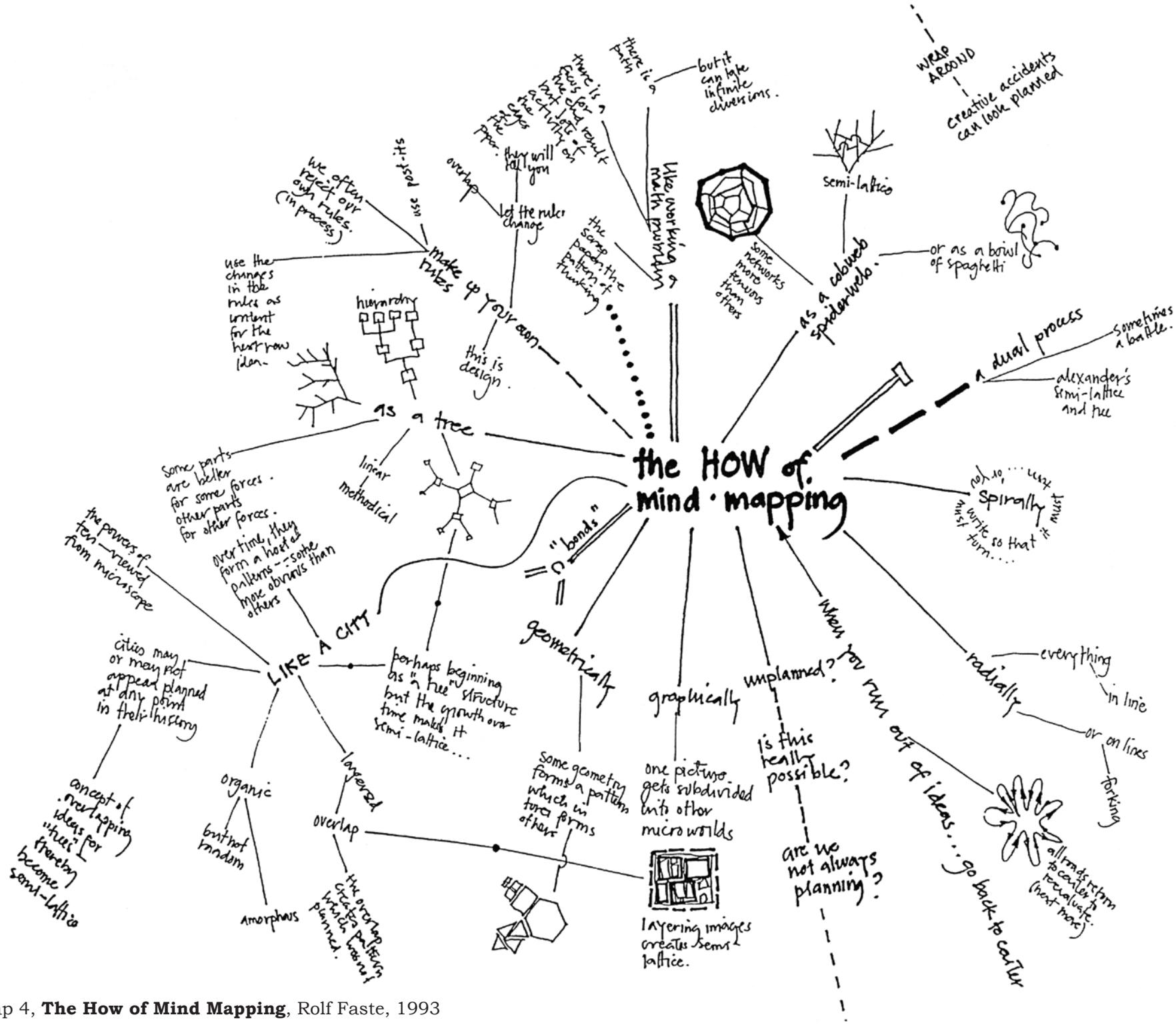
4. Use lines to show connections. As ideas come, they flow outward. As you think of related ideas, draw a line from the previous idea and write it down. The lines indicate the connections. Whether they are obvious or not, our minds work in metaphorical leaps. It is often interesting and valuable to see where ideas came from. You can use different kinds of lines: fat ones, thin ones. One of my students, Peter MacDonald, hit upon using double lines to show emphasis. His maps looked like super highways with interchanges and arterial feeders. Lines can connect clumps of words, or they can branch off the other lines. There are no correct rules. You can make your own. Wavy lines can indicate uncertainty. Dotted lines metaphorical leaps. A long line can run across a distance, leaping other lines in the way, to connect distant ideas together, or simply to find room to add more thoughts.

