

Conversations and models: Secrets to designing great products

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Pixar has made 17 hit movies—in a row—**by design, not luck.**
Founder Ed Catmull explains how in his book, *Creativity, Inc.*



Story meetings at Pixar—**conversations**, without laptops, supported by a dedicated project room, lots of sketches, a high-info-density physical environment.



Steve Jobs knew a thing or two about great products

“Design is the fundamental soul of a man-made creation...”

—Steve Jobs, *Fortune*, January 24, 2000

How did he define and refine that soul?
Through conversation.



The partnership between **Steve Jobs and Jony Ive** is famous.
What's rarely discussed is what it means, what we can learn from it.



It was an on-going conversation that built a **relationship and trust**.

“We had lunch together pretty much every day.

He would spend many afternoons a week in the design studio, and we became very close friends.”

—Jony Ive, *Financial Times*, March 13, 2015



The Jobs-Ives **conversation is not unique**; pretty much everywhere you find great design sustained over time, you find such conversations.

Adriano Olivetti + Marcello Nizzoli = Olivetti

Walter Paepke + Herbert Bayer = Container Corp.

Tom Watson, Jr. + Eliot Noyes = IBM

Artur & Erwin Braun + Dieter Rams = Braun

William Paley + William Golden = CBS

Frank Stanton + Lou Dorfsman = CBS

Max Dupree + George Nelson = Herman Miller

Hans Knoll + Florence Schust = Knoll

Martha Stewart + Gael Towey & Eric Pike = Martha Stewart

Steve Jobs + Jonathan Ive = Apple

Ed Catmull + John Lasseter = Pixar

**Generative conversations
with pairs collaborating
take place at all levels
and across many disciplines**

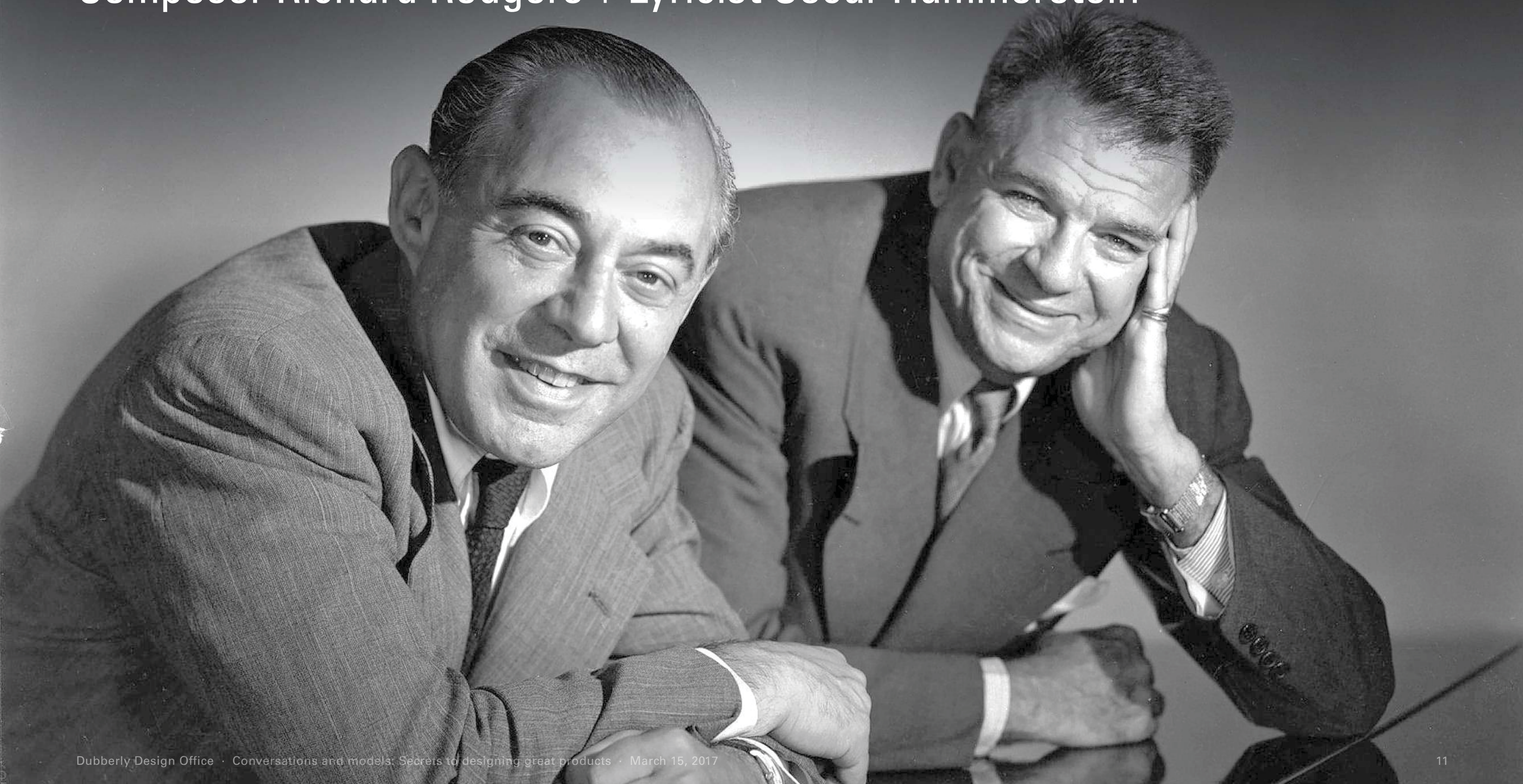
Art Director Lee Clow + Copywriter Steve Hayden



Copywriter Peggy Olsen + Art Director Don Draper



Composer Richard Rodgers + Lyricist Oscar Hammerstein



Director Steven Spielberg + Composer John Williams



Agent Fox Mulder (believer) + Agent Dana Scully (skeptic)



Pair Programming

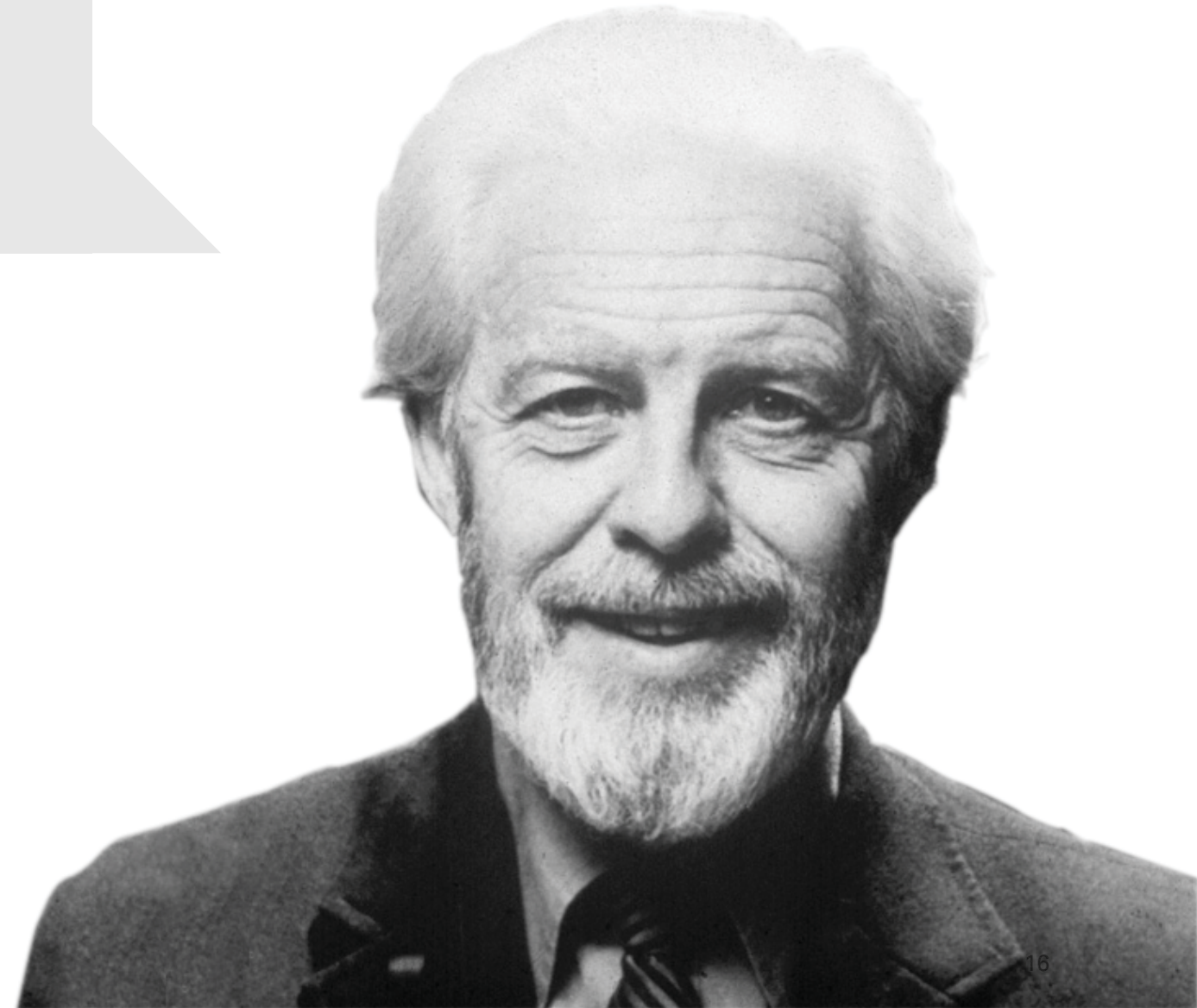


Generative conversations are at the heart of the creative process

Design pioneer **Jay Doblin** summed up the design process

*“At the most basic level,
design can be described as an event
that begins with an existing state
and through some process
produces a more desirable state.”*

—Jay Doblin, “A Short Grandiose Theory of Design,” 1987



Design as **transformation**



—after Jay Doblin

Doblin built on economist **Herbert Simon's** famous definition

*“Everyone designs
who devises courses of action
aimed at changing existing situations
into preferred ones.”*

