

**Rigor and Relevance in
Systems:
connecting differences**

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The term “general system theory” was introduced by [Bertalanffy], deliberately, in a catholic sense. One may, of course, limit it to the “technical” meaning in the sense of mathematical theory (as is frequently done)...

(Bertalanffy, 1969, p. xix)

... but this appears unadvisable in view of the fact that there are many “system” problems asking for “theory” which latter is not at present available in mathematical terms.

(Bertalanffy, 1969, p. xix)

So the name “general system theory” is here used broadly, similar to our speaking of the “theory of evolution,” which comprises about everything between fossil digging, anatomy and the mathematical theory of selection...

(Bertalanffy, 1969, p. xix)

...or “behavior theory” extending from bird watching to sophisticated neurophysiological theories.

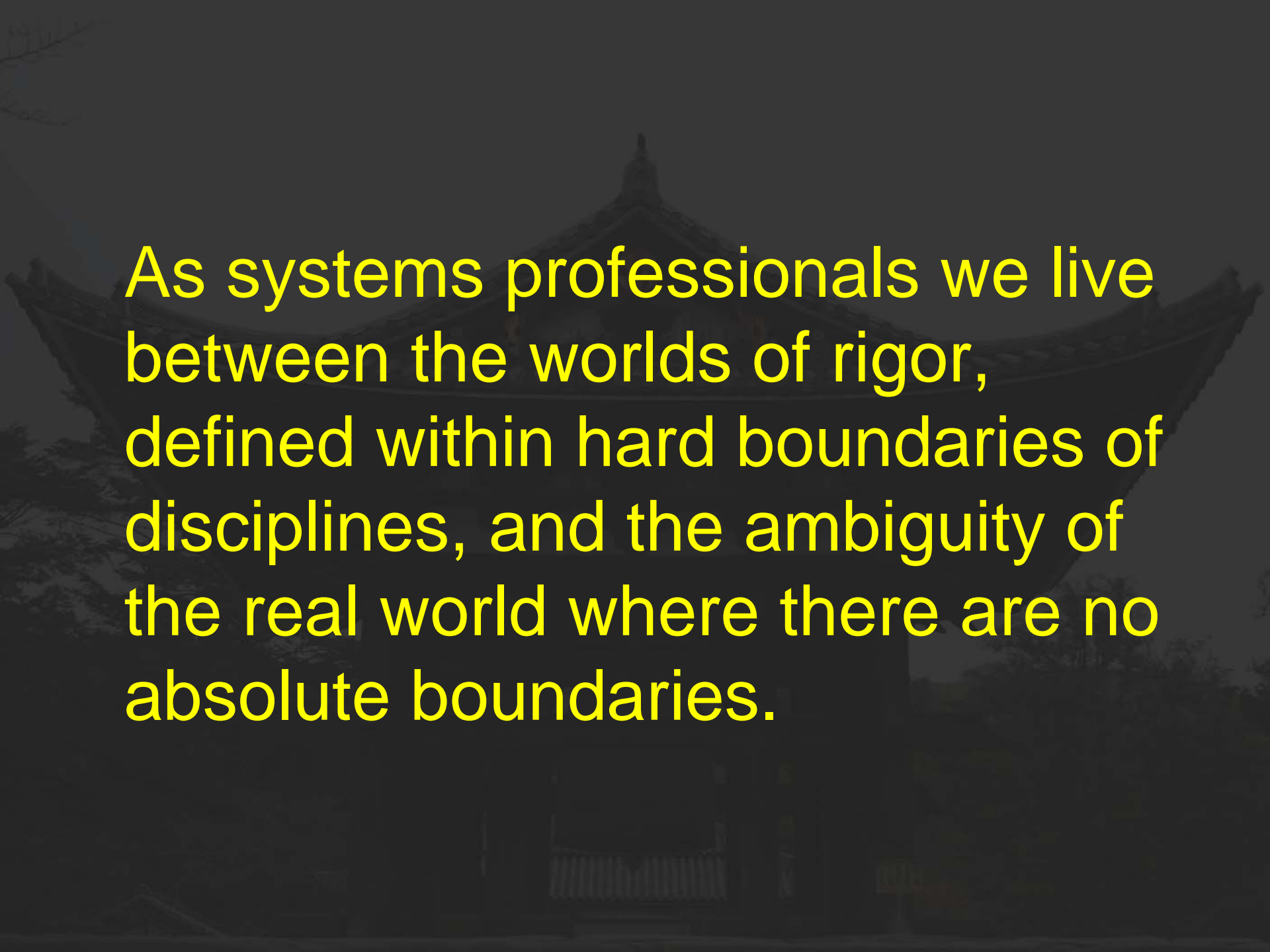
It is the introduction of a new paradigm that matters.