5. Create train of thought structures. This continual connecting and branching reveals a structure of thought. The solid collection of lines clearly indicate how the ideas flowed from one to another.

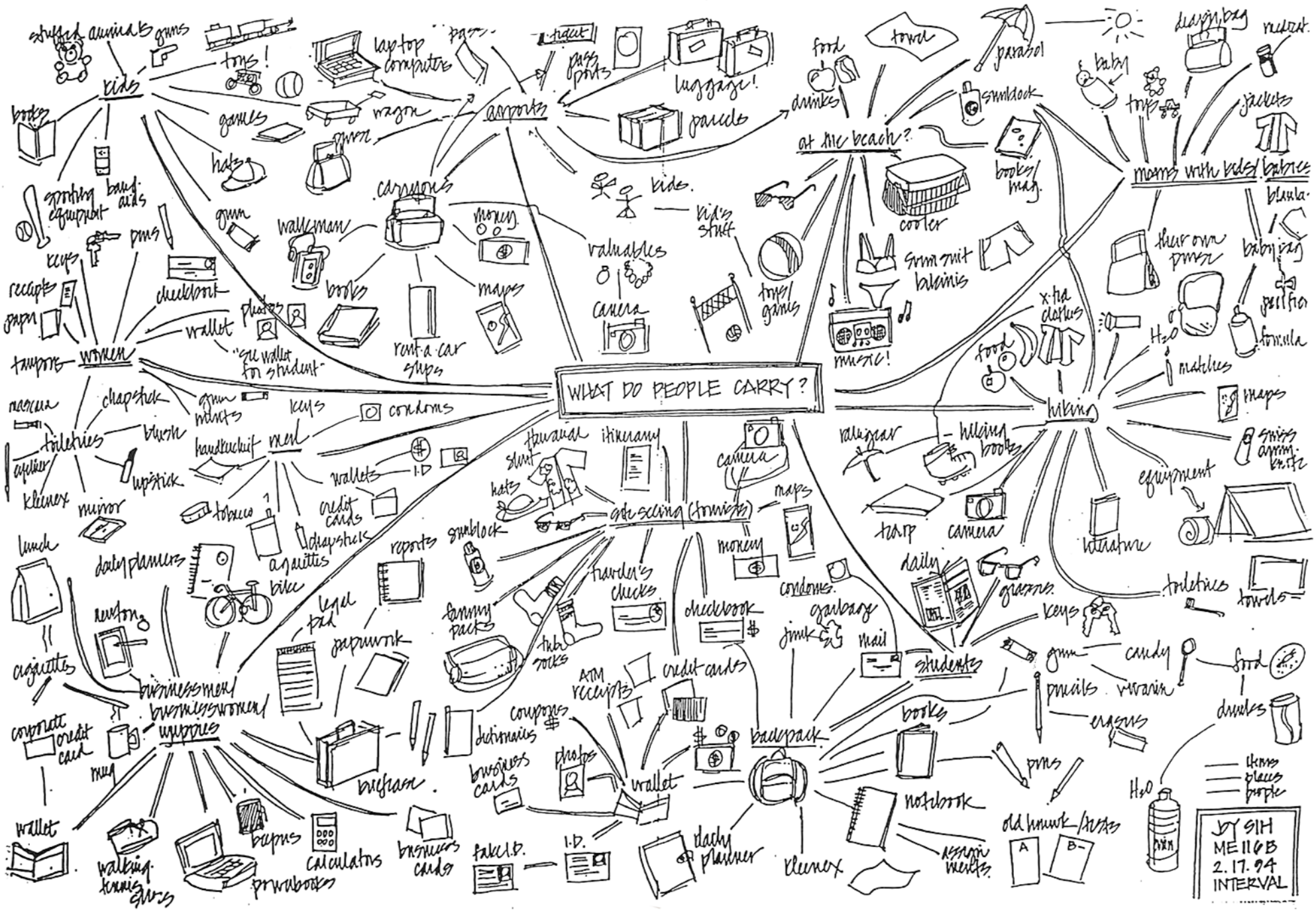


Map 2, **Mind Mapping**, Rolf Faste, 1993

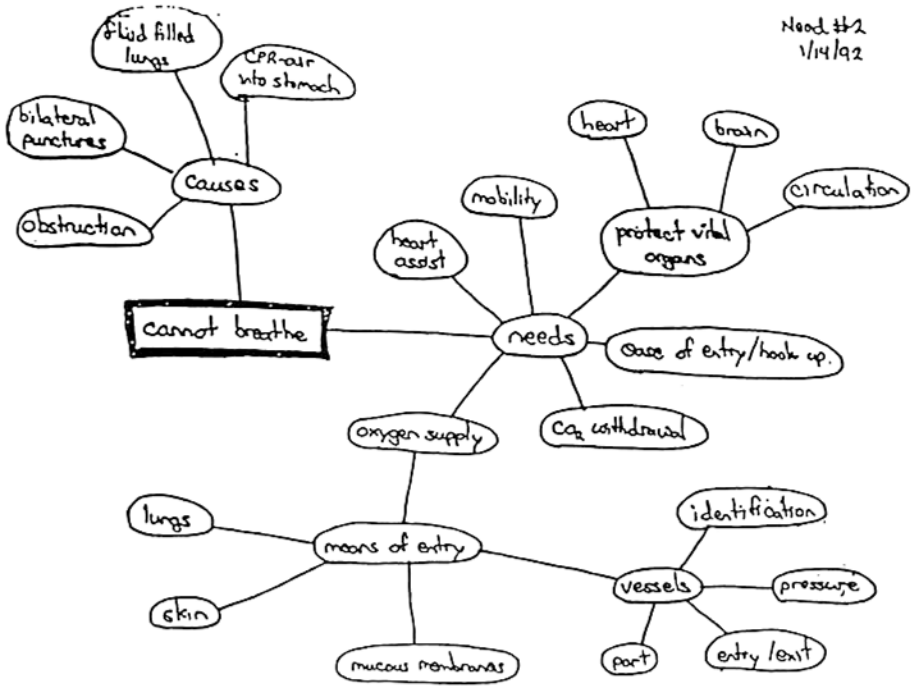

WHY MINDMAP ?
TO EXPLORE
TO MAKE AN INTENTIONAL MESS
creativity is messy
you have to break down and start over
ultimately, there are no rules
with not copying about "correct start"
just start
Take off in a new subject
to be playfully non-linear
MEMORIES
to explore on your own
chews on it in any order that comes to mind
every thought a surprise
frantic remembered
get a copy
remember all you can about something, allows adding stuff
NEW SUBJECT
or an old subject
associations
contexts
METAPHORS
analogies
expose associations
PURGE
conventions
all you remember
preconceived notions
opinions
attitudes
what you think about a subject
possible approaches or solutions
to make room for new ideas
TO GET STARTED
right now
overcome the fear of a blank page
break the ice
put something right smack in the middle
dab
plunge in
"fools rush in and get the best seats."
start anywhere there is no 'start'
you can't know all about life before living it
give self permission to make a mess
can you tell where this map started?
TO LEARN
to work on your own personal thinking style
what you do and don't know about something
maps will become fuzzier & fuzzier
finer & finer
sea monsters are always around the fringe of maps
TO ASK QUESTIONS
move questions will release further out
to ask questions in layers
to see what the pattern of questions is
to see what the really good questions are
to see if there are really BAD questions
is there a difference?
TO REVIEW MATERIAL
to summarize
to put it into layers
to find new questions / better questions
ROLF FASTE MAY 23, '93
may material familiar to you
to revisit / reexamine old material
