# An Any-Century Curriculum

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## Introduction

Our schools are stuck on a performance plateau. Even the best of them fail to hook solidly into students' natural curiosity, natural need to know, natural desire to make more sense of the world and their place in it.

Take away the report cards, certificates, diplomas, attendance laws, parental pressures, and community expectations, and America's schools would fall apart.

Obviously, when the drive to learn is intrinsic, but attempts to educate the young must lean so heavily on fear and other extrinsic motivators, something is seriously wrong.

And merely doing with greater determination what we're already doing isn't going to make what's wrong, right. Neither will raising standards, playing with class schedules, eliminating social promotion, administering more standardized tests, cutting class sizes, extending the school year, concentrating on "the basics," facilitating school choice, setting up alternative schools, installing exotic technology, staffing in innovative ways, or firing any other of the currently popular "silver bullets."

Those may bring marginal improvement but no really significant, lasting gains in the quality of learner intellect.

Searching for explanations of flat performance, the one place where the education establishment and legislative policymakers seem least likely to look is where the main problem surely lies—in the curriculum. Schooling, finally, is about what's taught and learned. No matter how high the standards, no matter how beautiful the buildings, no matter how advanced the technology, no matter how smooth the schedule, no matter how willing or enthusiastic the participants, if the curriculum is poor, the school will be poor.

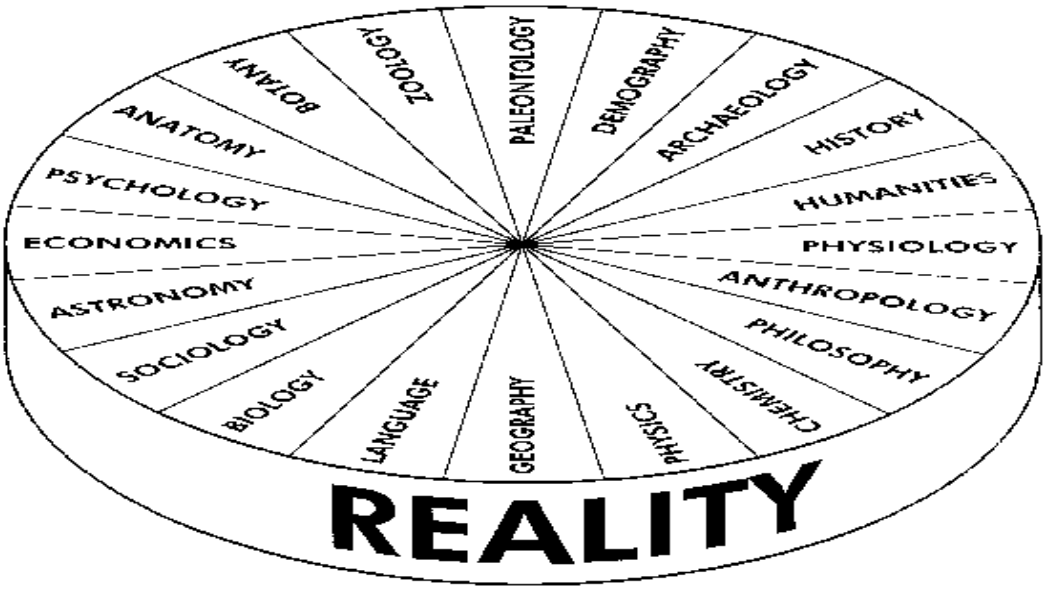
## Current Approaches to Curriculum

What should the young be taught? Ask a dozen educators, and there'll likely be a dozen different responses: "The main purpose of educating is to introduce students to the various fields of knowledge," ". . . to teach them to think," ". . . to prepare them for useful, productive work," ". . . to create democratic citizens," ". . . to develop individual potential," ". . . to teach the basics," ". . . to transmit our cultural heritage," ". . . to meet student needs," ". . . to instill virtue," ". . . to improve scores on standardized tests," and so on.

