How should education prepare designers for a future of change?

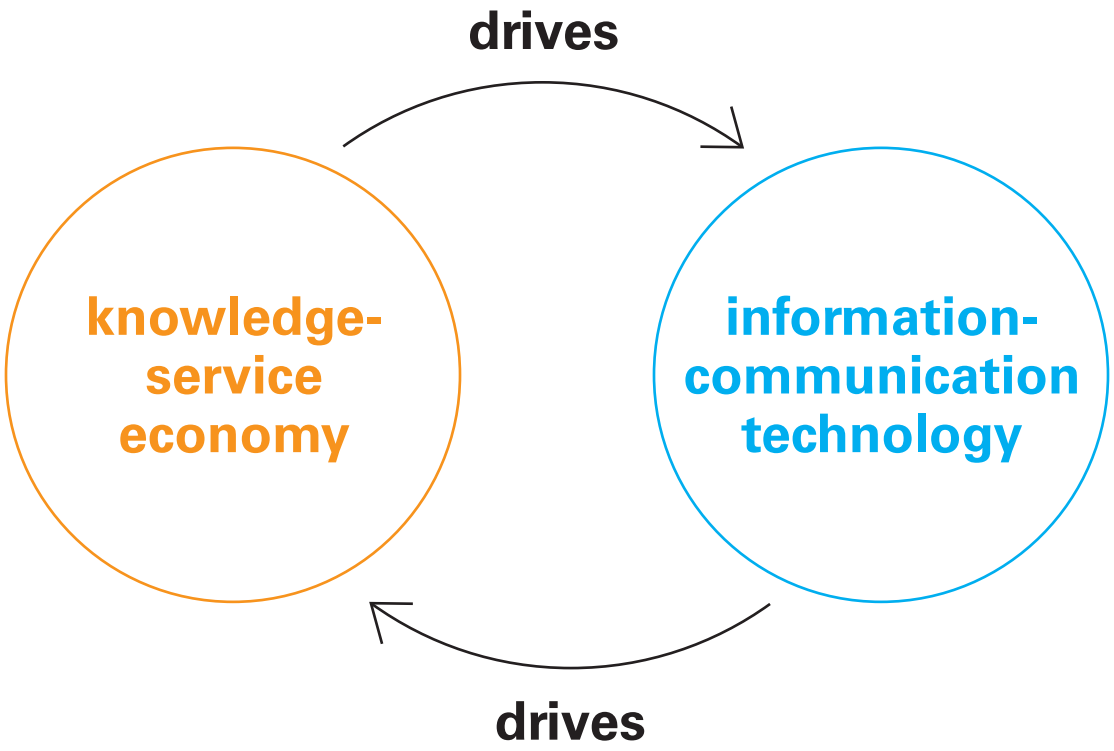
AIGA Next Conference

October 19, 2007; v0.9

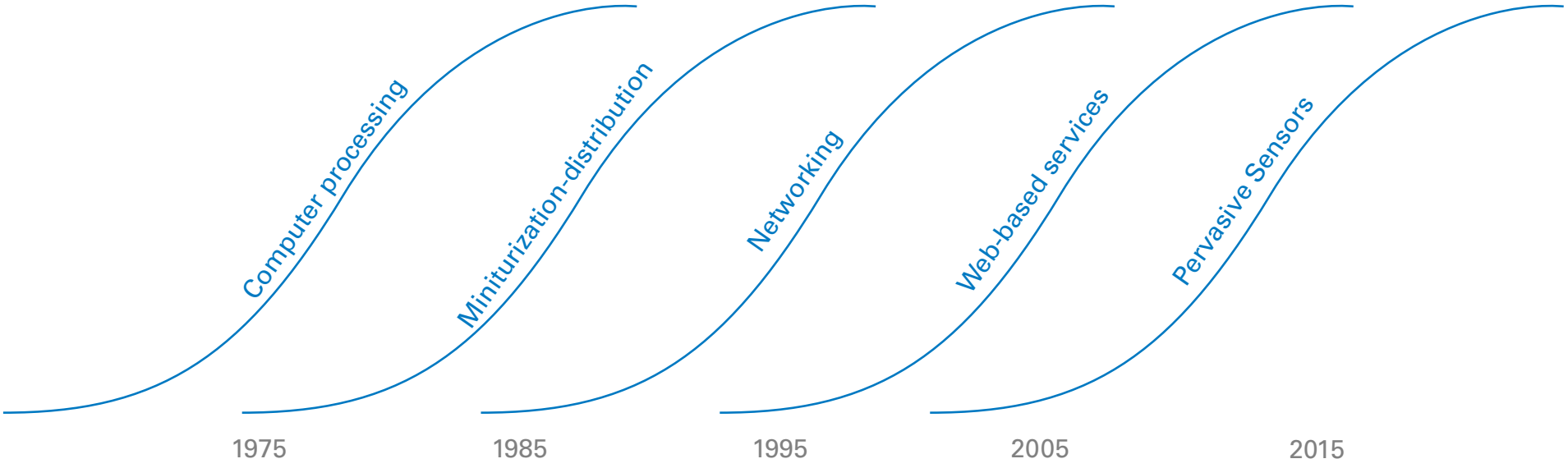
Hugh Dubberly

Sources of change

Growth of one fuels growth of the other



Five waves of technology are contributing to a new generation of integrated systems.



Sensors: the next revolution

Characterizing the change

“. . . commercial products are best treated as though they were services.

It’s not what you sell a customer,
it’s what you do for them.

It’s not what something is,
it’s what it is connected to,
what it does.

Flows become more important than resources.

Behavior counts.”

—Kevin Kelly

Changing scientific paradigms

After Austin Henderson

	Newton	*Darwin*
Metaphor	Mechanism	Organism
Control	Top-down	Bottom-up
Development	From outside	Self-organizing
	Rigid	Pliant
	Fragile	Robust
	Regular	Particular
	Coherent	Responsive

Increasing Customization

After Larry Keeley

	Era 1 Selling 1930s	Era 2 Marketing 1950s	Era 3 Positioning 1970s	Era 4 Tailoring 1990s
Key Goals	Support sales	Develop brands	Appeal to segments	Appeal to individuals
Innovations	Styling	Packaging Corporate ID	Specialization methods	Integrated programs Strategic prototyping
Program	Harvester Frigidaire	Nabisco Coca-Cola	JCPenney American Airlines	???

Changing relationships between designer and audience

After Liz Sanders

Era	*Past*	*Current*	*Emerging*
Design Paradigm	Expert-driven	Human-centered	Facilitated
Audience role	Customer	User	Participant
Activity	Consume - Shop - Buy - Own	Experience - Use - Interact - Communicate	Co-create - Adapt/Modify/Extend - Design - Make

What is the user's role?