—Herbert Simon, *Sciences of the Artificial*, 1969



Design as **transformation**



—after Herbert Simon

Simon published five years after architect **Christopher Alexander**

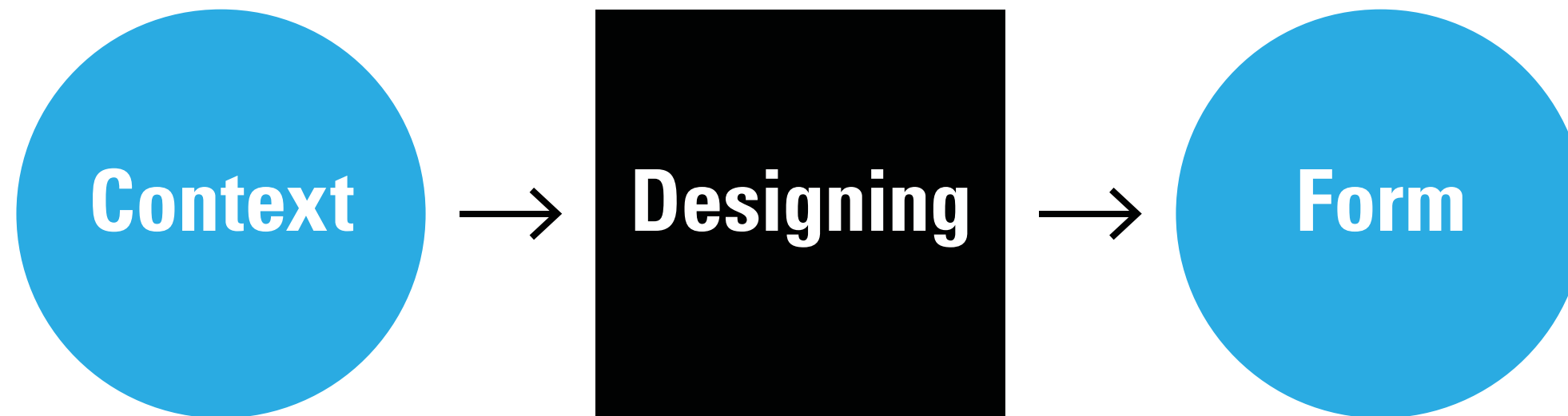
“...every design problem begins with an effort to achieve fitness between two entities: the form in question and its context.”

*“The form is the solution to the problem; context defines the problem.
In other words, when we speak of design, the real object of discussion is not the form alone, but the ensemble comprising the form and its context.”*