Perhaps because of the lack of agreement about overall direction, what's happening today in most classrooms is best explained by what happened last year. What happened last year is best explained by what happened the year before. And what happened the year before that is best explained by what happened back to the 19th century when the now-familiar academic disciplines took on distinct identities and began to be taught as school subjects and courses.

Underlying academic disciplines, subjects, and courses is the assumption that reality—the world around us we're trying to understand—is so complicated it has to be "taken apart" to be understood. However, these "parts" are also complicated, so complicated no one can master more than one or two of them. A "good" education, therefore, is thought to be one that gives the student a little of several disciplines and a lot of one of them.

This assumption about the organization of knowledge could be represented graphically like this:




The view that knowledge must be compartmentalized is the one most widely shared by both educators and non-educators. There are, however, dissident voices.

Some educators—interdisciplinarians—point out that, in the real world, the things we're trying to understand almost never fall into neat little compartments that correspond to the disciplines. They look for ways to bridge between them, and for disciplinary parallels and intersections to explore.

Others say the disciplines shouldn't be seen as ends in themselves but as tools. These educators start with a project, social problem, theme or topic, and bring the disciplines to bear, examining their focus from different disciplinary perspectives.

Still others never actually mention or even credit the disciplines, but use them as sources of facts, ideas or insights as they attempt to help students understand themselves, their immediate situation, the past, and probable and possible futures.

Even the dissidents, then, assume that the disciplines are the basic organizers of knowledge, assume that they disassemble the reality we're trying to understand in the most useful and logical way.

It's an erroneous assumption.

## What's Wrong with the Disciplines?

The disciplines certainly have their uses. We've created a society that can't function without highly specialized knowledge. The disciplines provide that, but they aren't by any means the most useful and logical way to organize the general education curriculum.

What learners need is a "master mental filing system" that makes accessible in memory everything they know, a system that helps them distinguish between the important and the trivial, a system suggesting things they could know but don't, a system that makes clear the systemically integrated, mutually supportive nature of knowledge, a system that shows them the basic processes by means of which knowledge expands.

And that system should do all of those things in ways the average adolescent can understand and explain.

## What Respected Scholars Say On the Subject

**Alfred North Whitehead**: "[We must] eradicate the fatal disconnection of subjects which kills the vitality of the modern curriculum." (Presidential Address to the Mathematical Association of England, 1916)

**Felix Frankfurter**: "That our universities have grave shortcomings for the intellectual life of this nation is by now a commonplace. The chief source of their inadequacy is probably the curse of departmentalization." (Introduction to Alfred North Whitehead's The Aims of Education, Mentor 1948)

**Neil Postman**: "There is no longer any principle that unifies the school curriculum and furnishes it with meaning." (Phi Delta Kappan, January 1983, p. 316)

**John Goodlad**: "The division into subjects and periods encourages a segmented rather than an integrated view of knowledge. Consequently, what students are asked to relate to in schooling becomes increasingly artificial, cut off from the human experiences subject matter is supposed to reflect." (A Place Called School, McGraw-Hill, 1984, p.266)

**Association of American Colleges**: "We do not believe that the road to a coherent education can be constructed from a set of required subjects or academic disciplines." ("Integrity In the College Curriculum, A Report to the Academic Community," Project On Redefining the Meaning and Purpose of Baccalaureate Degrees, 1985)

**Harlan Cleveland**: "It is a well-known scandal that our whole educational system is geared more to categorizing and analyzing patches of knowledge than to threading them together." (Change, July/August 1985, p. 20)

**Buckminster Fuller**: "American education has evolved in such a way it will be the undoing of the society." (Quoted in Officer Review, March 1989, p.5)

**Thomas Merton**: "The world itself is no problem, but we are a problem to ourselves because we are alienated from ourselves, and this alienation is due precisely to an

inveterate habit of division by which we break reality into pieces and then wonder why, after we have manipulated the pieces until they fall apart, we find ourselves out of touch with life, with reality, with the world, and most of all with ourselves." (Contemplation In a World of Action, Paulist Press, 1992, p.153)