After Austin Henderson

Follow	*Participate*	*Lead*
Design *for* users	Design *with* users	Design *by* users
Provide input	Combine expertise	Scripting languages
Provide feedback	Combine values	Open systems
		Construction sets

The end of incrementalism

After John Rheinfrank

From (escape the past)	*To (invent the future)*
Mechanistic world view	Ecological—evolutionary world view
Landscape depletion	Landscape renewal
Surface novelty	Evocative structures
Detached expert	Collaboration
Tangible assets	Intangible assets
Consolidation	Flow

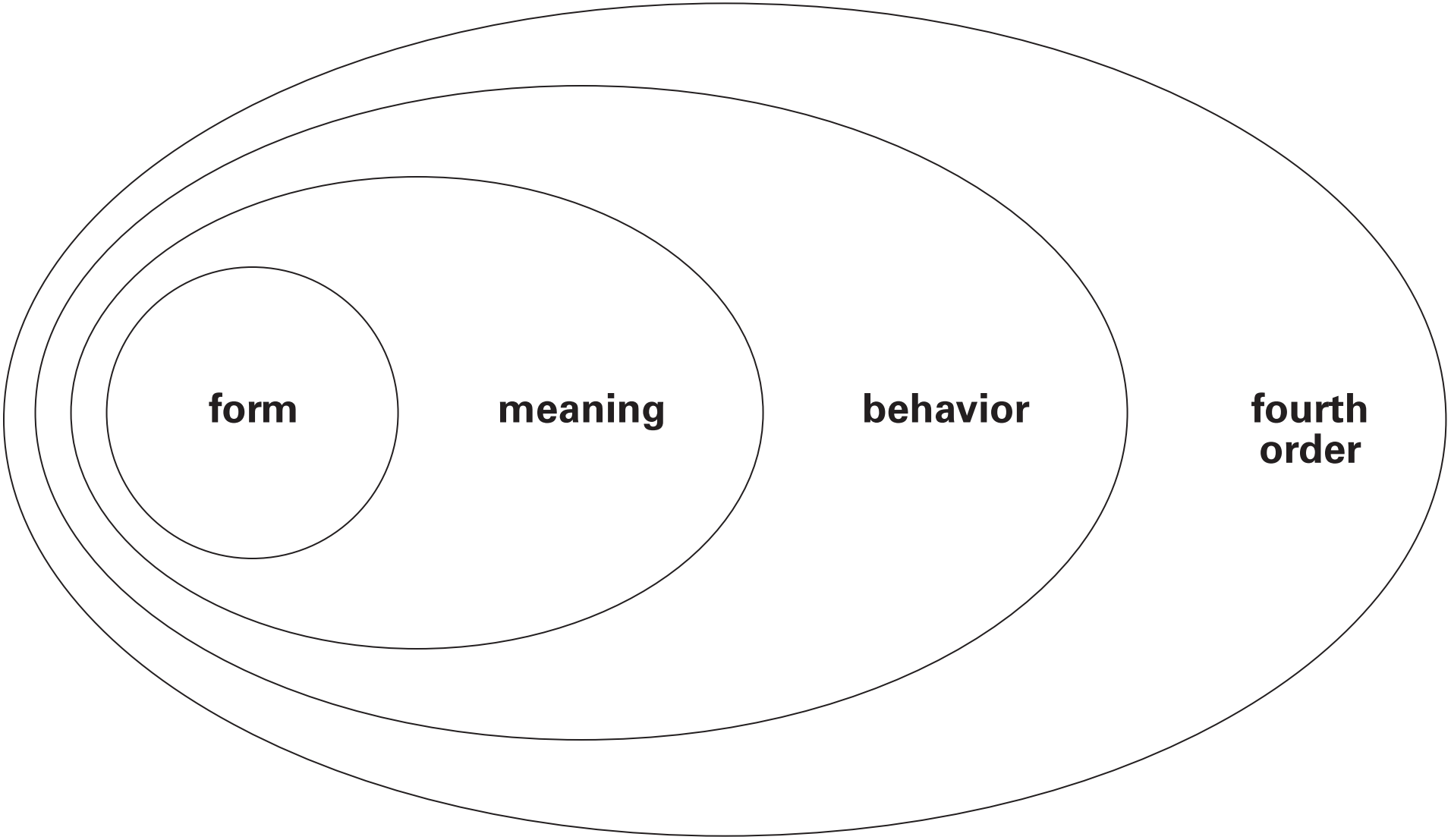
Changes in planning methods

After Shelley Evanson

	Product	*Service*
Era	Planned	Emergent
Focus	Find right strategy	Understand customers
Growth	Top-Down	Organic
Method	Sequential	Parallel
Delivery	Internal	Co-produce

Changing focus of designers

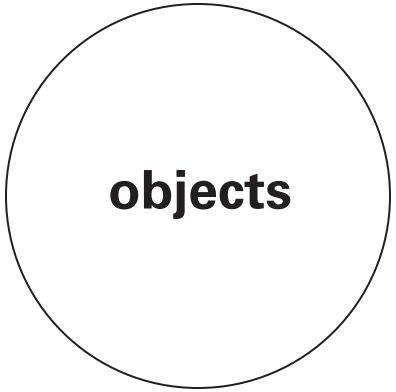
After Golsby-Smith / Buchanan



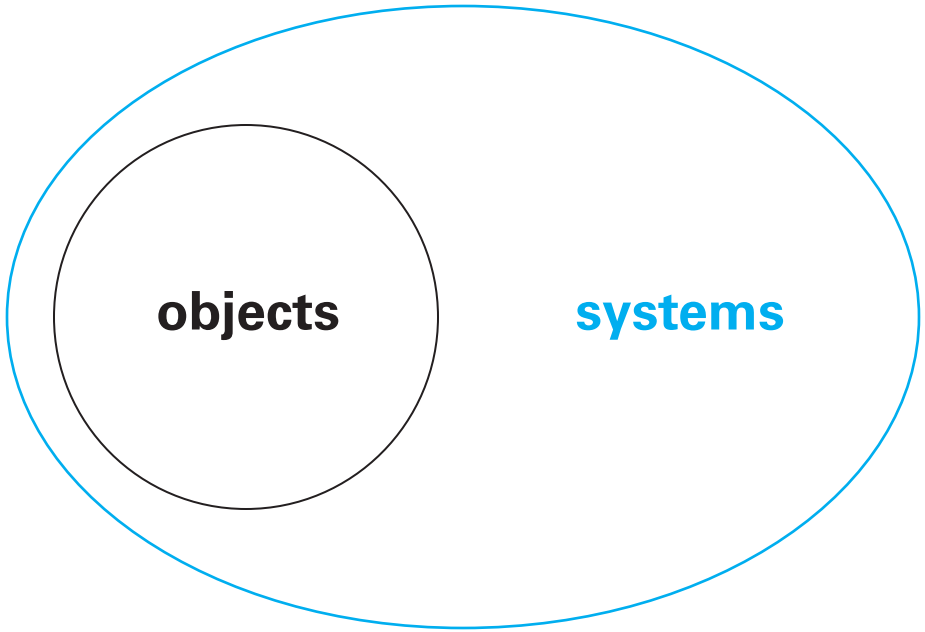
After: Tony Goldsby-Smith and
Richard Buchanan

What does change mean for designers?