—Christopher Alexander, *Notes on the Synthesis of Form*, 1964



Design as **transformation**

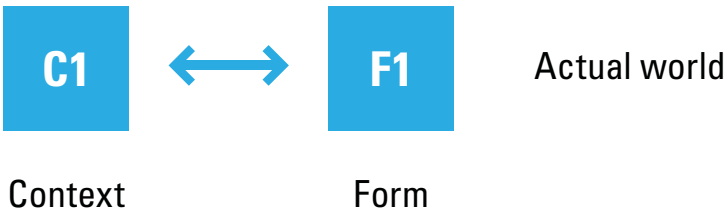


—after Christopher Alexander

Alexander described three types of design

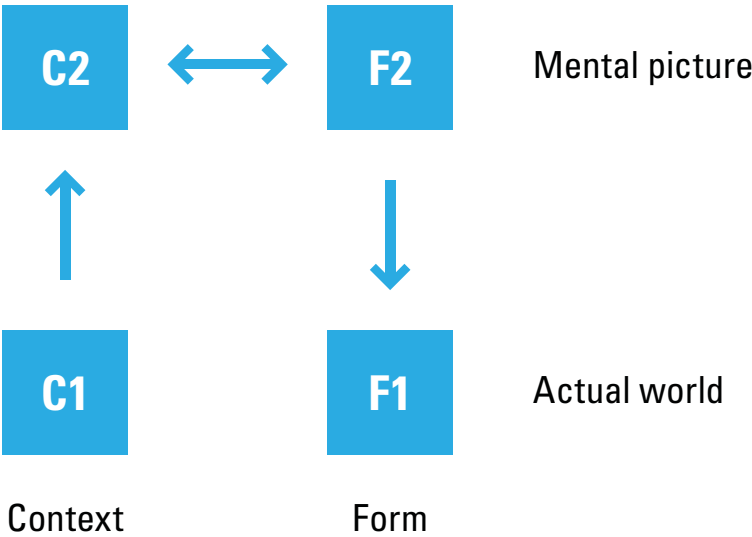
Unselfconscious design

Direct making



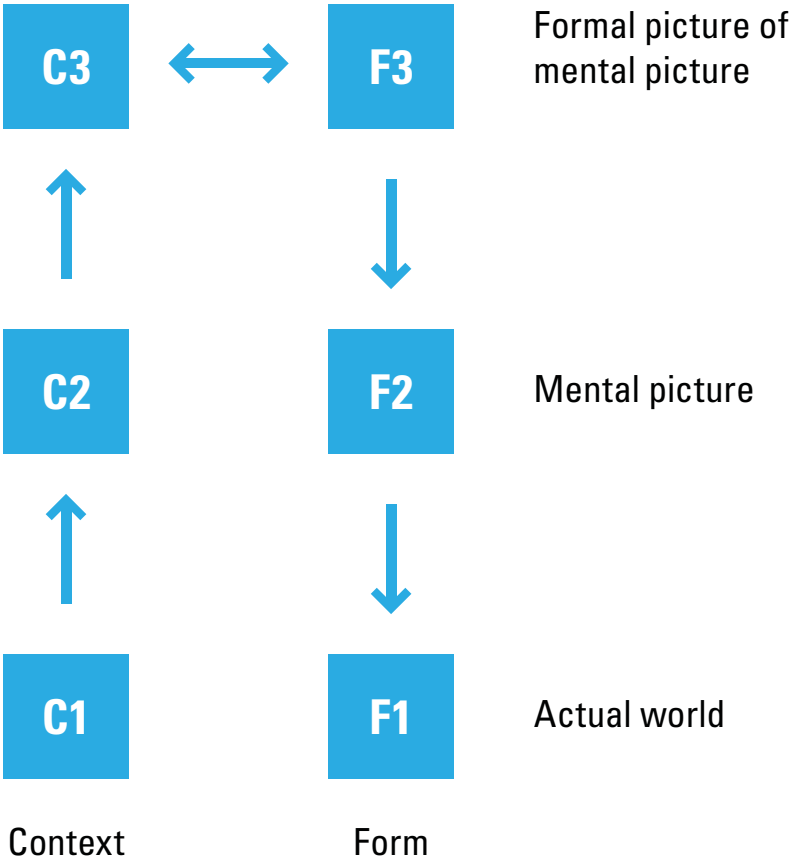
Selfconscious design

Working it out in your head



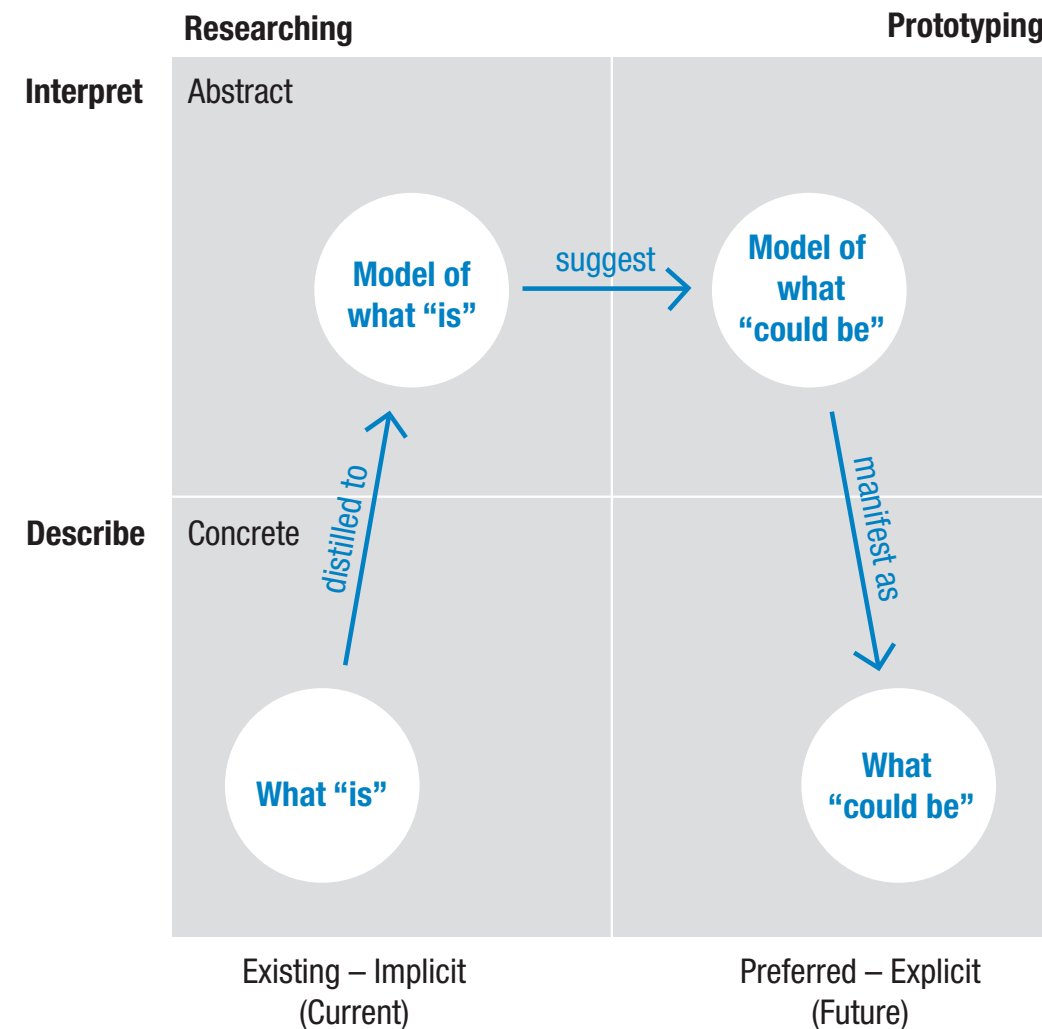
Mediated design

Creating shared representations

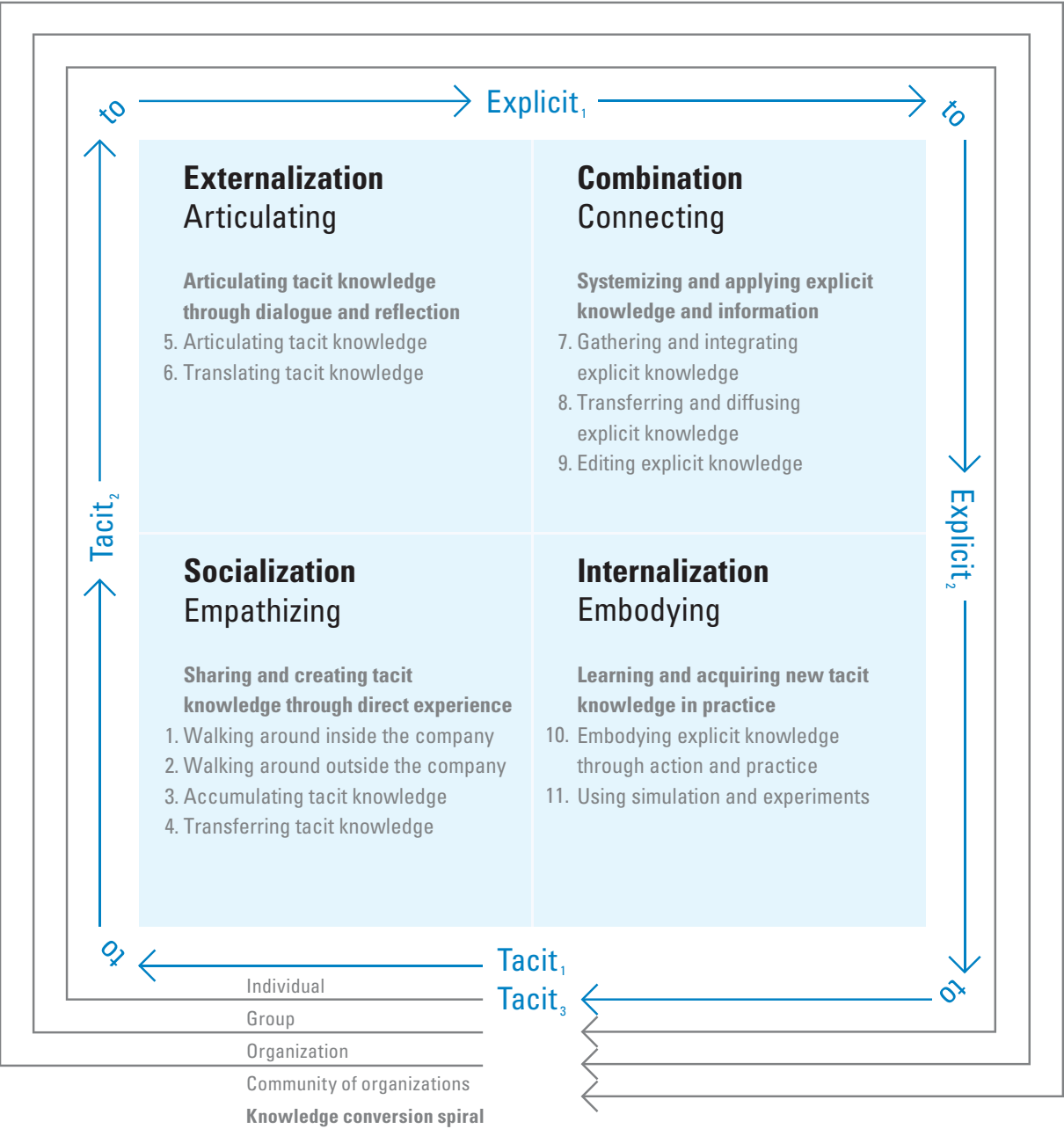


—after Christopher Alexander

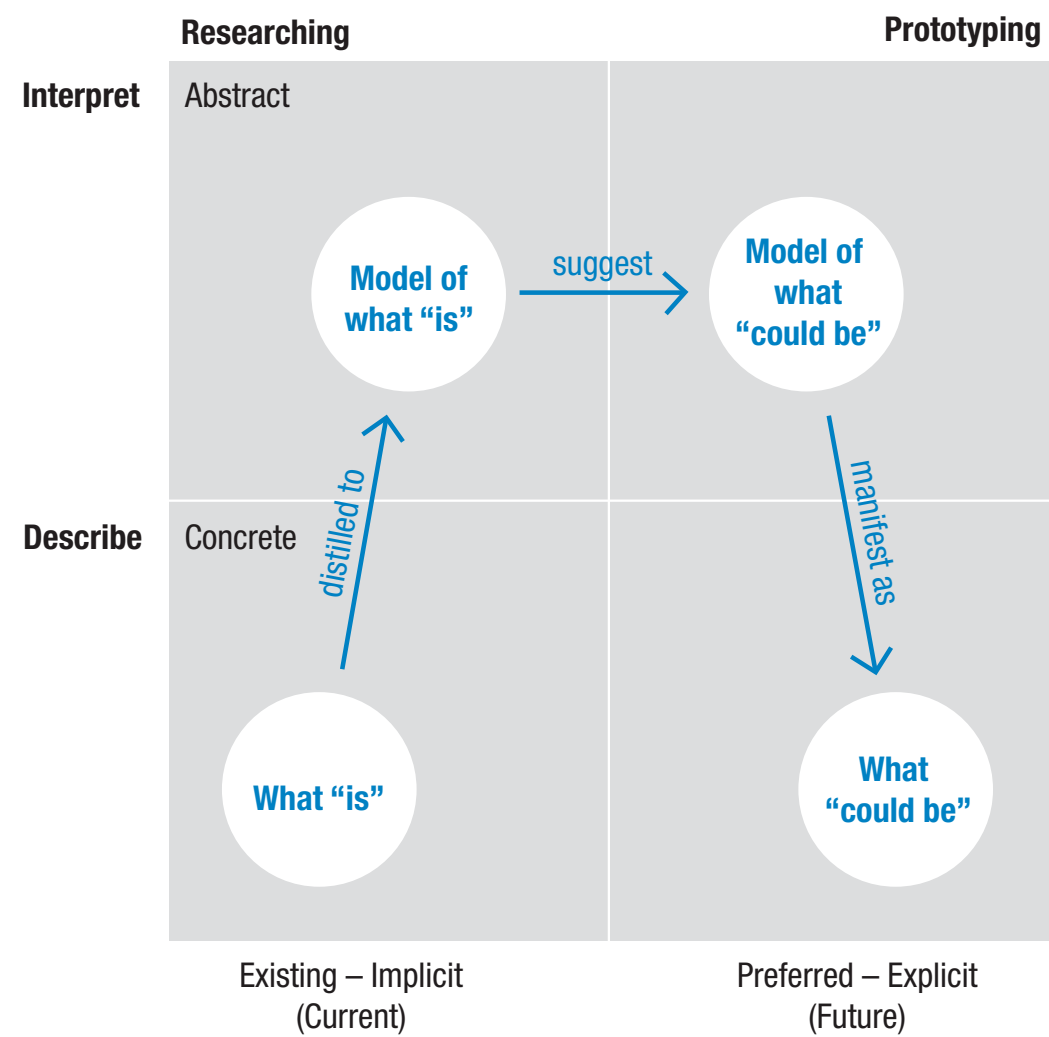
Models are tools designers use to bridge the gap between what is and what should be.



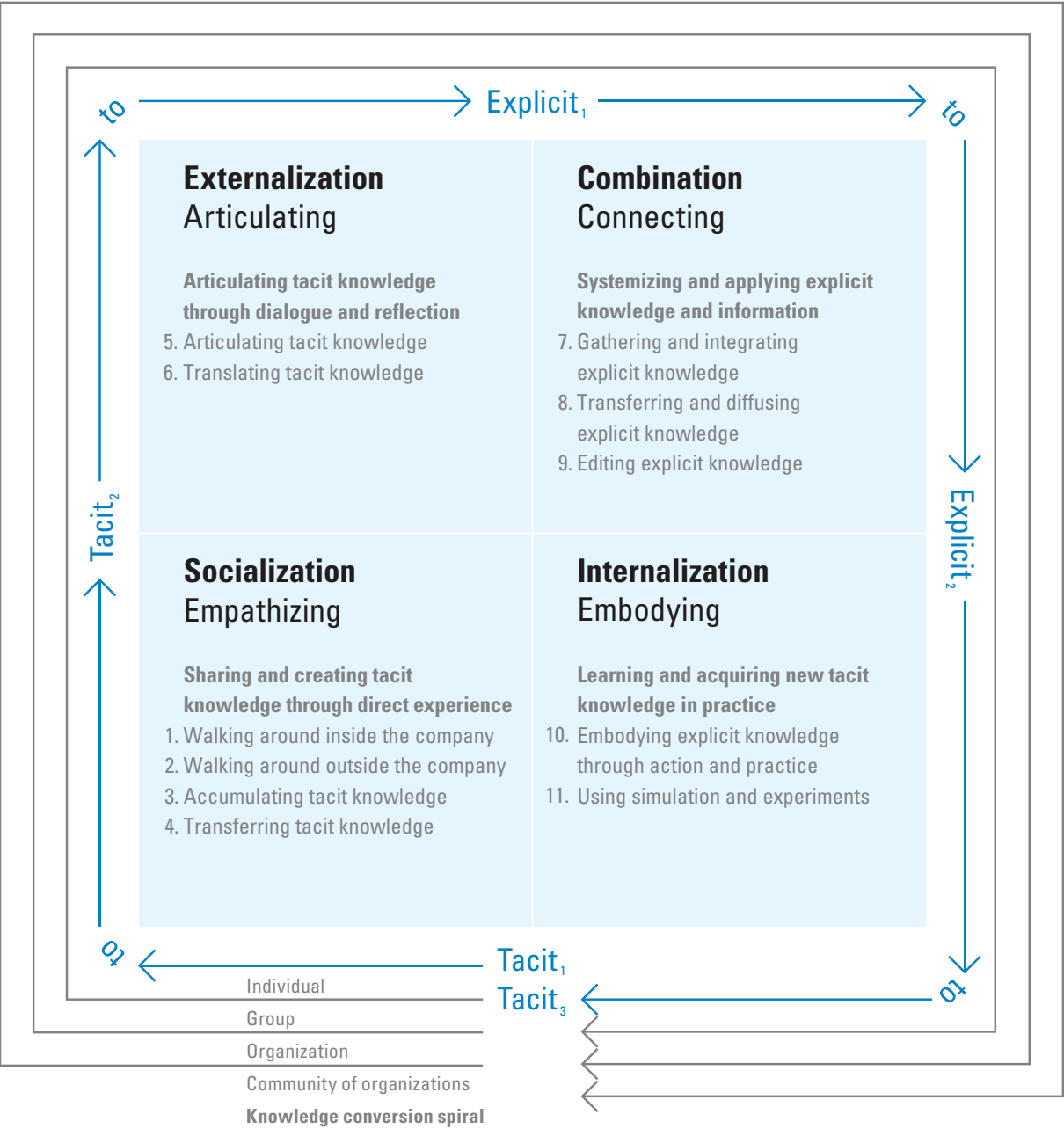
Organizational learning follows a similar process, turning tacit knowledge into explicit knowledge and back again.