(Bertalanffy, 1969, p. xix)

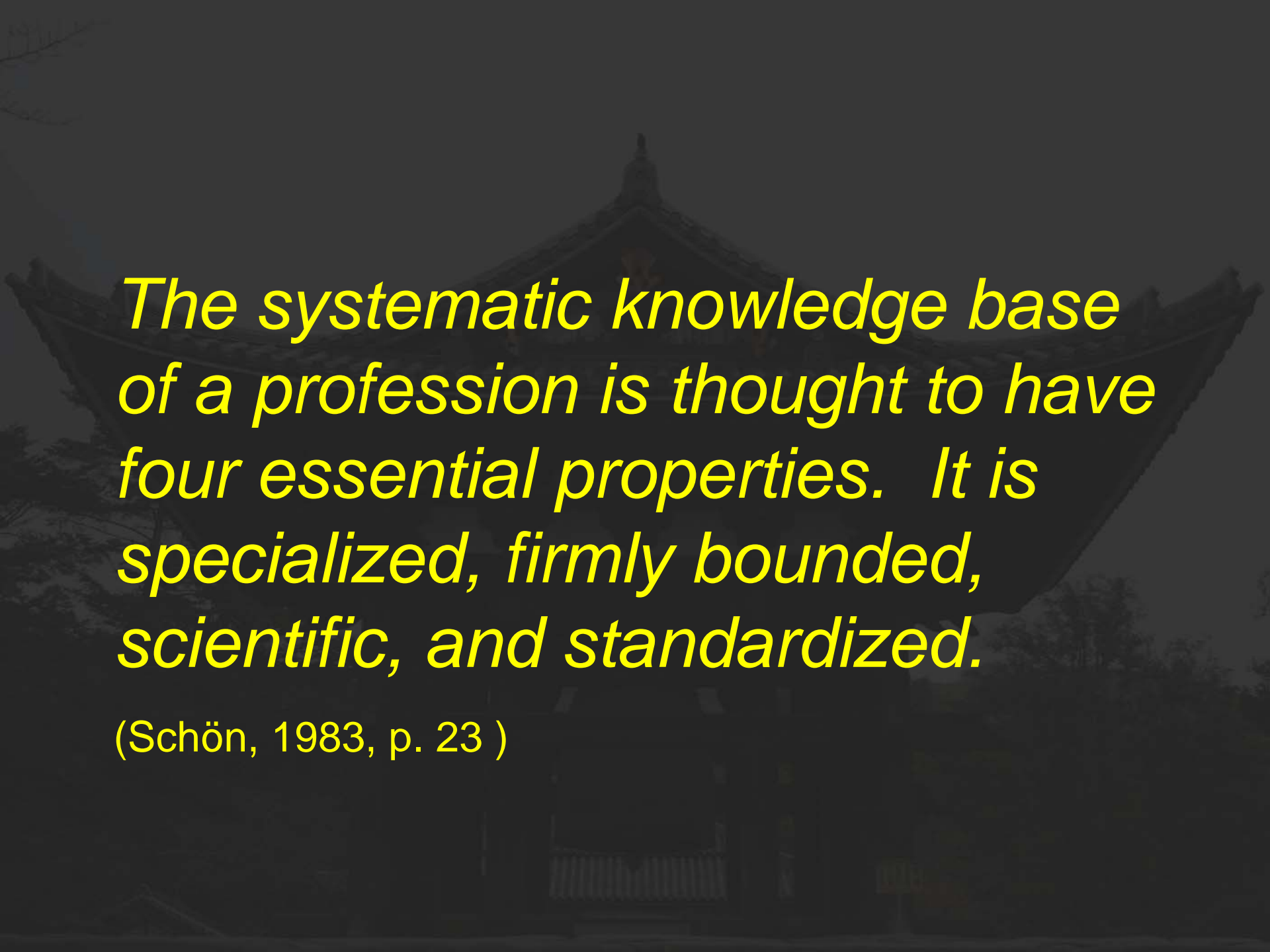


Two important concepts from
Gregory Bateson:

1. “a difference that makes a difference”, and
2. “the pattern that connects”