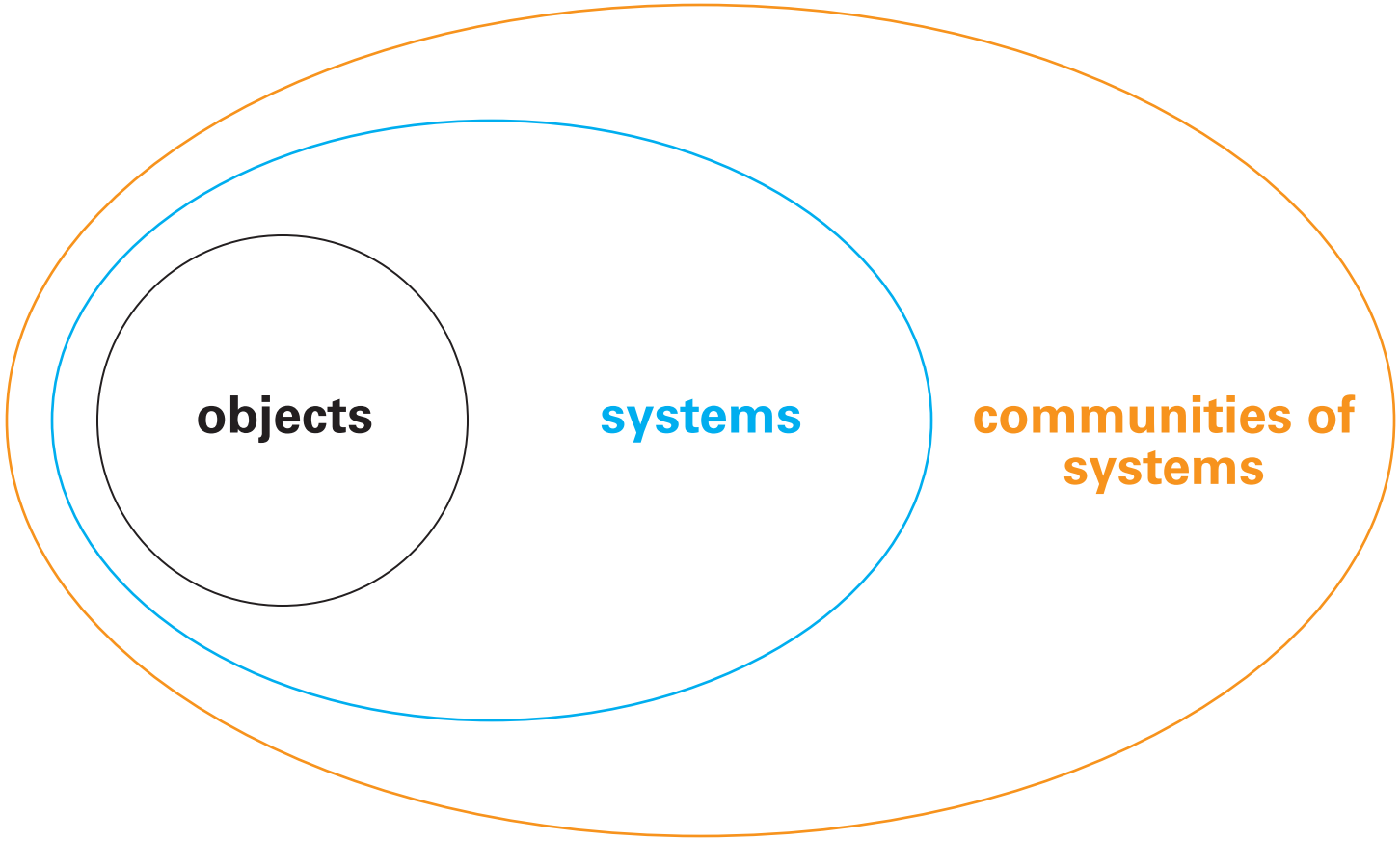
Changing context of design



Changing context of design



Changing context of design

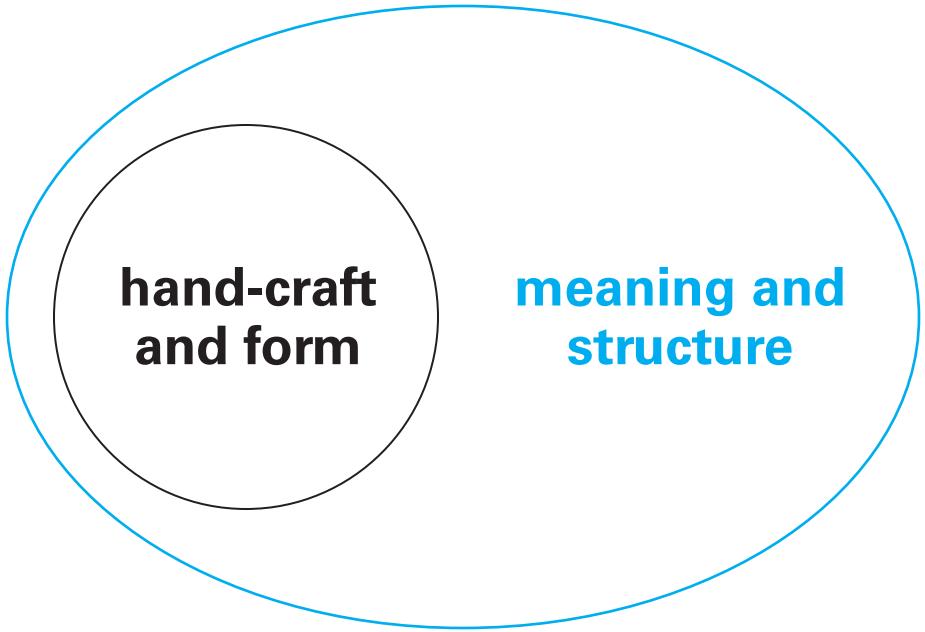


Changing context of design

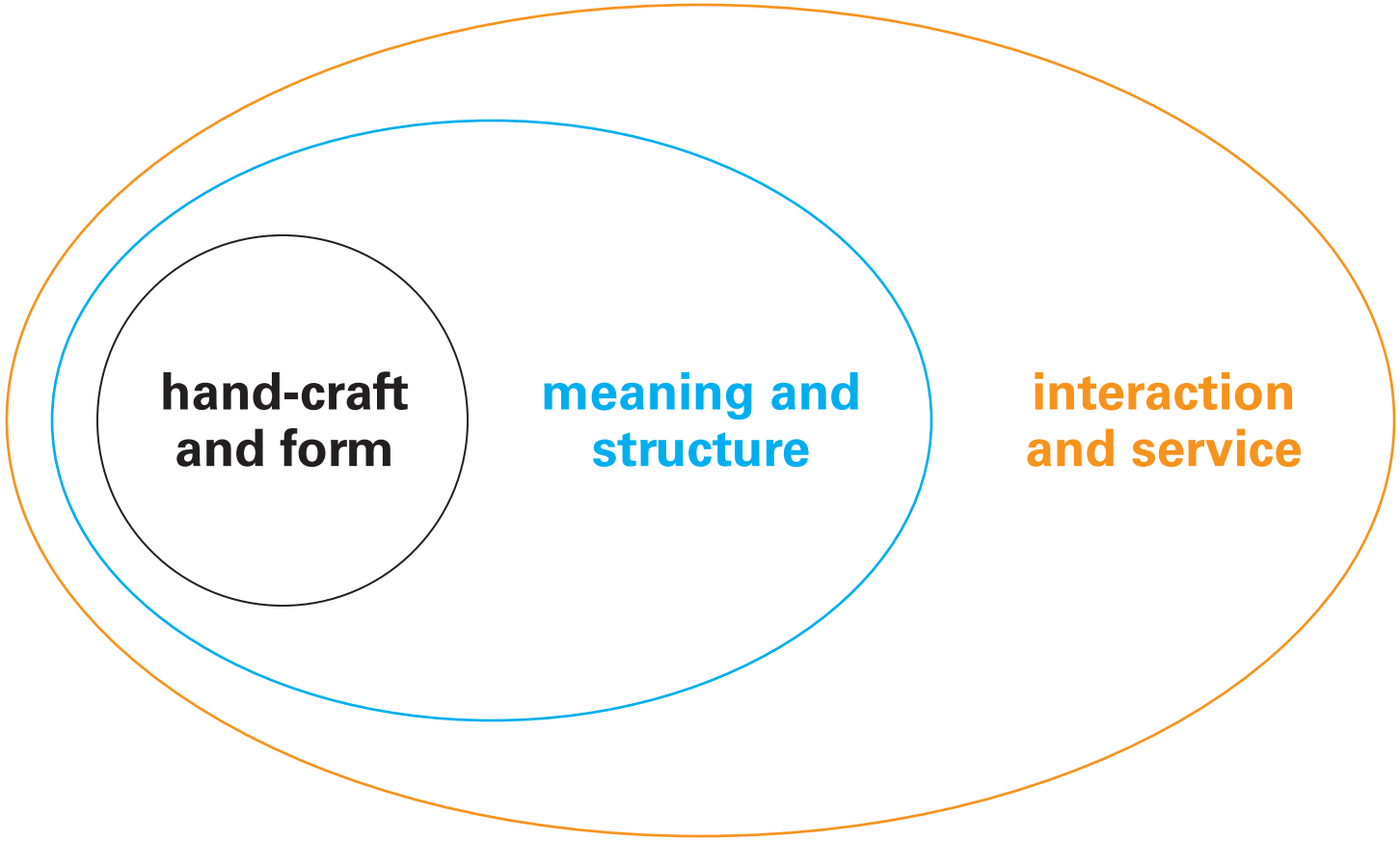
	Industrial era	*Electronic era*
Focus	Objects	Systems
Values	Seek simplicity	Embrace complexity
Designer's role	Deciding	Facilitating
Stopping condition	Almost perfect	Good enough for now
Result	More deterministic	Less predictable
End-state	Completed	Adapting or evolving
Relation to time	Editions	Continuous updating