Both processes have the same structure— designing is learning.



Analysis-Synthesis Bridge Model
Dubberly, Evenson & Robison (2008)



SECI model of knowledge create
Ikujiro Nonaka (1995)

Understanding models: examples from design practice

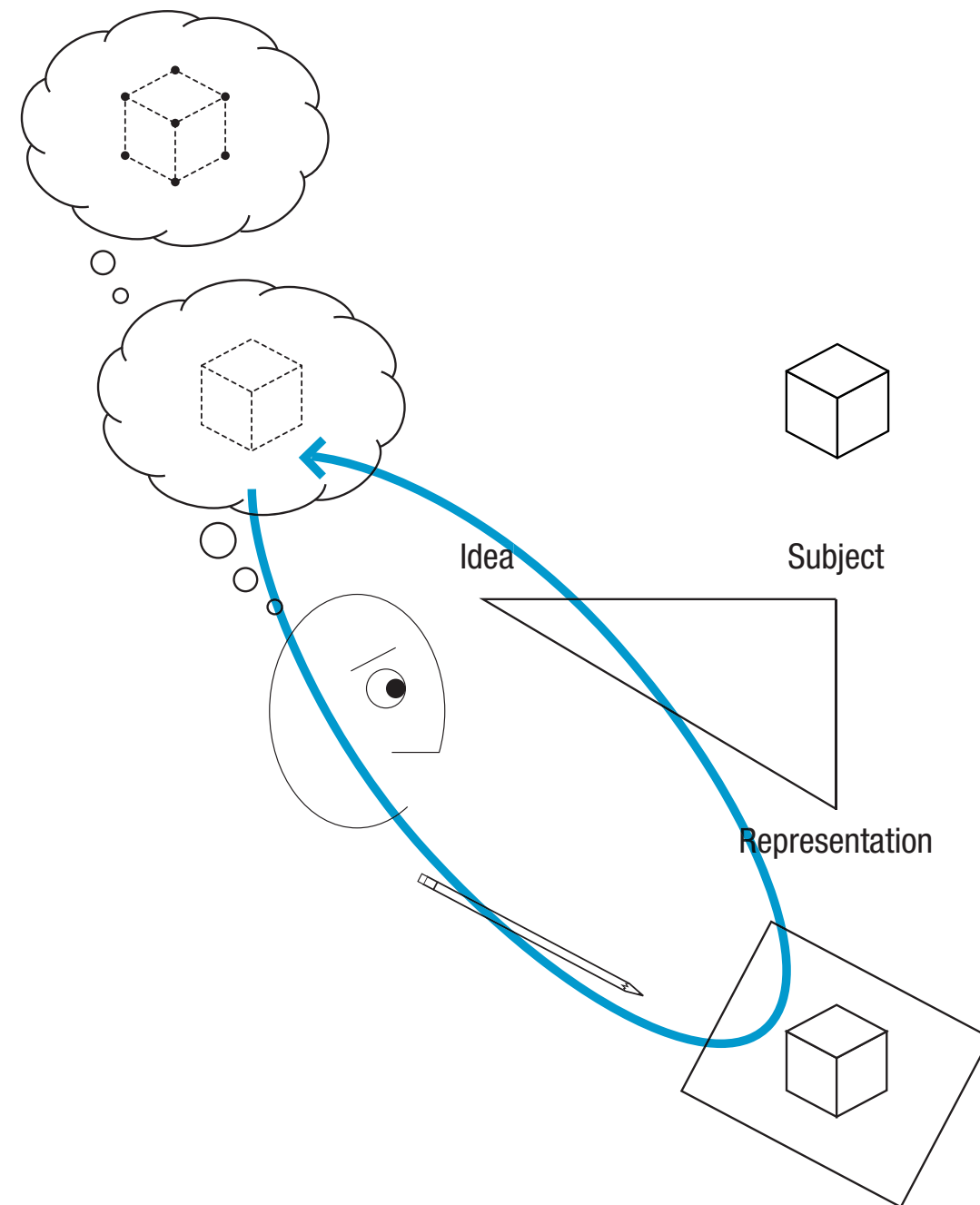
Alexander spells out why **modeling is key** to design

“...physical clarity cannot be achieved in a form until there is first some programmatic clarity in the designer’s mind and actions; and that for this to be possible, in turn, the designer must first trace his design problem to its earliest functional origins and be able to find some sort of pattern in them.”