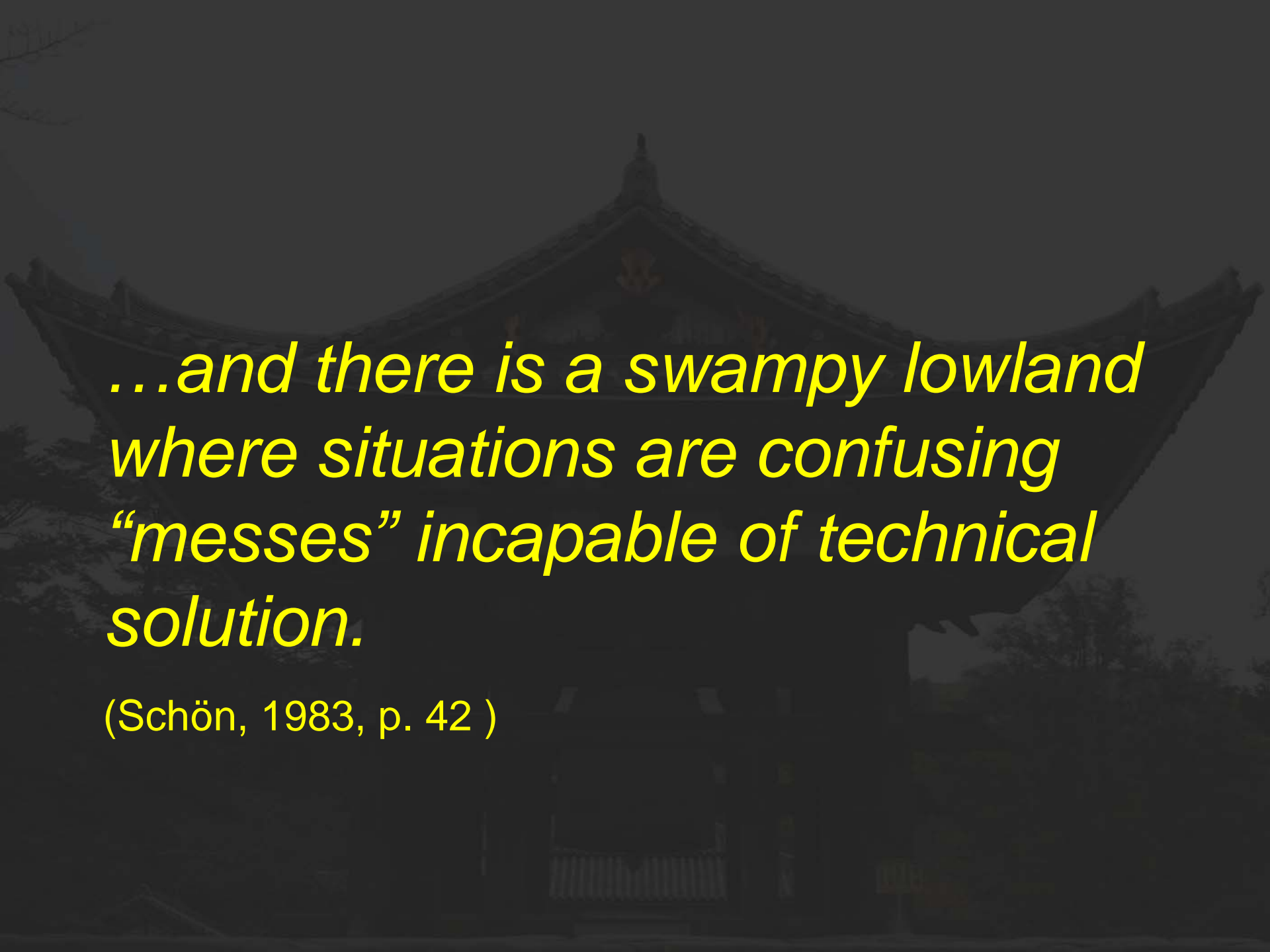
As systems professionals we live between the worlds of rigor, defined within hard boundaries of disciplines, and the ambiguity of the real world where there are no absolute boundaries.