**David W. Orr**: "A second danger of formal schooling is that it will imprint a disciplinary template onto impressionable minds and with it the belief that the world really is as disconnected as the divisions, disciplines, and subdivisions of the typical curriculum. Students come to believe that there is such a thing as politics separate from ecology or that economics has nothing to do with physics." (Earth In Mind, Island Press, 1994, p.23)

**Peter M. Senge**: "From a very early age, we are taught to break apart problems, to fragment the world. This apparently makes complex tasks and subjects more manageable, but we pay a hidden, enormous price. We can no longer see the consequences of our actions; we lose our intrinsic sense of connection to a larger whole." (The Fifth Discipline, Currency Doubleday 1990, p.3)

## A Seamless, Supradisciplinary Curriculum

Studying reality holistically doesn't mean abandoning the Western, science-based "take-it-apart" approach and replacing it with meditation or some New Age strategy. What needs to be abandoned is the assumption that the traditional disciplines break reality and knowledge of it apart in the most useful way possible.

Fortunately, an alternative doesn't have to be invented. It's already in place and in constant use by all of us—may, in fact, already be "hard-wired" in our brains. All we need to do is make this implicitly known system explicit and formally adopt it as the "meta-organizer" of the general education curriculum.

Educating, finally, is about understanding—making sense of experience. When we isolate some part of experience in order to describe or analyze it, we seek just five kinds of information:

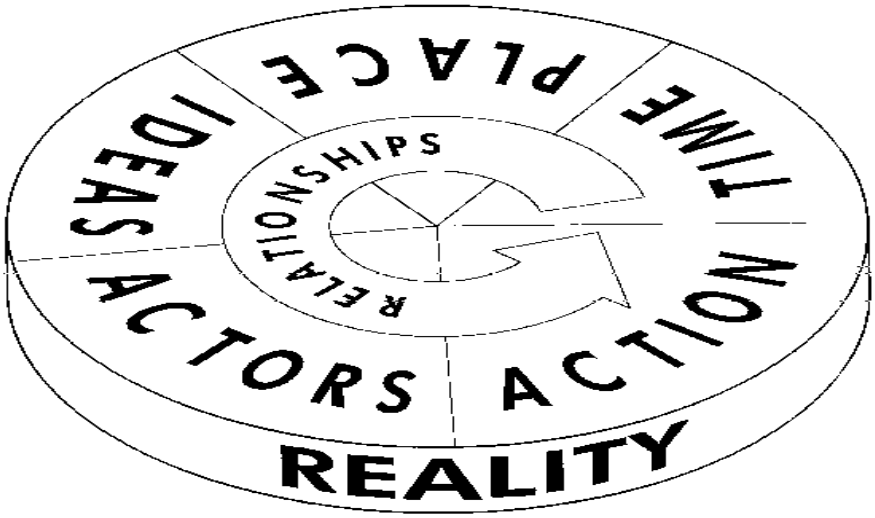
1. Its physical milieu
2. Its location in time
3. The identity of the participating actors or objects
4. The nature of the action
5. The states of mind "explaining" the action.

We take reality apart by asking "who, what, when, where, why." We model reality holistically by putting them together in stories and drama—devising a plot, then choosing a setting, time, and actors, and acting it out.

This five-category ***Model*** of reality, not the familiar disciplines, is the optimum conceptual organizer of sense-making—the "raw material" from which we construct thought, language, meaning. The Model may be brought to bear on any human situation,

event, problem; anything complex and worth studying. It should become the learner's main "question generator," pointing out how to proceed with any investigation.