become comfortable with it
to help remember material
your motivation
why do I want to do this?
for my students?
for my children?
am I doing this for myself?
TO QUESTION
now/why
why?
without fear of being stupid
would a client benefit from this?
another approach: BECAUSE OF THE VARIOUS ATTRIBUTES OF MINDMAP
during
or after a meeting
to exercise a conscience
TO RECORD
during
as they occur
issues that must be addressed
the process we went through
the content of what was said
the pattern of ideas
clusters
gist of topics
give enough detail to be meaningful a year from now
quick, easy, portable
see entire information
TO COMMUNICATE
to others
to students
to self
to our audit
to clients
the process we went through
the content of what was said
the structure of a subject
your message clarified
to scale clarification
pictorial approach
to see patterns
including the point of view of the person you are communicating to
to value their thoughts
TO LOOK ON AN IDEA
look at it in different ways
turn it sideways
flip it over
look at it from above
look at it from below
look at it from the center
to settle on the most important part of the small of the same time
but look from radical to the whole
break it down into smaller pieces
visualize it
to picture it
visualize
vision
vision for the future
TO LOOK FOR PATTERNS
look at the same time
look at it from different perspectives
look at it from different points of view
to find underlying connections
to find hidden meanings
to find hidden structures
to find hidden relationships
to find hidden connections
to find hidden dynamics
to find hidden forces
to find hidden influences
to find hidden causes
to find hidden reasons
to find hidden motivations
to find hidden patterns
to find hidden systems
to find hidden principles
to find hidden laws
to find hidden rules
to find hidden truths
to find hidden realities
to find hidden meanings
to find hidden connections
to find hidden relationships
to find hidden structures