Changes in design practice

Changes in design practice



Changes in design practice

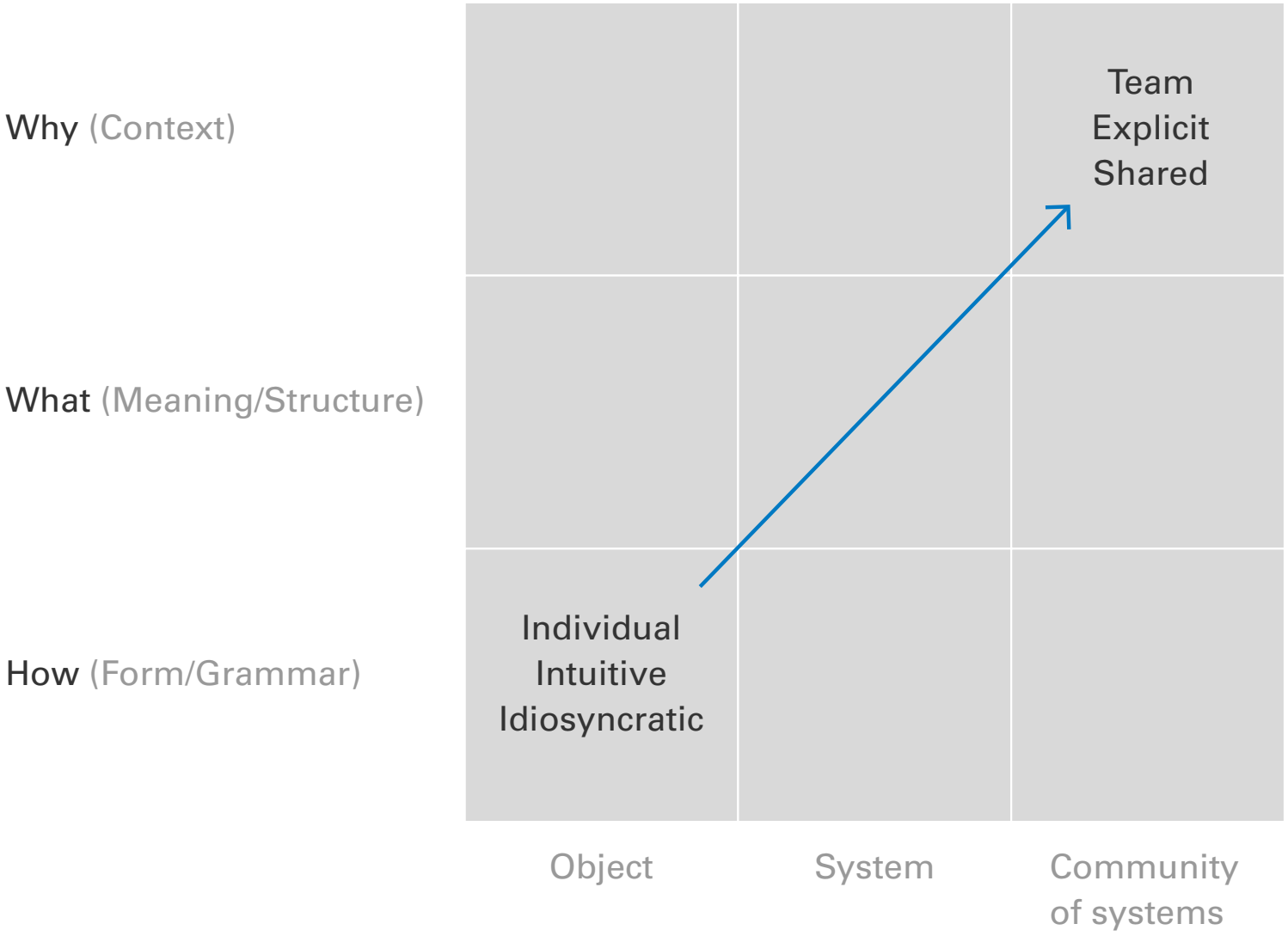


Changes in design practice

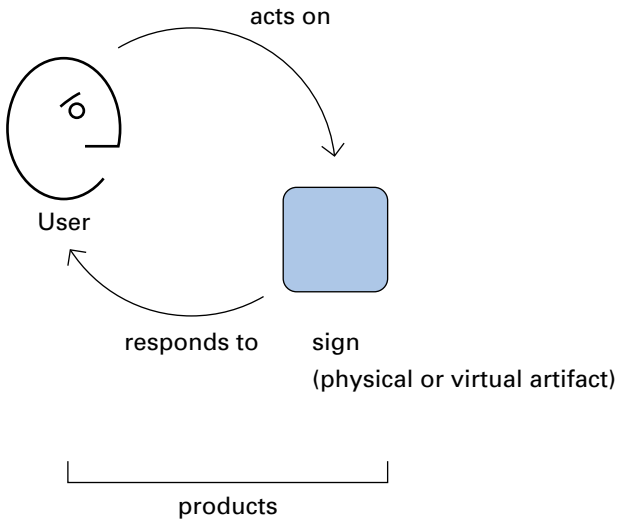
	Hand-Craft	*Service-Craft*
Subject	Things	Behaviors
Participant(s)	Individual	Team
Thinking	Intuitive	Reasoned
Language	Idiosyncratic	Shared
Process	Implicit	Explicit
Work	Concrete	Abstracted
Construction	Direct	Mediated