Our sense-making Model could be represented graphically like this:




Think of the five elements of the Model as a "meta-discipline:" Doing so

- Makes all school subjects and all general knowledge parts of a single, simple conceptual framework
- Erases the arbitrary, artificial boundaries between fields of study
- Systemically integrates all knowledge
- Identifies presently ignored fields of study
- Suggests the relative importance of information
- Facilitates recall
- Juxtaposes various aspects of reality in new ways, suggesting possible knowledge-expanding relationships.

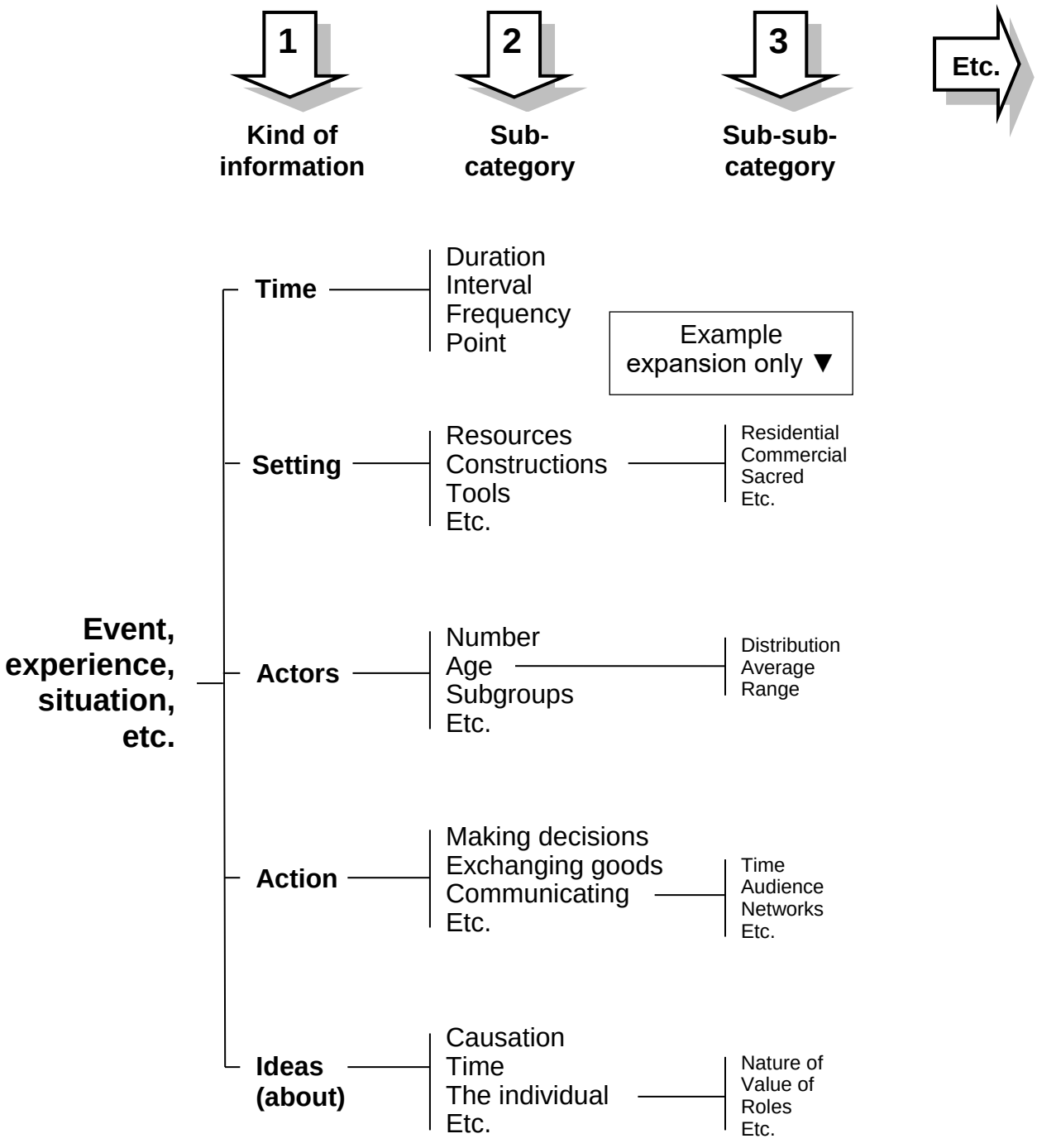
**The meta-discipline's "content" is a *process*. Learners progress through activities that help them understand the major process by means of which they learn. The activities make explicit their implicitly known "model of reality," then lead them to refine that Model and make extensive use of it to guide examination of their own experience and all other realities, and imagine alternatives to those realities.**