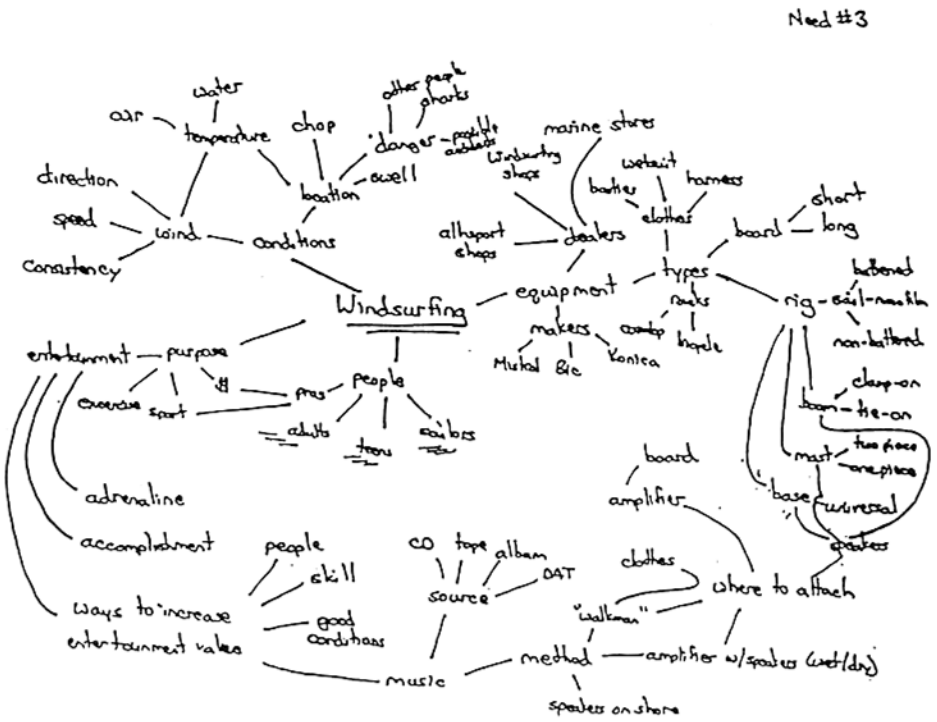


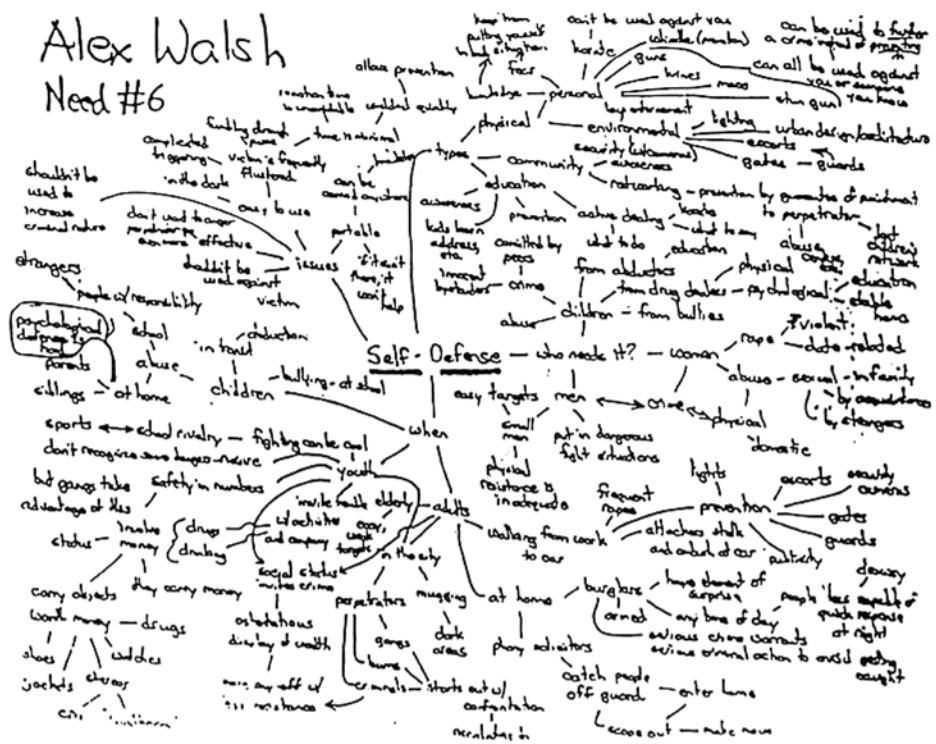
Map 4, **The How of Mind Mapping**, Rolf Faste, 1993