Changing nature of design engagements

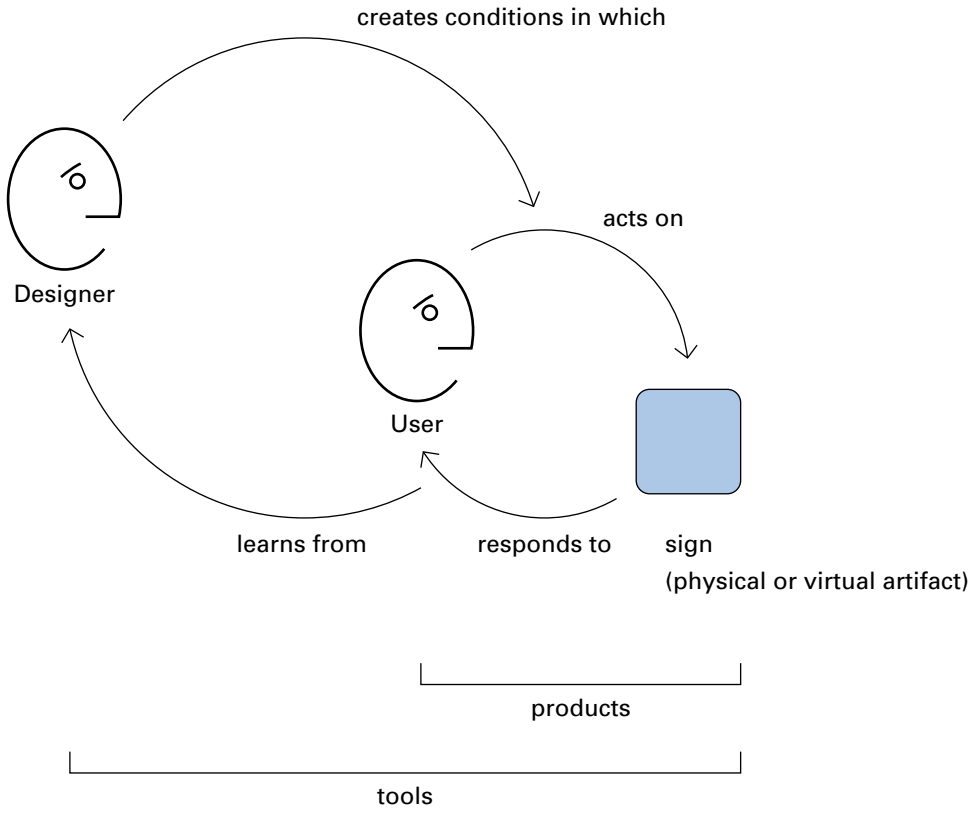
After Joy Doblin and Charles Morris



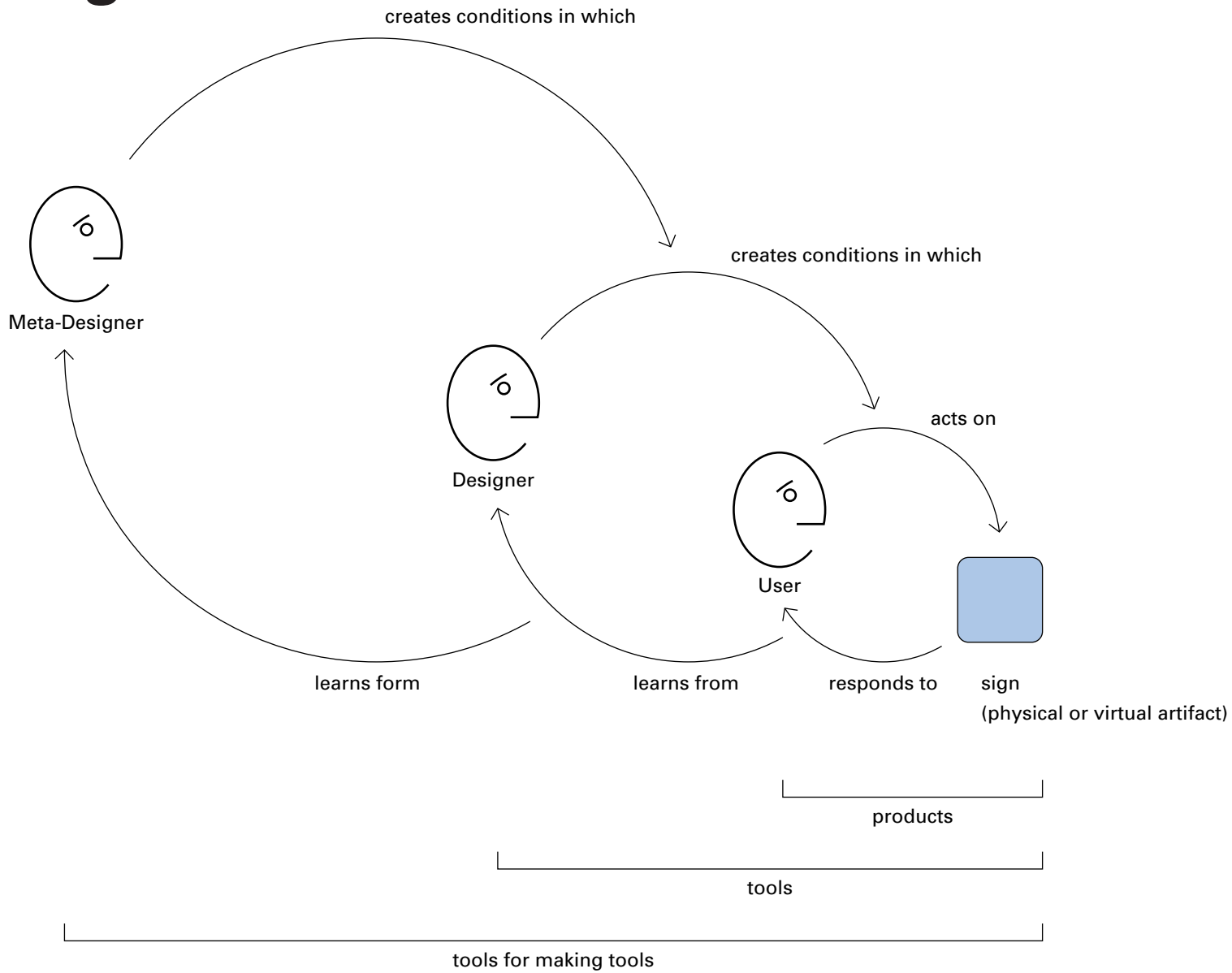
User interacting with artifact



Designer interacting with (User interacting with artifact)



Meta-Designer interacting with (Designer…



Summary

Era	Focus
19th century	Hand-skills
Early 20th century	Form
Mid-1950s	Methods
Mid-1970s	Meaning
Mid-1990s	Interaction
Late-2000s	Services

Summary

Era	Focus	Role	Activity
19th century	Hand-skills	Individual craftsman	Designing and making tightly coupled (production systems)
Early 20th century	Form	Individual designers	Designing precedes manufacturing (identity systems)
Mid-1950s	Methods	Planning teams	Planning precedes designing (military systems) (first generation)
Mid-1970s	Meaning	Corporate design department	Manufacturing moves toward tailoring (product semantics) (language systems)
Mid-1990s	Interaction	Development teams	Continuous beta replaces periodic editions (electronic systems)
Late-2000s	Services	Facilitators / tool builders	Co-creation (emergent systems)