Standards and measures of accountability shouldn't check learner knowledge of school subjects, should instead check learner ability to make use of her or his Model of reality to make sense of personal experience and imagine alternatives to that experience.

The product of that effort, of course, will be so idiosyncratic its merit can't be determined by standardized testing.

The image below displays the five elements of our sense-making Model, and gives examples of their familiar subcategories and sub-subcategories.

## How the brain organizes information to "make sense:"




**Systemic Relationships: In every situation, each category and sub-category is related to and affected by many others.**

(Note: A more complete version of this diagram is at the end of the article.)

In the above image, the Model yields a "snapshot" of things as they are at a particular moment in time. However, once the Model's categories are fixed in mind, it can be used to study the dynamics of change by asking, "How did (or how might) a change in this aspect or part of reality change other parts of reality?"

Perhaps the greatest value of a consciously known Model of reality is that it facilitates the growth of individual and collective knowledge by identifying those parts of it which are potentially relatable. This function is so important it deserves elaboration and illustration.

## Creating Knowledge

*"Well, Johnny! What did you learn in school today?"*

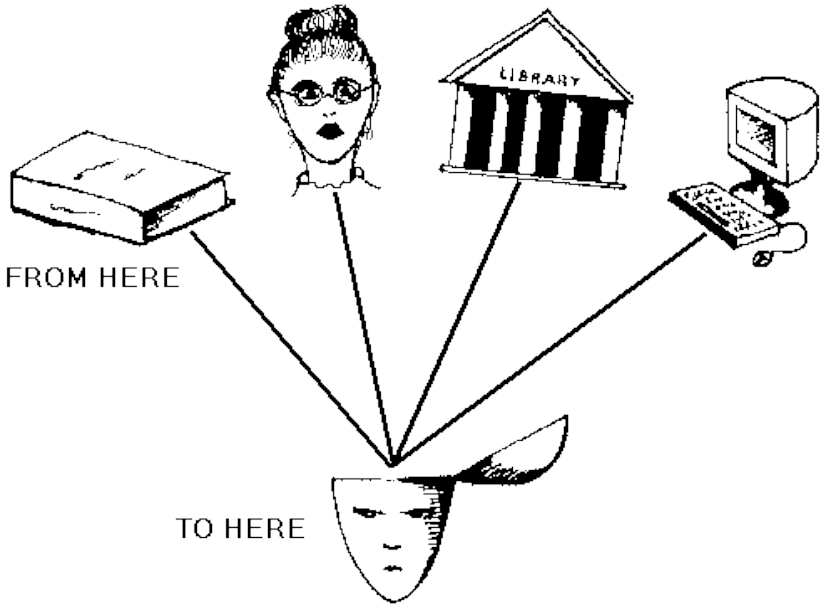
*"Nothing."*

*"Oh, come on! You must have learned something!"*

*"Well, yeah, I learned that the Nile is the longest river in the world, that a short pendulum swings faster than a long one, and that John Adams was the next president after George Washington. Oh! Almost forgot! I learned to say my sixes times table without making any mistakes!"*

*"Good boy, Johnny! Here's a dollar. Keep up the good work."*

The commonsense, widely shared view of what educating is all about is wrapped up in that brief exchange. Educating is thought to be about information transfer—moving information about geography, history, chemistry and so on from the heads of those who know to the heads of those who don't know.