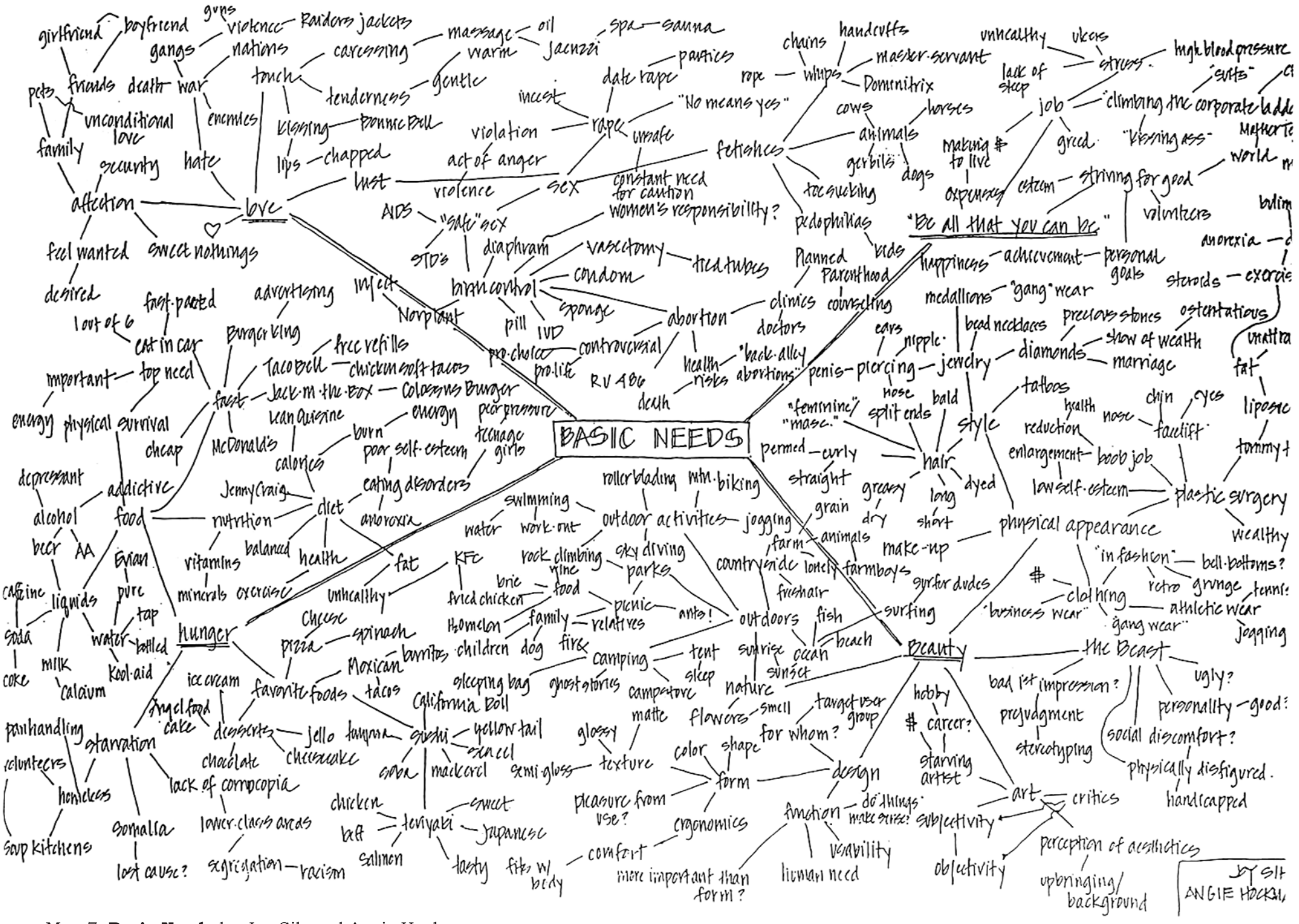
Map 5, **What do People Carry?** by Joy Sih







Map 6, Needfinding maps by Alex Walsh.
These maps show the increasing density of ideas that come with practice.