The systematic knowledge base of a profession is thought to have four essential properties. It is specialized, firmly bounded, scientific, and standardized.

(Schön, 1983, p. 23)

This dilemma of “rigor or relevance” arises more acutely in some areas of practice than others. In the varied topography of professional practice, there is a high, hard ground where practitioners can make effective use of research-based theory and technique... (Schön, 1983, p. 42)



*...and there is a swampy lowland
where situations are confusing
“messes” incapable of technical
solution.*

(Schön, 1983, p. 42)

The difficulty is that the problems of the high ground, however great their technical interest, are often relatively unimportant to clients or to the larger human society, while in the swamp are the problems of greater human concern .

(Schön, 1983, p. 42)

Family Counseling

Which approach works for what disorders with what kind of family?

Management

The “how to” approach to success
(or “just act like someone
successful”)

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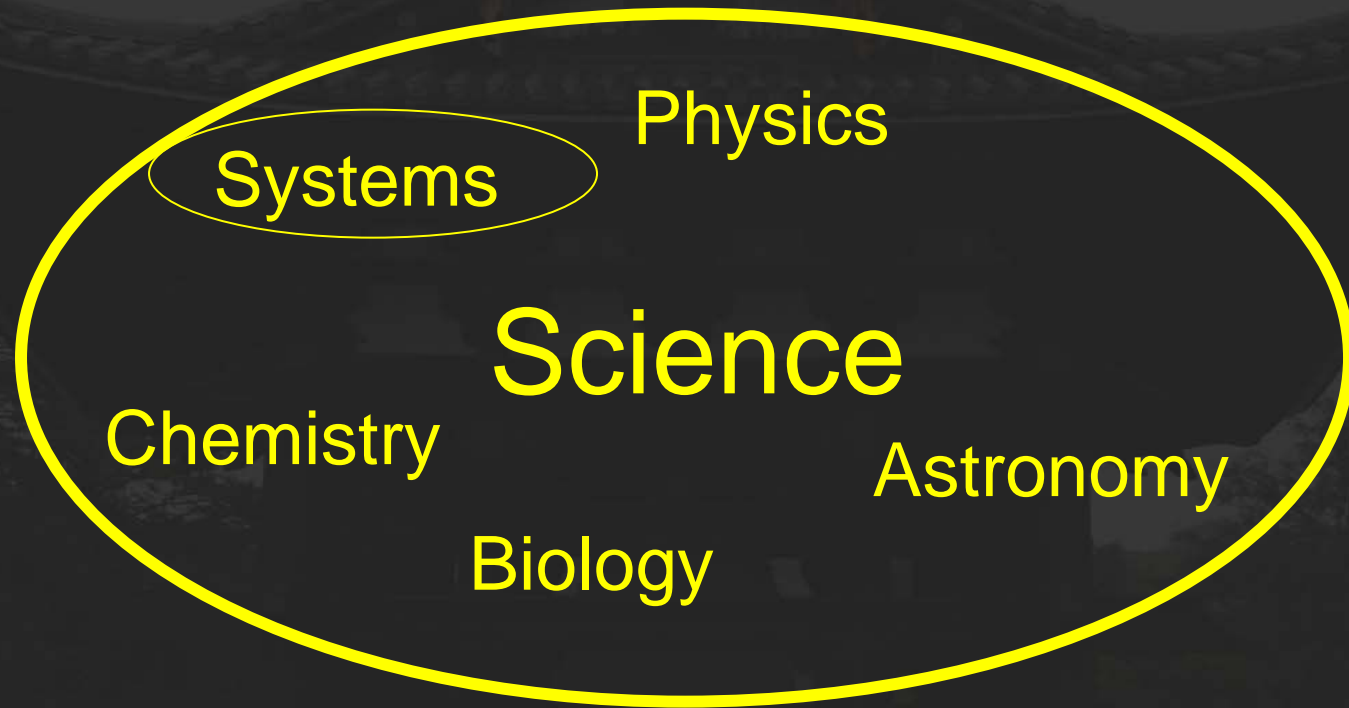
The Art & Practice of
the Learning Organization