An emerging theme, with five variations

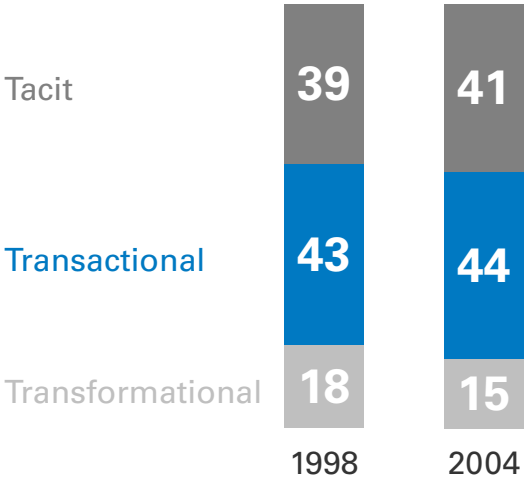
- Participatory design
- Design for evolution
- Design for service
- Integrated systems of products and services
- Platform design

The shift to a service economy suggests designers must begin to design for service

Recent McKinsey data illustrates a shift in job types

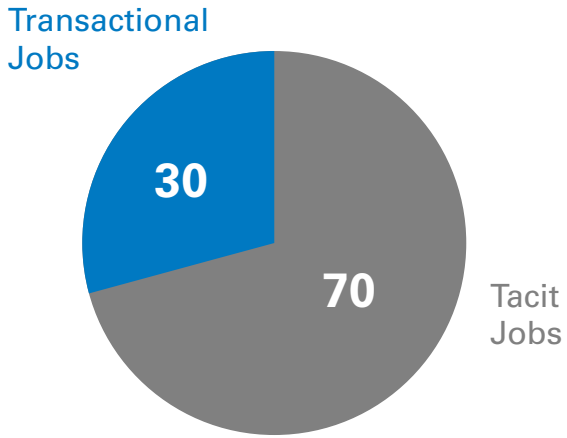
Total U.S. Employment

Number of employees in millions, %



New jobs in the U.S., 1998–2004

100% = 6.4 million



Source: Johnson, Mayika and Lee, Next Revolution in Interactions, McKinsey Quarterly 2005 Number 4

In 2002, IBM bought Price Waterhouse's IT consulting business

In 2004, IBM sold its PC business to Lenovo

In 2005, service was 35% of IBM's income

In 2007, Philips sold its chip division.

Philips then acquired Health Watch Holdings and Lifeline Systems, another health services company.

Potential for growth

In research (investment in Germany)

Product development	€3,121 / employee / year
Service development	€ 67 / employee / year

—Birgit Mager, KISD

In developing economies

80% of the U.S. GDP is in service
39% of China's GDP is in service
—Mary Jo Bitner, ASU

Ways of thinking about service:

Pine & Gilmore—stage experience

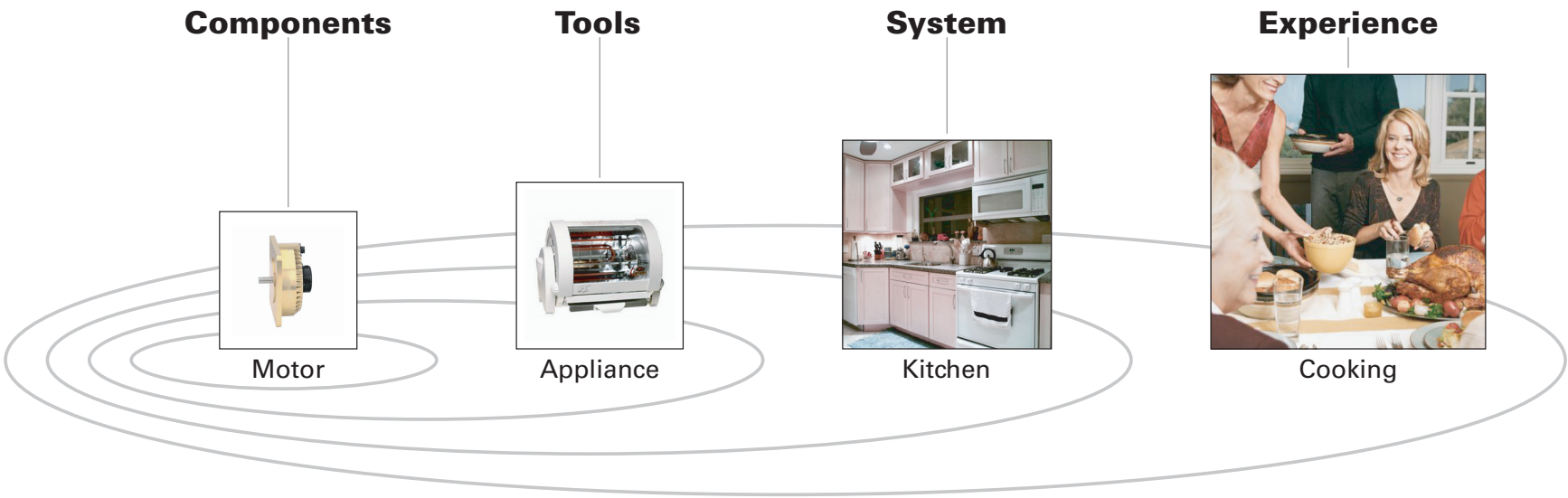
coffee beans > coffee > coffee shop > Starbucks

Commodity	Goods	Service	Experience
			
1¢–2¢ Per Cup	**5¢–25¢** Per Cup	**75¢–$1.50** Per Cup	**$2–$5.00** Per Cup
Beans	Roasted and ground	Brewed and served	Treating yourself to something special

Ways of thinking about service:

Rheinfrank—define marketspaces

motor > blender > kitchen > dining experience



Contrasting Goods and Services

After Lusch

Goods Dominant Logic	*Service-Dominant Logic*
Goods	Service(s)
Tangible	Intangible
Operand Resources	Operant Resources
Asymmetric Information	Symmetric Information
Propaganda	Conversation
Value Added	Value Proposition
Transactional	Relational
Profit Maximization	Financial Feedback