We think of knowledge in quantitative terms. It can be "passed on," "handed down," "absorbed," "stored up." "Empty-headed" students "cram" for exams, "pounding information in" until heads are "stuffed" with knowledge. "Material" is "covered."

Our metaphors mislead us. The major advances in human knowledge and understanding didn't result from information transfer. This country's abundance of Pulitzers, patents, and other evidences of ingenuity, imagination and creativity didn't come from individuals who knew answers, but from those who asked questions not previously asked, then tried to answer them.

Knowledge is created by finding systemic relationships between parts of reality not previously thought to be connected (e.g. moon → tides, mass → gravity, friction → heat). That process can't work as it should if knowledge is rigidly compartmentalized. Only if the learner's Model of reality includes everything he or she knows can the relating process function as it should.

The process can be illustrated using the Model version titled "**How the brain organizes information to 'make sense'**" (page 6 and page 10). A simple device can help learners generate hypotheses—questions for investigation—about possible relationships between parts of reality:

http://www.marionbrady.com/RelationshipHypothesisGenerator.html

The device allows users to juxtapose any two elements of the Model to encourage thought about possible links between them.

Some of those relationships will be laughably obvious or trivial; others will be frustratingly subtle or complex. But reality, and the way we make sense of it, is seamless, so relationships there will be, and nothing is more central to educating (and surviving) than exploring them.

## Big Ideas

There's a risk in taking note of some of the terms useful in thinking and talking about relationships and systems theory. Teachers may be tempted to build assignments around them rather than allowing students to gradually become familiar with them as they play with their sense-making Model.

Including a representative list of such terms, however, may serve as a reminder of *how much various fields of study and school subjects have in common* when the focus is on big, important ideas rather than on specific facts.

| | | |
|---|---|---|
| adaptation | interaction | process |
| boundary | dynamic | rate |
| cause/effect | equilibrium | rhythm |
| change | feedback | stability/instability |
| chaos | frequency | stasis |
| communication | function | static |
| complexity | inertia | structure |
| component/element | lag | subsystem |
| critical mass | model | system |

| | | |
|---|---|---|
| cumulative causation | morphogenesis | tipping point |
| cycle | multiple causation | trend |
| duration | organization | variable |
| | pattern | |

## Taking Action

The mechanics of putting in place a curriculum that respects the necessity of both specialized and holistic study isn't difficult, especially if the effort is directed to adolescents at the middle school level. The basic elements of our everyday approach to sense making are not only simple and obvious, they're already embedded in language and thought, shaping our conversations, stories, myths, reports, poetry, novels, humor, plays, obituaries, and other tools for modeling reality and communicating sense. Making the five Model elements explicit and formally adopting them as curriculum organizers not only solves every major problem with the traditional curriculum, it strengthens the academic disciplines by putting them in context, integrating them, and allowing their mutually supportive nature to be apparent.

Here's an example of such a curriculum:
http://www.marionbrady.com/IntroductiontoSystems.asp

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Below is a version of the conceptual framework on page 6 above. If at first glance it seems overwhelmingly complex, keep in mind:

1. It 's merely an elaboration of the familiar concepts of "who, what, when, where, why."
2. A similar list of the major concepts of the usual courses taught at the middle and high school levels would be far longer, much more complex, contain many unfamiliar concepts, and still not be comprehensive.
3. It's not an alternative to school subjects, but an already-implicitly known conceptual framework. Present disciplines, subjects, and courses elaborate random parts of it.
4. The framework isn't imposed on learners as something to be learned, is instead constructed by them over time, based on their own firsthand, real-world, here-and-now experience.
5. The activities in *Introduction to Systems* lead learners through a process that makes explicit, organizes, and systemically relates what they already know.