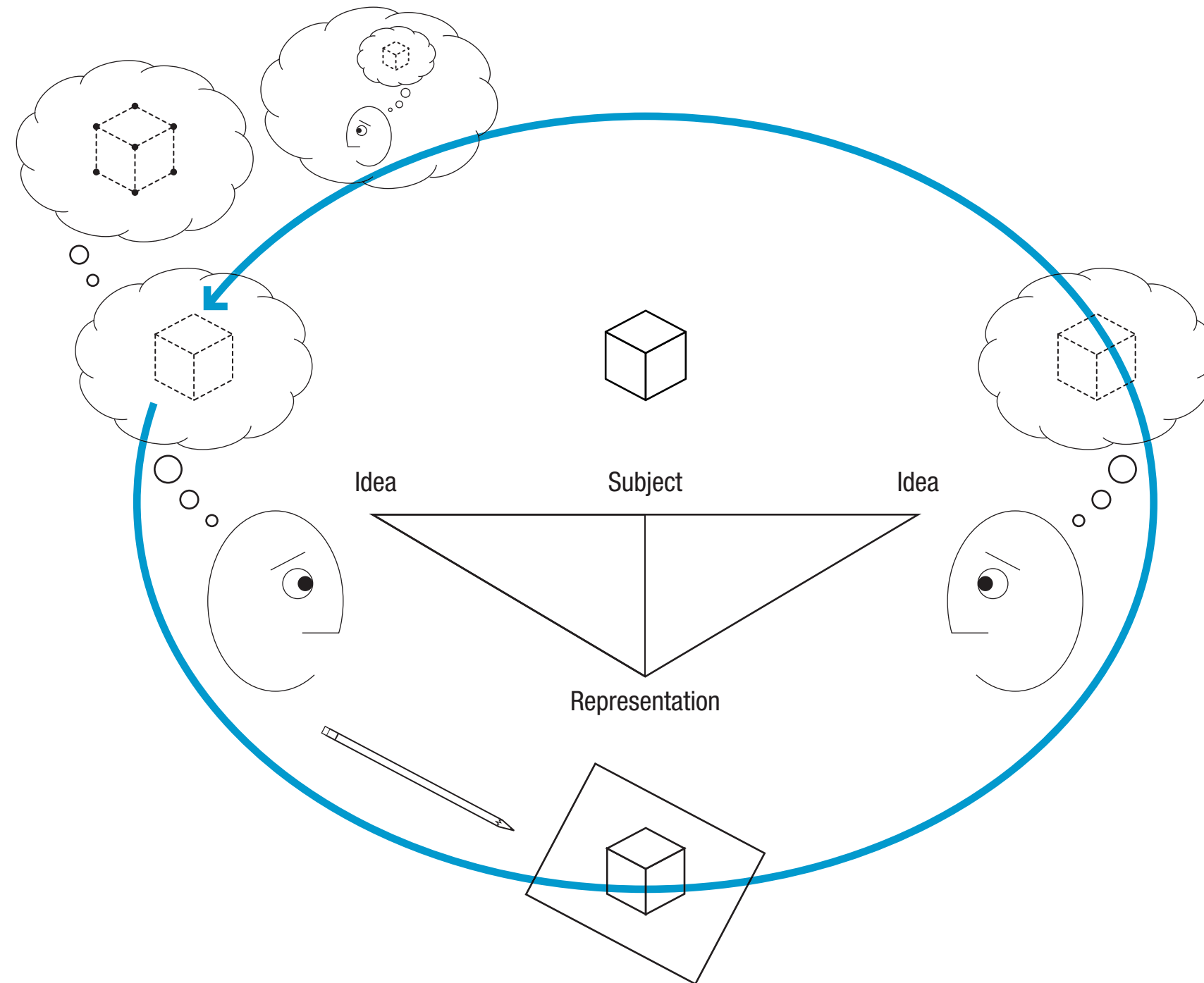
—Christopher Alexander



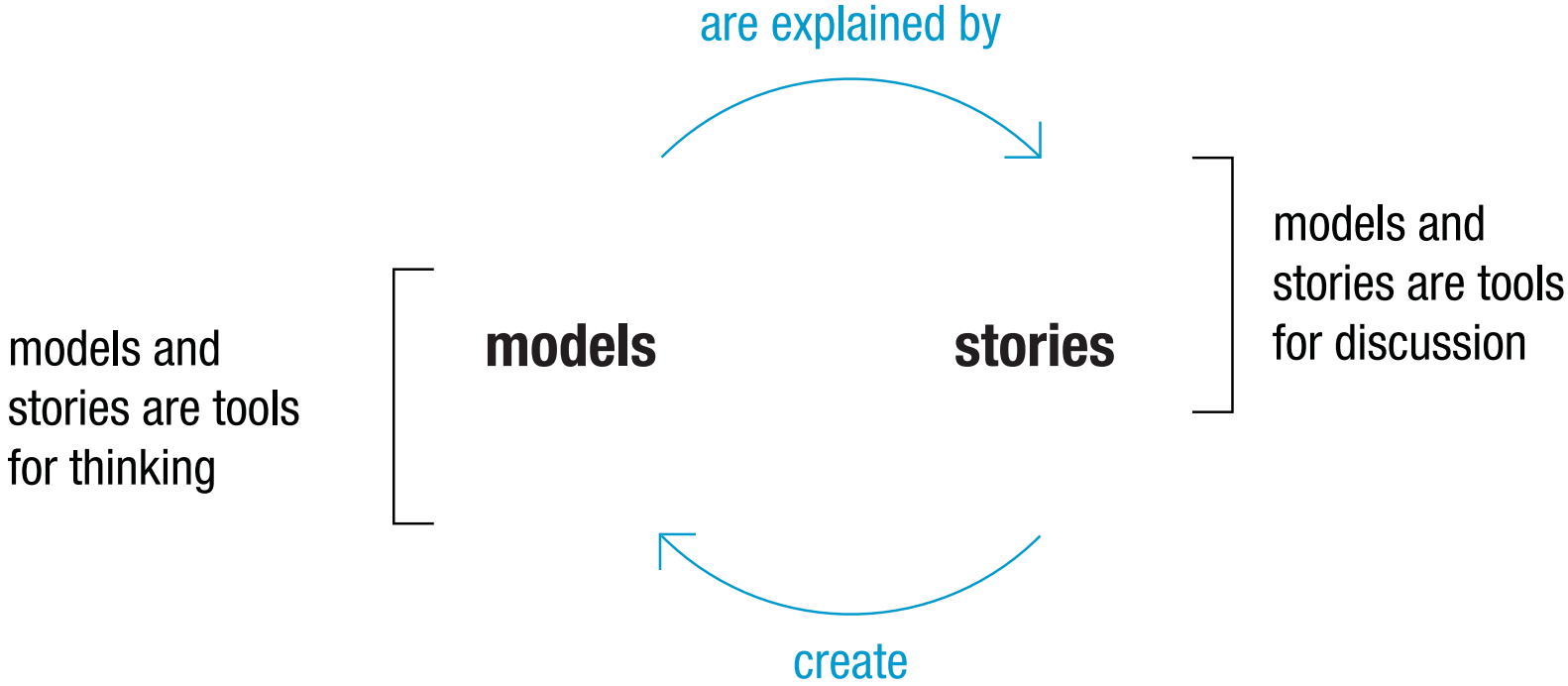
A model is an idea about how part of the world works; representing the idea aids its refinement.



Models are a form of 'boundary object'— artifacts that bridge the gap between disciplines.



Models tell stories, and stories build models in our minds.