PETER M. SENGE

The Federal Executive Institute

- Complexity of the environment
- Importance of science in agencies
- Multiple rationalities
 - professional (scientific)
 - legal
 - economic
 - political

Systems Science (?)



Rigor Dictates Relevance

Research Funding

Government

Industry

Publishing Industry

Journals

Academia

Tenure

Recognition



Metaphysics

Superstition

Mythology

Science

Witchcraft

Opinion

Common Public

Superstition

Mythology

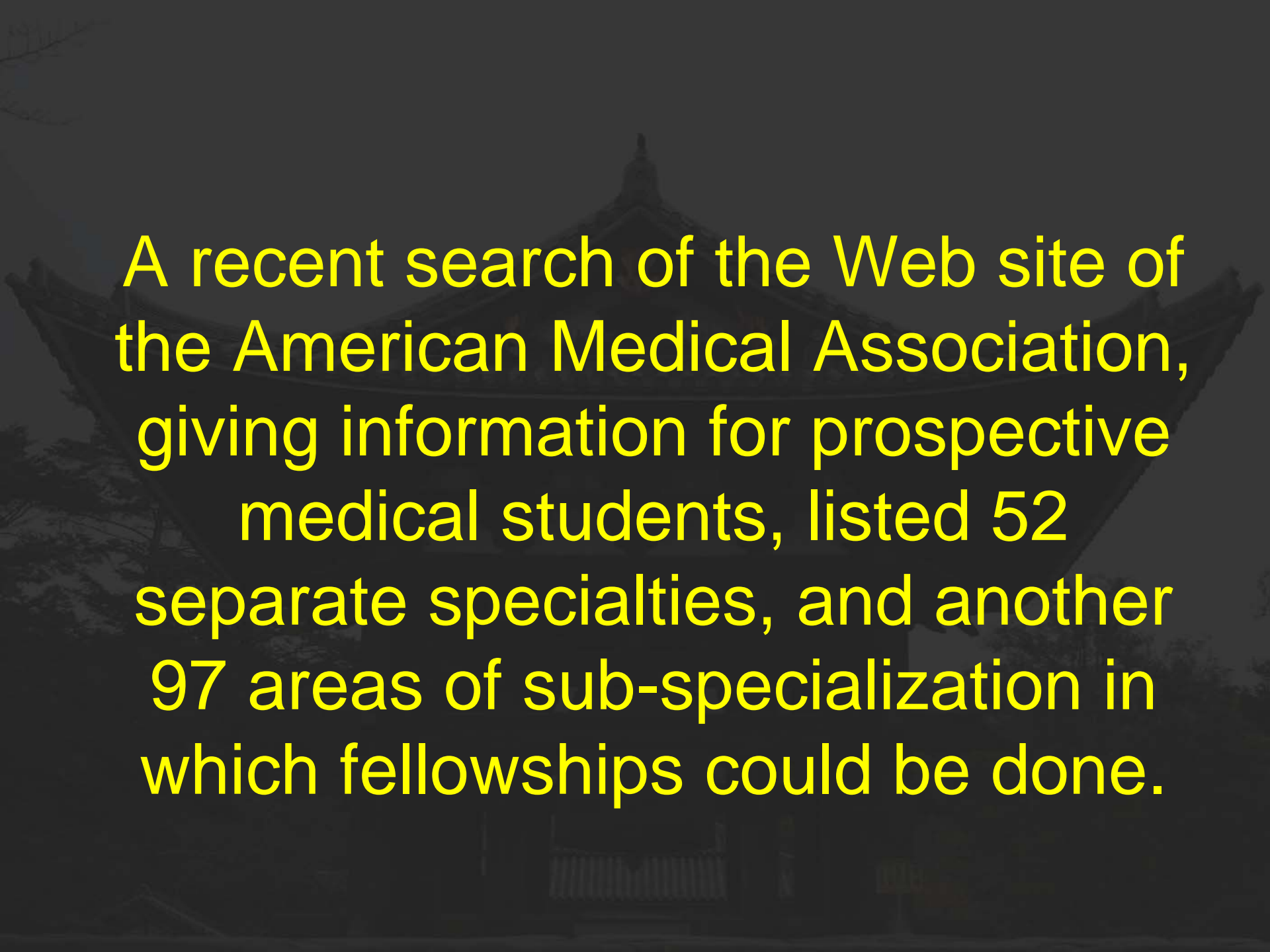
Experts

Witchcraft

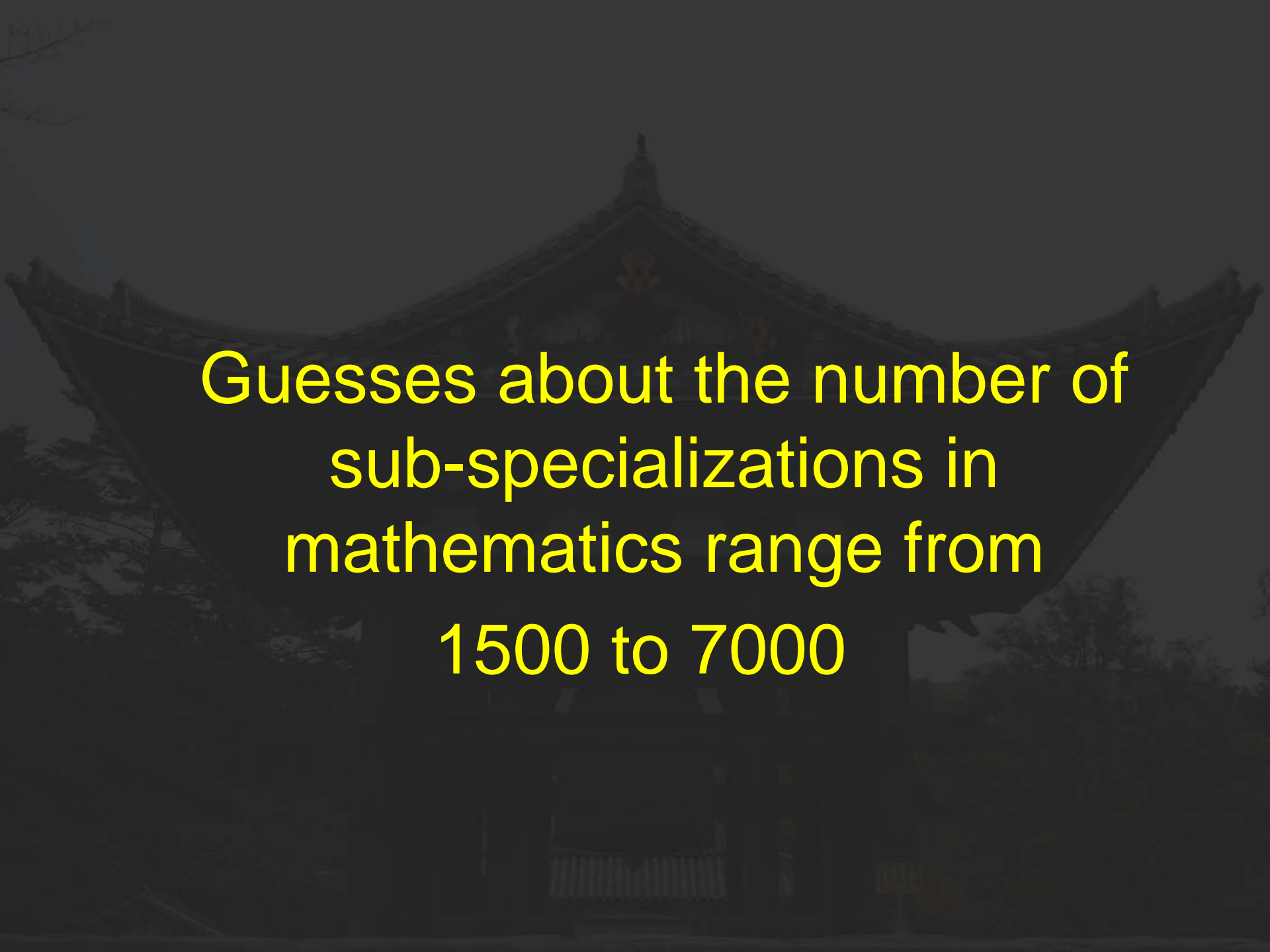
Opinion



Specialization & Fragmentation



A recent search of the Web site of the American Medical Association, giving information for prospective medical students, listed 52 separate specialties, and another 97 areas of sub-specialization in which fellowships could be done.



**Guesses about the number of
sub-specializations in
mathematics range from
1500 to 7000**