BASIC NEEDS
love
affection
family
friends
pets
unconditional love
security
feel wanted
desired
sweet nothings
lust
sex
violence
act of anger
violation
rape
incest
date rape
panties
"No means yes"
unsafe
constant need for caution
fetishes
chains
handcuffs
whips
rope
master-servant
Dominitrix
toe sucking
pedophilias
kids
animals
cows
horses
gerbils
dogs
AIDS
"safe" sex
STD's
women's responsibility?
birth control
diaphragm
vasectomy
tied tubes
condom
sponge
pill
IUD
Norplant
abortion
clinics
doctors
Planned Parenthood
counseling
pro-choice
pro-life
controversial
RU 486
health risks
"back-alley abortions"
death
penis
piercing
ears
nipple
nose
jewelry
medallions
"gang" wear
bead necklaces
diamonds
precious stones
show of wealth
marriage
ostentatious
style
tattoos
hair
"feminine"
"masc."
permed
curly
straight
split ends
bald
greasy
dry
long
dyed
short
grain
physical appearance
make-up
plastic surgery
health reduction
enlargement
boob job
nose
chin
eyes
facelift
fat
liposuc
tummy t
unattra
low self-esteem
wealthy
beauty
the Beast
bad 1st impression?
prejudgment
stereotyping
ugly?
personality
good?
social discomfort?
physically disfigured.
handicapped
clothing
"in fashion"
bell-bottoms?
retro
grunge
tennis
athletic wear
jogging
"business wear"
"gang wear"
surfer dudes
surfing
farmboys
lonely
farm
animals
countryside
fresh air
outdoors
fish
ocean
beach
sunrise
sunset
nature
flowers
smell
camping
tent
sleep
campstove
sleeping bag
ghost stories
outdoor activities
jogging
swimming
water