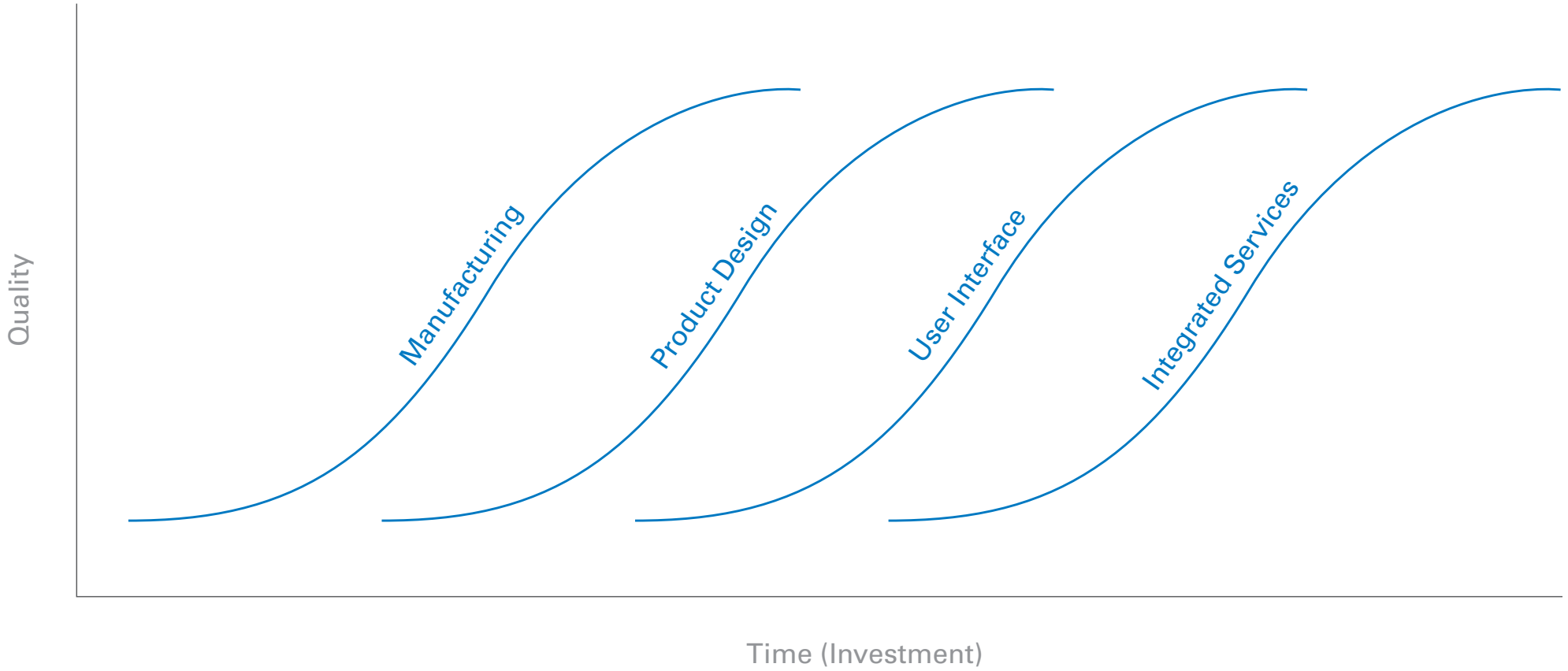
Stand-alone products
may soon be impractical.

Products already require support services.

And soon everything will be connected
to the internet.

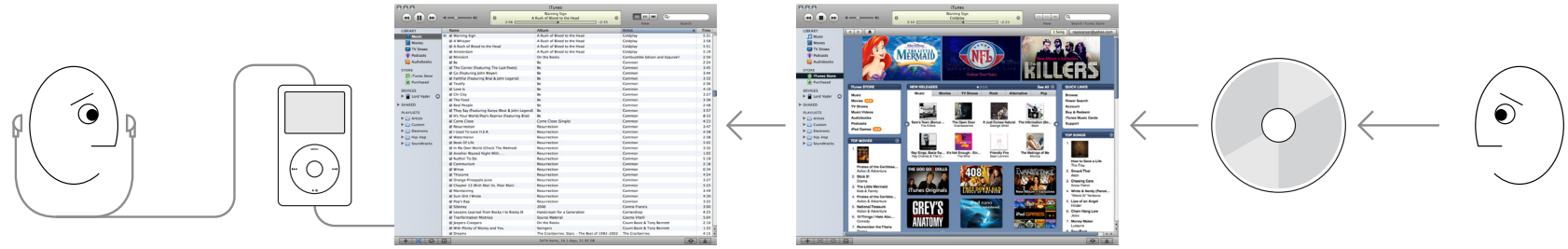
For new technologies, services often drive adoption

Services offer opportunity for differentiation

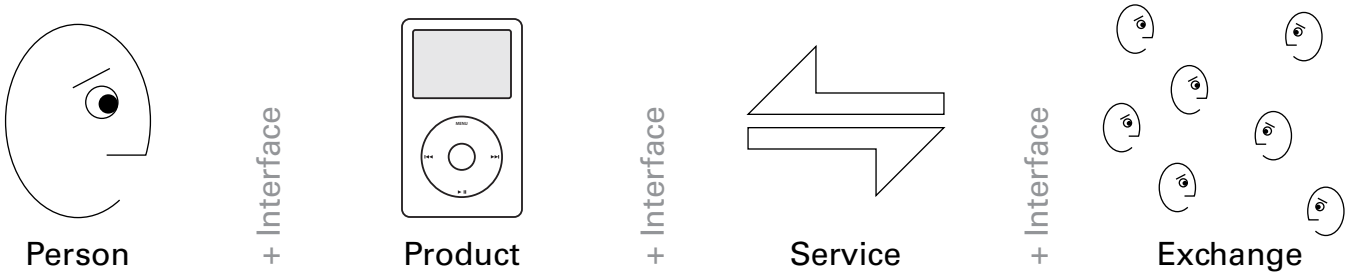


Service examples

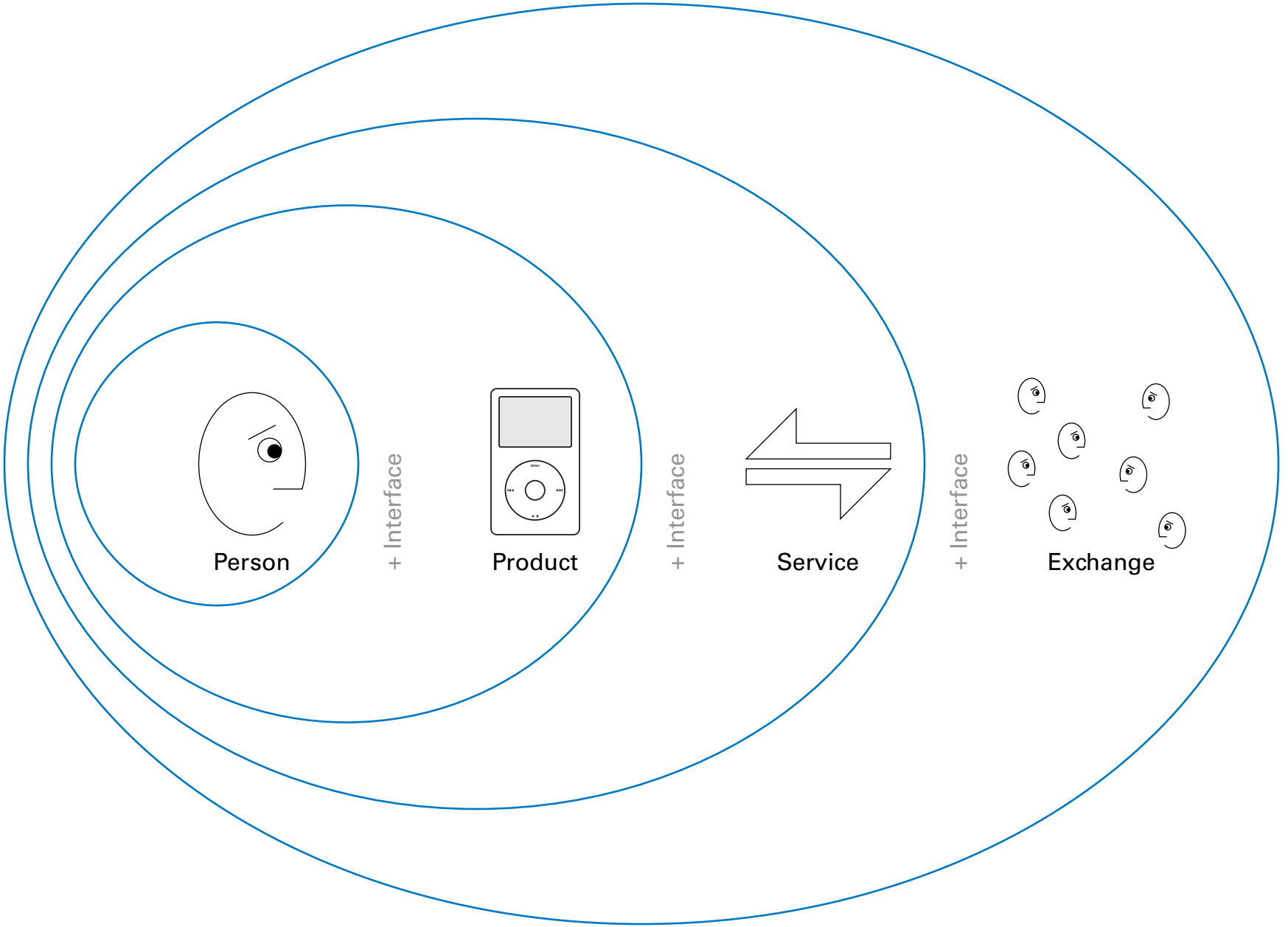
Marketplace
Networked Service
Software
iPod = Hardware