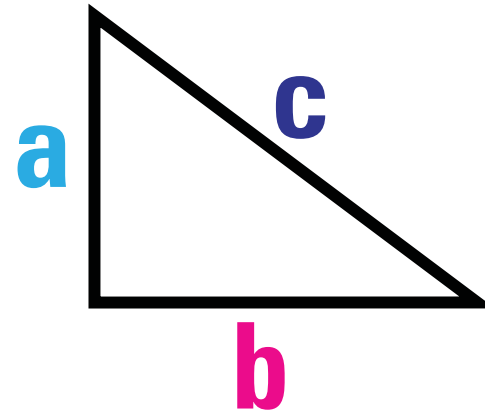


*“Models are our voodoo dolls.
We do most of our thinking in models.”*

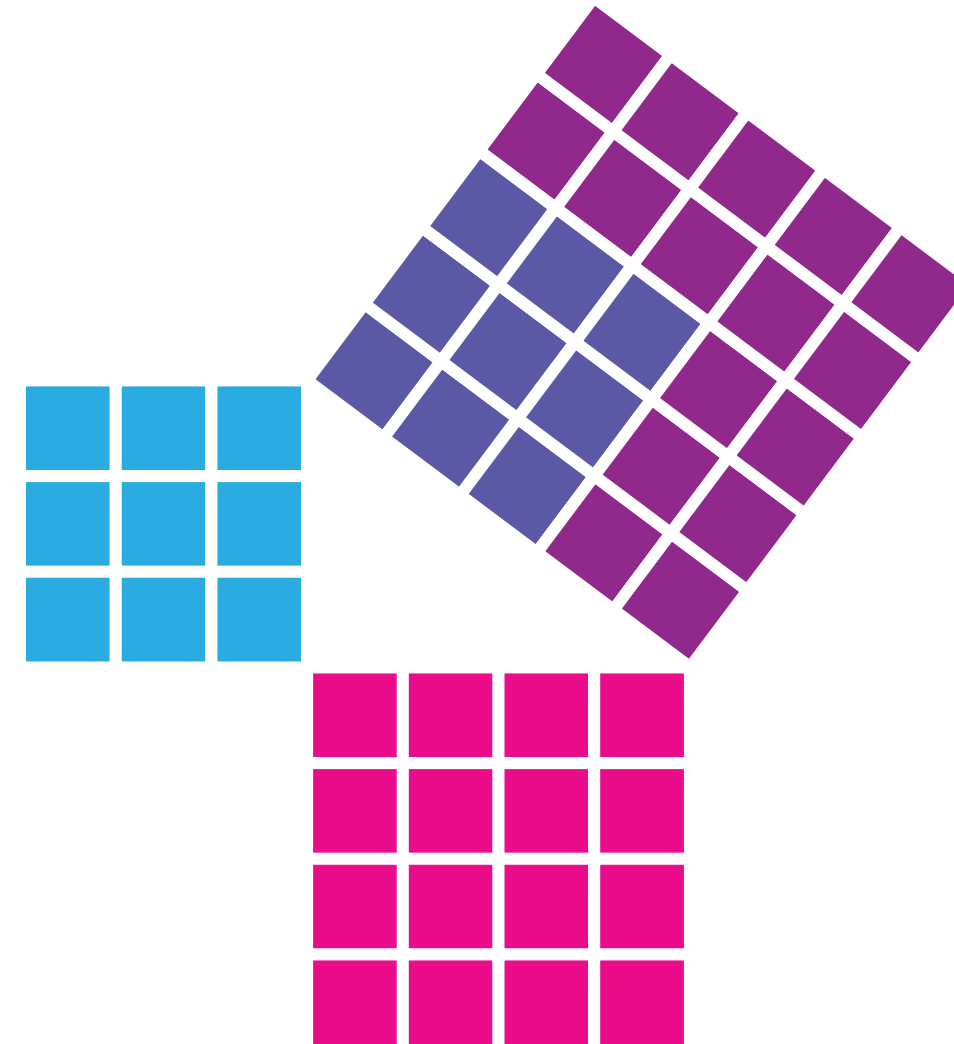
—Alan Kay



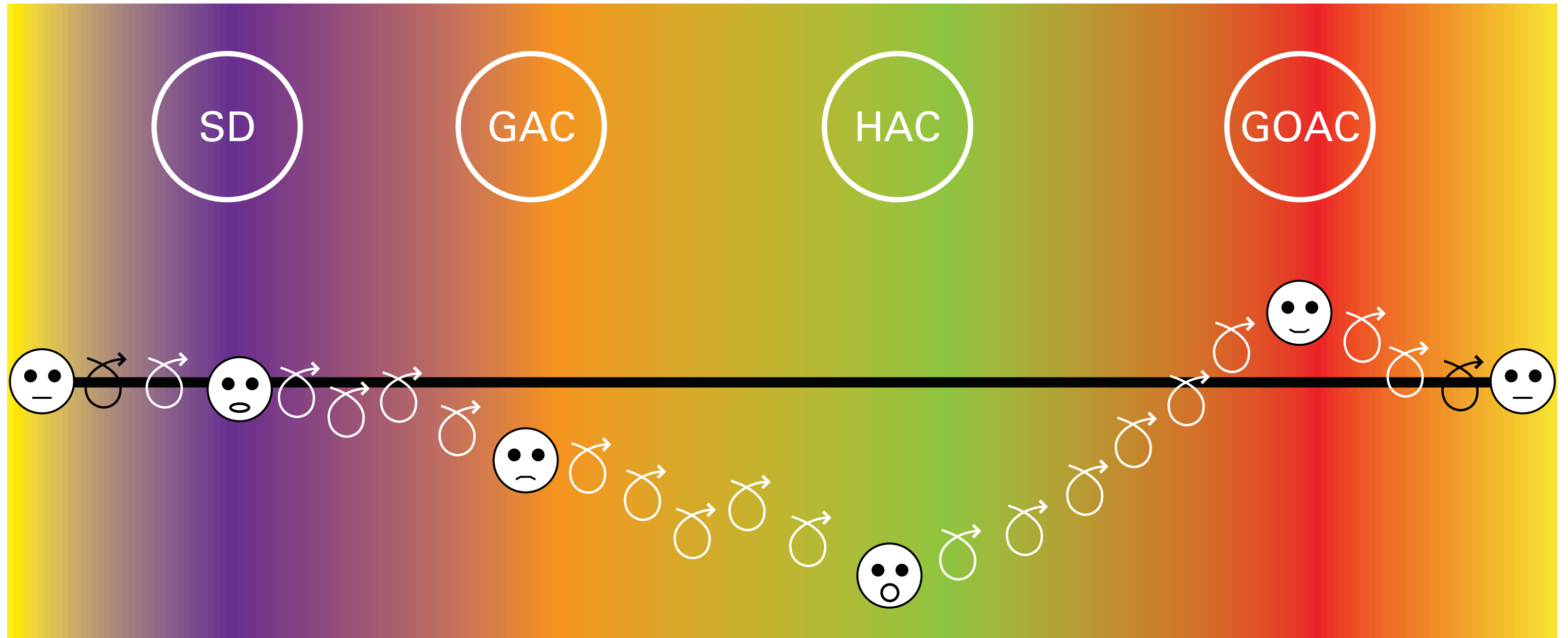
Example: The Pythagorean Theorem



$$a^2 + b^2 = c^2$$

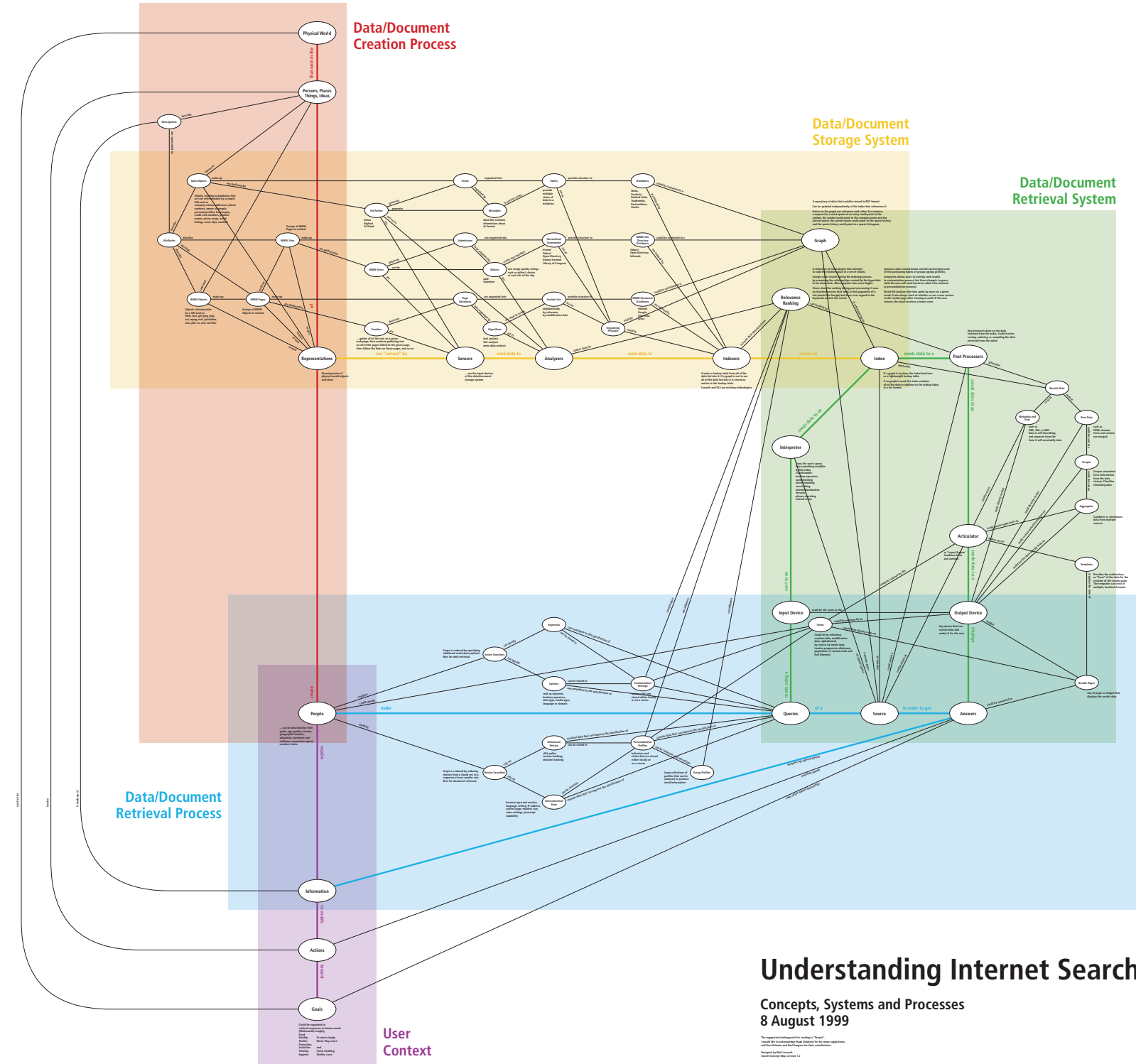


Example: Phases of a cold.