work out
rollerblading
mtn. biking
rock climbing
sky diving
parks
picnic
ants!
wine
brie
fried chicken
watermelon
children
dog
family
relatives
fire
hunger
pizza
cheese
spinach
Mexican
burritos
tacos
favorite foods
ice cream
angel food cake
desserts
jello
tampura
chocolate
cheesecake
sushi
California Roll
yellow tail
mackerel
eel
soba
teriyaki
chicken
beef
salmon
sweet
Japanese
tasty
starvation
panhandling
volunteers
homeless
soup kitchens
Somalia
lost cause?
lack of cornopcia
lower-class areas
segregation
racism
food
addictive
alcohol
depressant
beer
AA
liquids
caffeine
soda
coke
milk
calcium
water
Evian
pure
tap
bottled
Kool-aid
nutrition
vitamins
minerals
exercise
diet
Jenny Craig
calories
burn
energy
Jean Quisine
eating disorders
anorexia
poor self-esteem
teenage girls
peer pressure
balanced
health
unhealthy
fat
KFC
fried chicken
fast
Taco Bell
free refills
chicken soft tacos
Jack-in-the-Box
Colossus Burger
McDonald's
Burger King
fast-paced
1 out of 6
eat in car
important
top need
energy
physical survival
cheap
advertising
infect
Norplant
job
unhealthy
stress
high blood pressure
lack of sleep
"suits"
climbing the corporate ladd
"kissing ass"
greed
making $ to live
expenses
esteem
striving for good
world
volunteers
"Be all that you can be"
happiness
achievement
personal goals
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steroids
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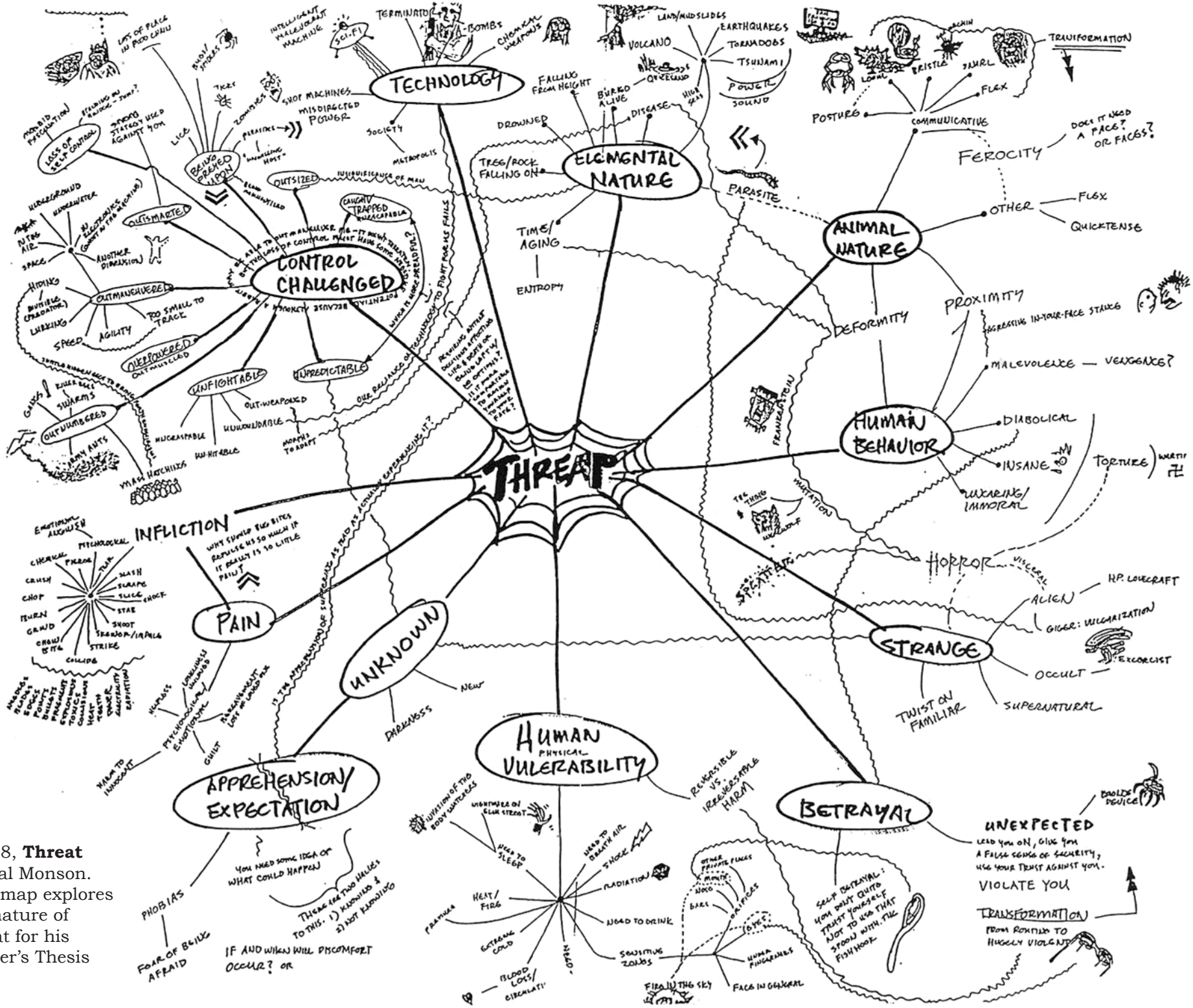
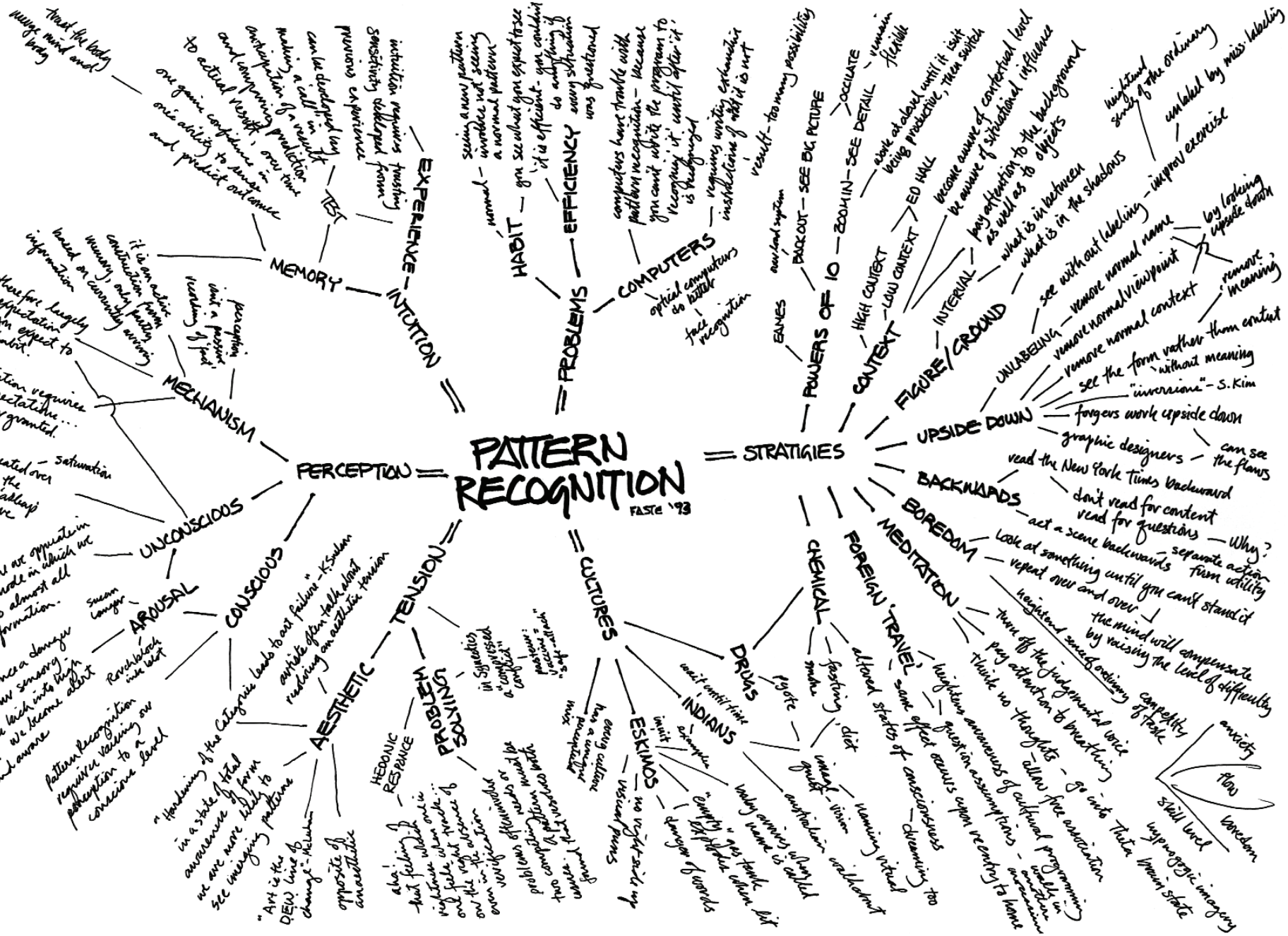