We cannot in general hope to reconstruct the properties of the predictive models embodied in a fully adapted system by considering the corresponding models generated in subsystems... (Rosen, 1985, p. 392)

Since each of the subsystems sees only a fragment of the total situation, it can only form a model of that fragment through the selection imposed on the whole system.

(Rosen, 1985, p. 392)

We can see this most clearly from our own experience, considering ourselves as subsystems of an evolving social structure; thus each of us generates predictive models about the structure as a whole and utilizes them for generating his behavior.

(Rosen, 1985, p. 392)

These models are all different, and depend at least in part upon the information we receive about the overall behavior of the structure; since our positions in it are generally different, so too will be our information, our models and our behavior. (Rosen, 1985, p. 392)



Fundamentalism

Relevance Precedes Rigor

Collective Wisdom

Open Source

Volunteers


Contributors

Charitable
Donations

Opinion

General system theory, then, is the scientific exploration of “wholes” and “wholeness” which, not so long ago, were considered to be metaphysical notions transcending the boundaries of science.

(Bertalanffy, 1969, p. xx)



**What Should Be
vs.
What Is**



What does Systems have to teach?

All serious arguments are about different views of what is absolutely necessary.

Freedom makes possible a creative perception of new orders of necessity.

(David Bohm, *On Dialogue*, 1996)

*A story is a little knot or complex
of that species of connectedness
that we call relevance...*

*Connectedness [occurs] between
people in that all think in terms of
stories*

(Bateson, M&N, p. 12)

Conclusions

- Finding or creating differences requires rigor
- Differences only make a difference when they are relevant, i.e. connect to the larger world



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