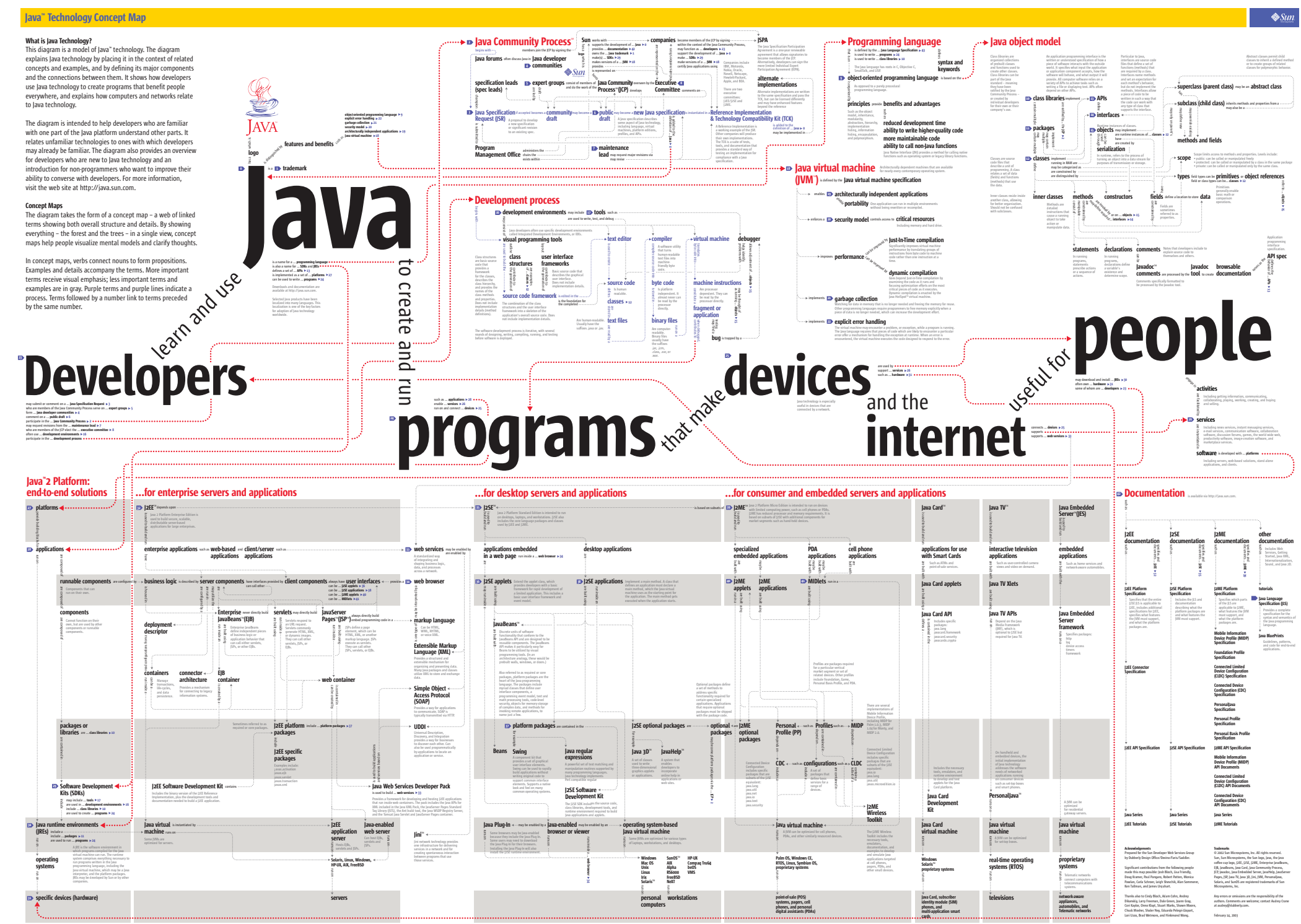


— E-Lab, Rick Robinson

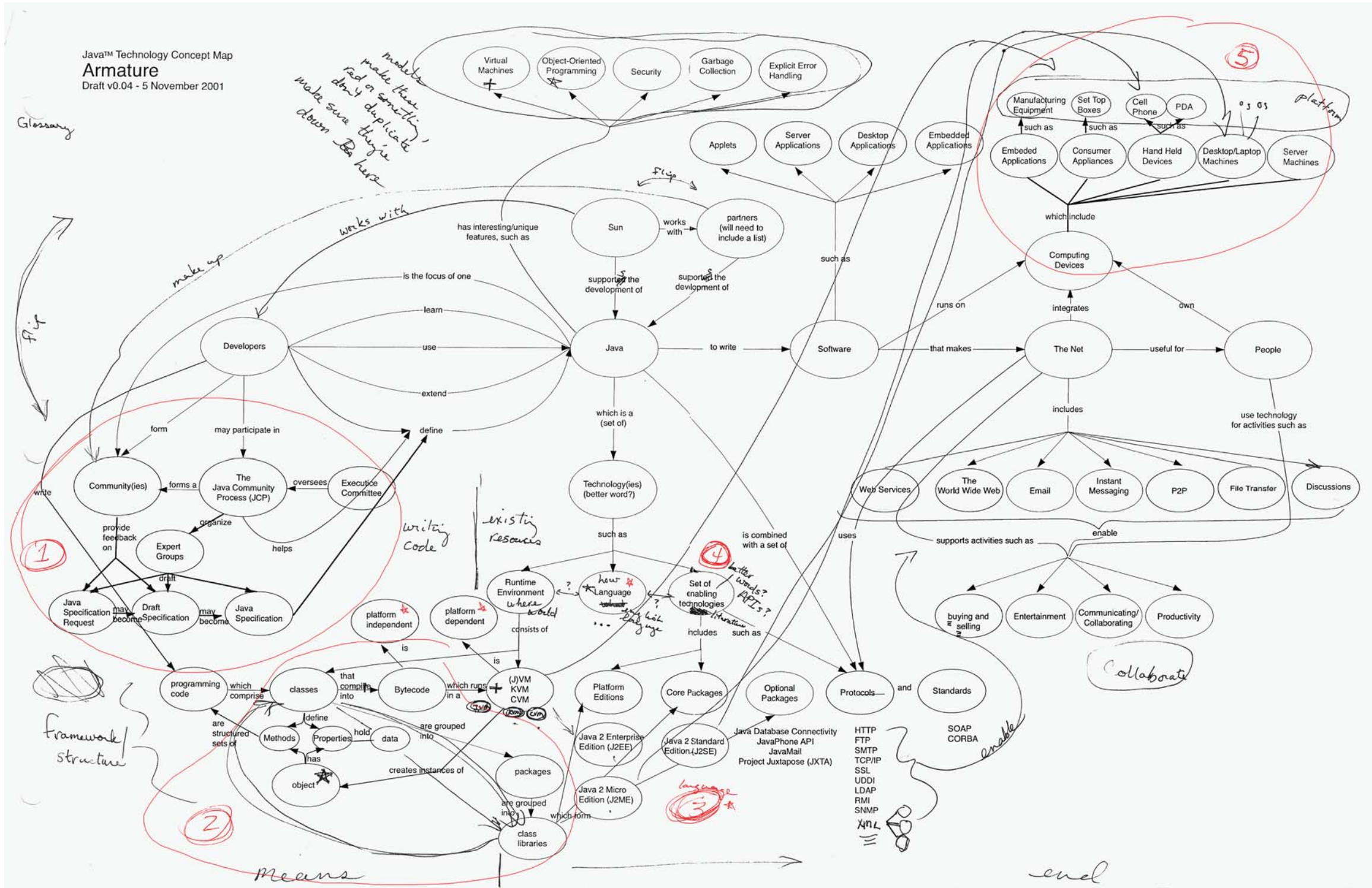
Example: Search concept map



Example: Java concept map

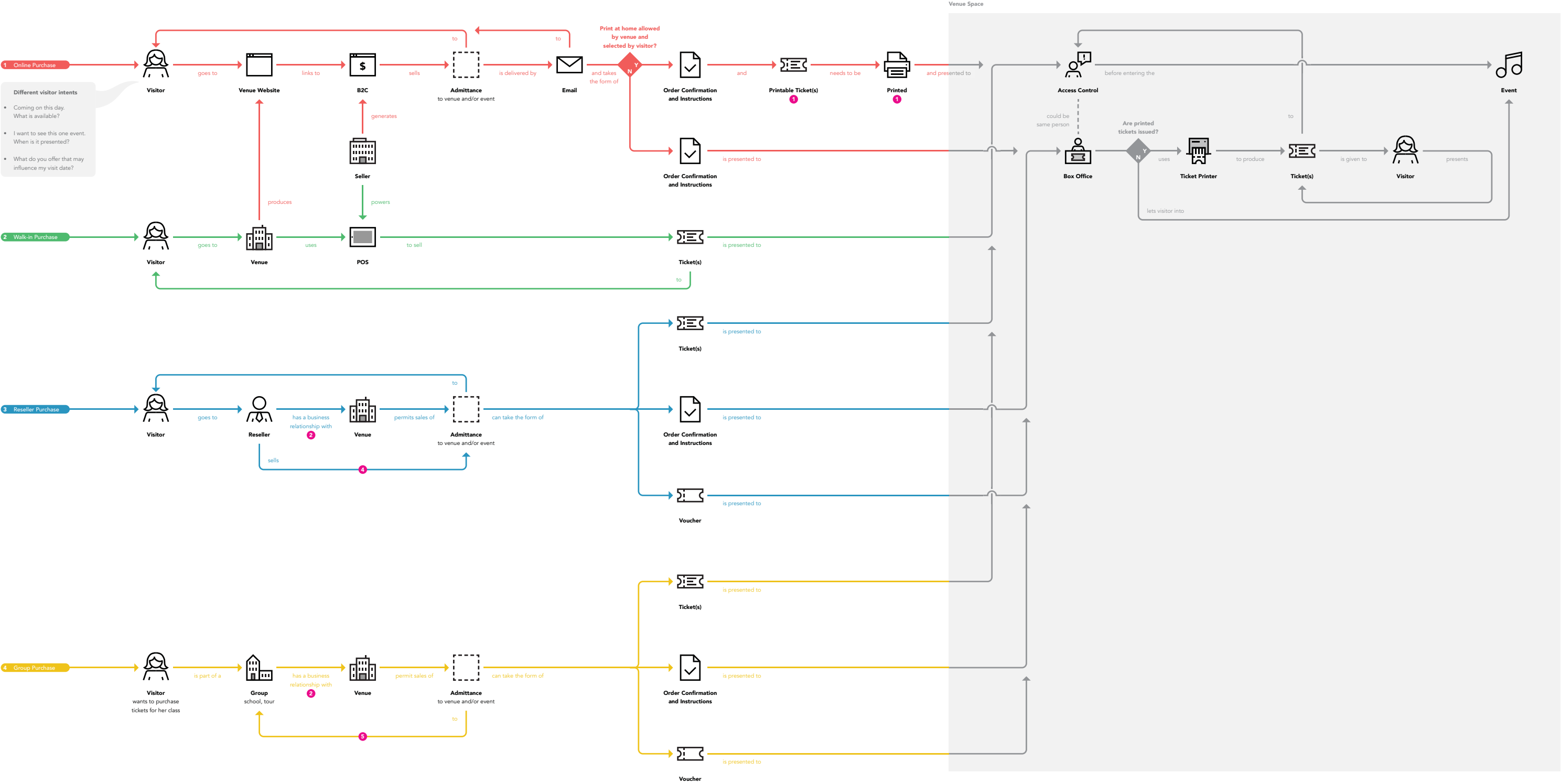


Example: Draft of the Java concept map



Formalizing the role of models in the design process

Journey map example: ticket ordering

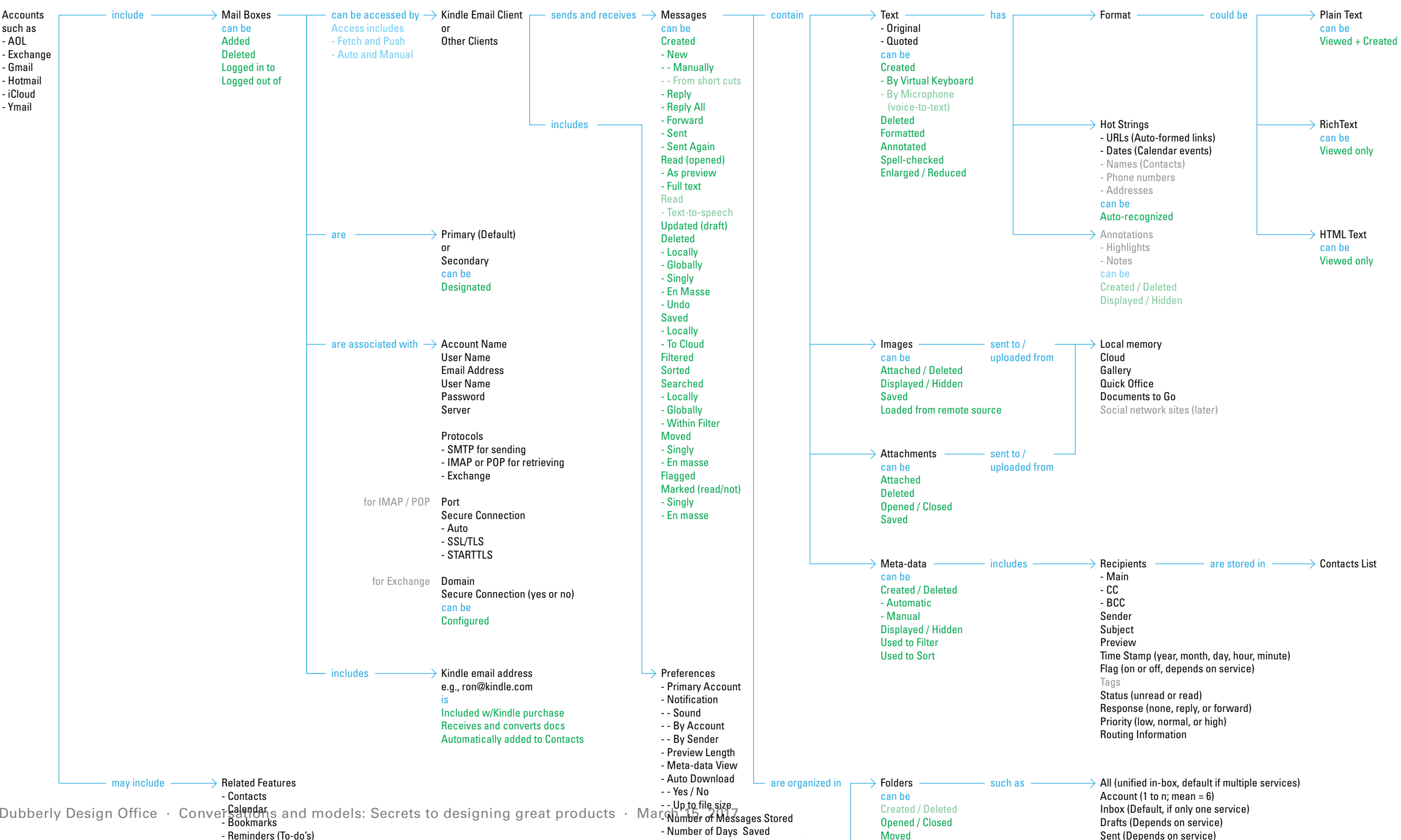


“A conceptual model is a high-level description of an application. It enumerates all concepts in the application that users can encounter, describes how those concepts relate to each other, and how those concepts fit into tasks that users perform with the application.”