Map 8, **Threat** by Hal Monson. This map explores the nature of threat for his Master's Thesis

Map 9, **The Mind's Eye**, lecture notes by Rolf Faste from a talk by Sara Little Turnbull, 1995



Map 10, **Pattern Recognition**, Rolf Faste, 1993

6. Follow an idea as far as it will go. Sooner or later, ideas come to an end. At some point I tend to run out of gas, or I have really said enough about that issue, or have gone thoroughly off the track, or gotten to the point where I have nothing but questions. That's the time to stop the train.

7. Work from the known to the unknown. Questions are a good place to wind up. Because we tend to work from the known to the unknown, it is normal to have questions at the fringe of the map. Knowledge becomes less certain and rather fuzzy at the edges, just like a 17th century world map. Questions are a great way to summarize an idea chunk and provide a good place to stop.

8. Return to the center when ideas are exhausted. When you have finished a thought, go back to the center. If you have already have another category in mind, you can begin on that. If not, look at the center idea until you think of another issue to explore. In my example, I came back to "Where to mind map?," and I was off and running again. Repeat the cycle of coming to the center and starting over until you have exhausted your thoughts on the subject or just plain run out of room. Note that if you really need more space you can tape on an extension.

9. Increase density to create richness. Interesting and insightful maps occur when a certain density of ideas is achieved. Density creates a critical mass—the opportunity for fission and fusion of ideas and concepts. When there are a lot of ideas, they jostle each other and bounce off each other—they break apart and re-combine in unexpected and delightful patterns.

Map 6 shows four maps done by a student during weeks 2, 3, 4 and 6 while taking a class which explores human need. Each one concerns a possible design project. The first explores an issue raised while spending time with Paramedics, i.e., Inability to Breathe. The others continue with Windsurfing, First Aid, and Self Defense. These maps show a clear and intentional progression from simple and elementary to dense and rich. The first map might be appropriate for communicating an idea to someone else, but is not rich enough to generate new insights about the issue of breathing. In remarkable contrast, the last map is far more likely to reveal a multiplicity of fruitful approaches to his problem. It is also far more interesting for a reader to study—the density of ideas creates an involvement with the thinking process itself.

A wonderful feature of mind maps is that you can go back into a map and use the interstitial spaces to record new ideas and insights. Often increasing the density can turn a ho-hum map into an exciting one (see Map 7). Achieving such density takes time, which is why it is important to commit a sufficient amount of time to the effort.

10. Avoid being judgmental. In any creative process, premature criticism kills ideas before they even have a chance to breathe. Problem solving sessions should not tolerate critical comments while ideas are flowing. This applies to mind mapping just as it applies to brainstorming. It should be an expressive, exploratory activity. Mind maps are best when free flowing, speculative and uncensored by our judgmental self.

At Stanford we characterize the creative process with the acronym "ETC." Professor Bob McKim coined this phrase which stands for Express, Test, Cycle. The key idea is to separate creative thinking (Expressing Ideas) from judgmental thinking (Testing Ideas). There should be no censorship, testing or judging allowed while in the expressive, idea generating phase of thinking. Once we have a large number of ideas (or solution candidates), we can stand back, be objective, and make judgments about our ideas. If we have possible solutions to our problems, great. If not, we Cycle again and begin another Express phase.

11. Have fun with the form. Mind maps often exhibit the map maker's sense of aesthetics and playfulness (see Map 8). People who make a lot of maps often become very creative in finding new forms that help them communicate their ideas, or simply make them more fun to do. We will discuss some of these forms later as they can be quite useful.

And now it's time to make some maps!