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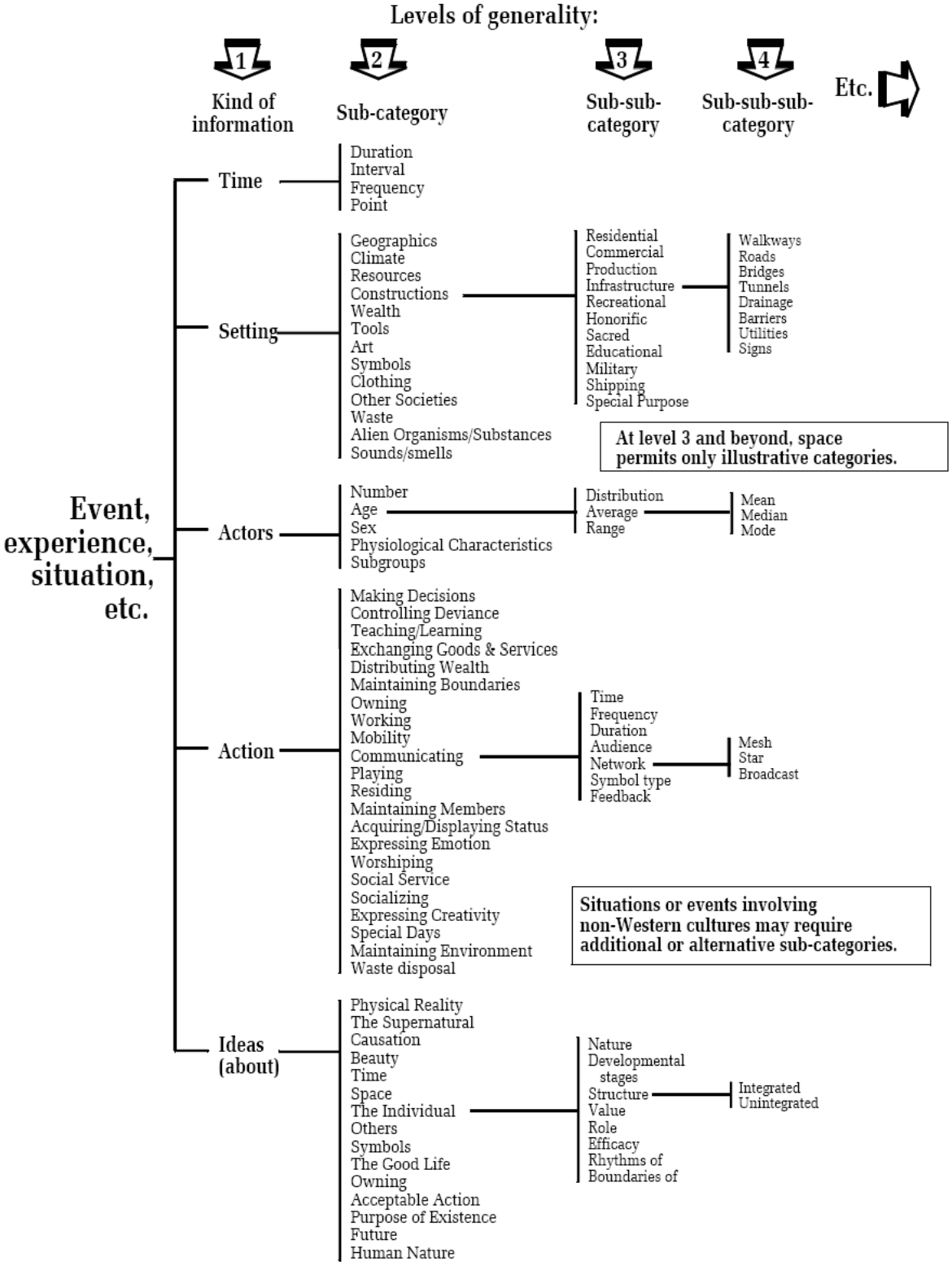
(Revised 11/24/2011)

# How The Brain Organizes Information to "Make Sense"

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