—Jeff Johnson + Austin Henderson,
Conceptual Models: Core to Good Design, 2012



Example user conceptual model: an email client app



“At its heart, software design is about creating virtual worlds in which users work, learn, and play.

Virtuality has two aspects:

- 1. Conceptual structure—the ideas and how they unfold, connect, and lodge in the mind*
- 2. Feel—how things look and the other sensations we experience (crude or slick, bumpy or smooth, warm or cool)*

The real issue is designing a consistent conceptual structure, one that fits the domain as much as possible, as comprehensively and comprehensibly as possible.

Consistency, completeness, and clarity are the objectives.”

—Ted Nelson, the inventor of hypertext



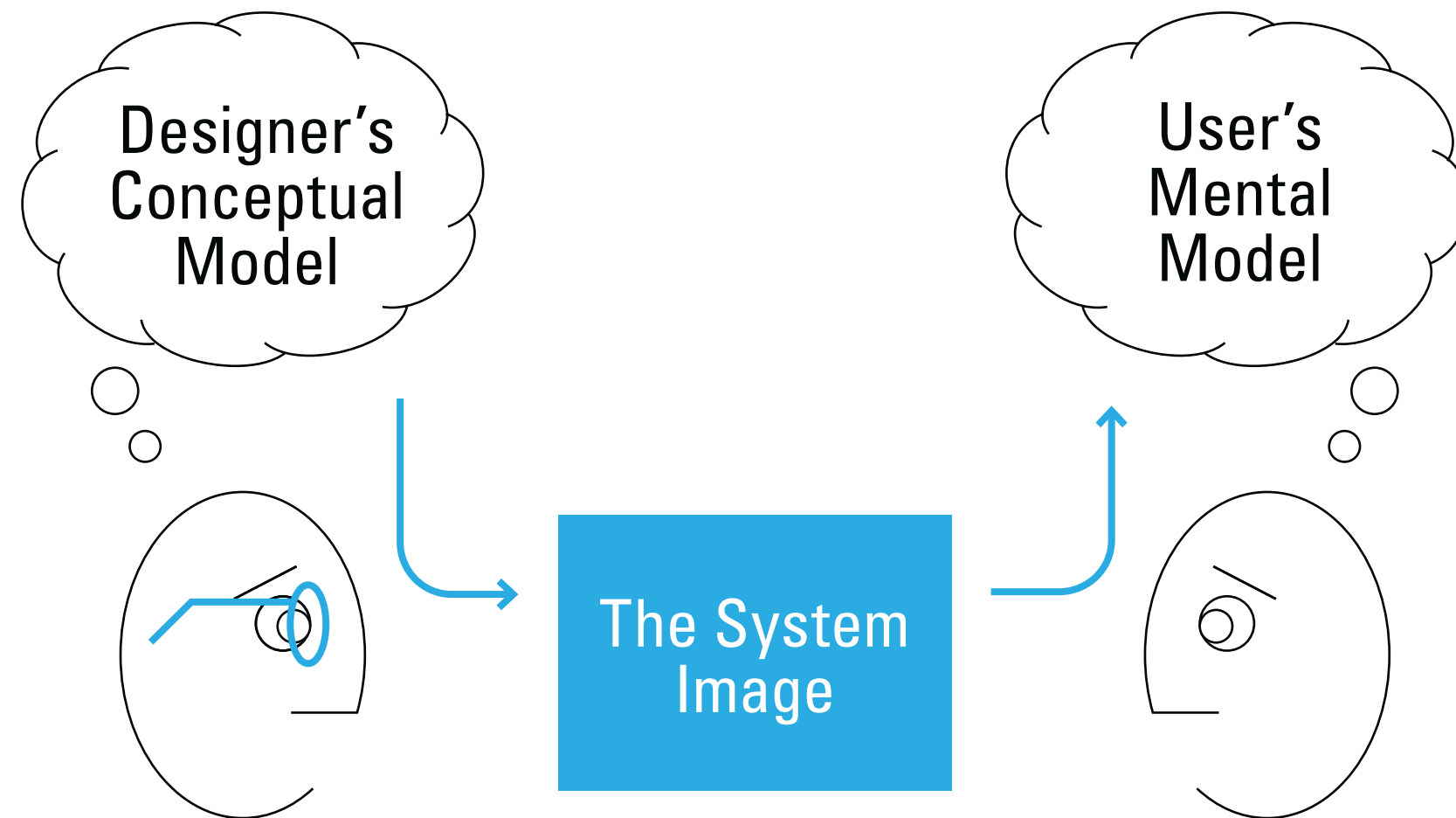
“For people to use a product successfully, they must have the same mental model (the user’s model) as that of the designer (the designer’s model). But the designer only talks to the user via the product itself, so the entire communication must take place through the ‘system image’: the information conveyed by the physical product itself.”

—Don Norman, *The Design of Everyday Things*, 1988

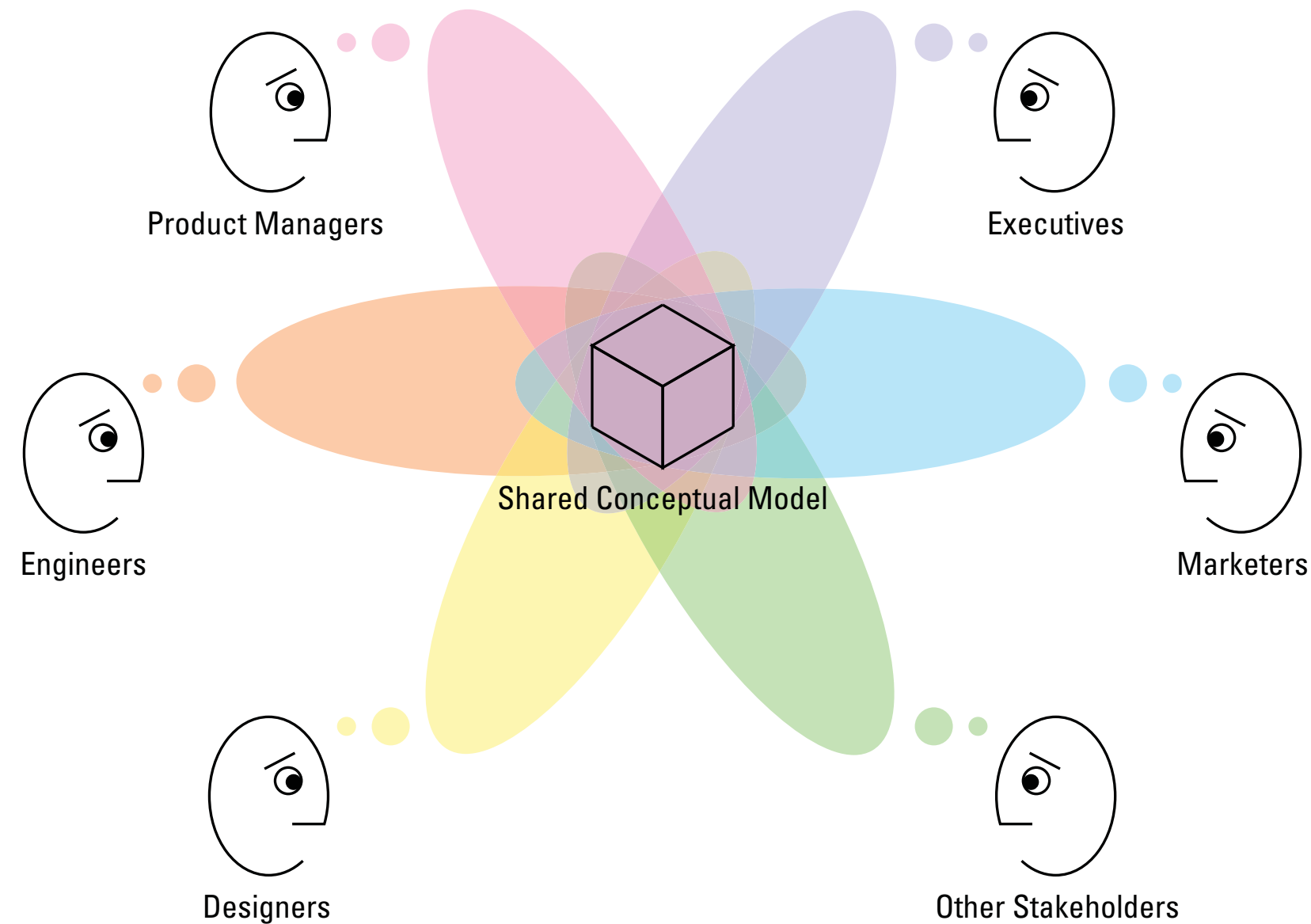


**“...most digital systems fail when they fail to provide a story,
when there is a poor **conceptual model**.”**

— Don Norman



Conceptual models help a product team communicate.



The communication needs to go two ways; it needs to be a conversation.

That means designers don't own the model; the designer's role is to facilitate the conversation, by representing the model and prototyping.

*“Design has also evolved
from the design of objects
both physical and immaterial,
to the design of systems,
to the design of complex adaptive systems.*

*This evolution is shifting the role of designers;
they are no longer the central planner,
but rather participants
within the systems they exist in.*

*This is a fundamental shift—
one that requires a new set of values.”*

—Joi Ito
Director, MIT Media Lab
“Design and Science,” January 11, 2016



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