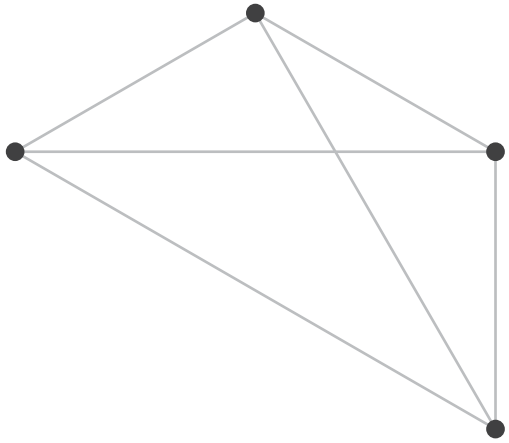
Elements of an integrated system



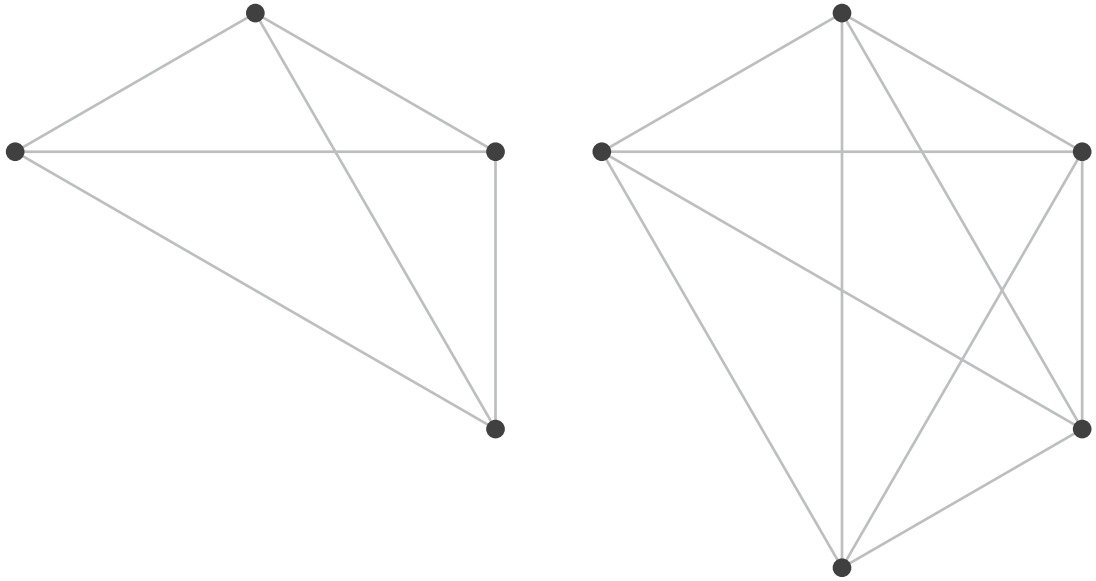
Each step expands our potential



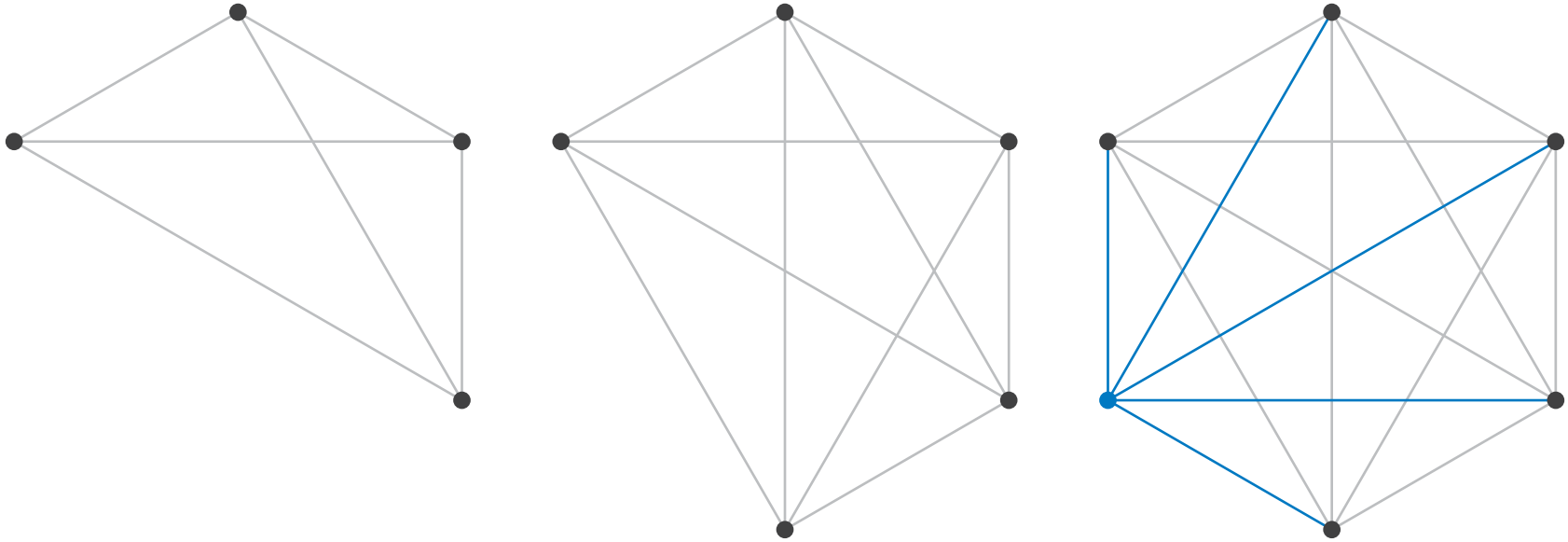
Integrated Systems take advantage of network effects.



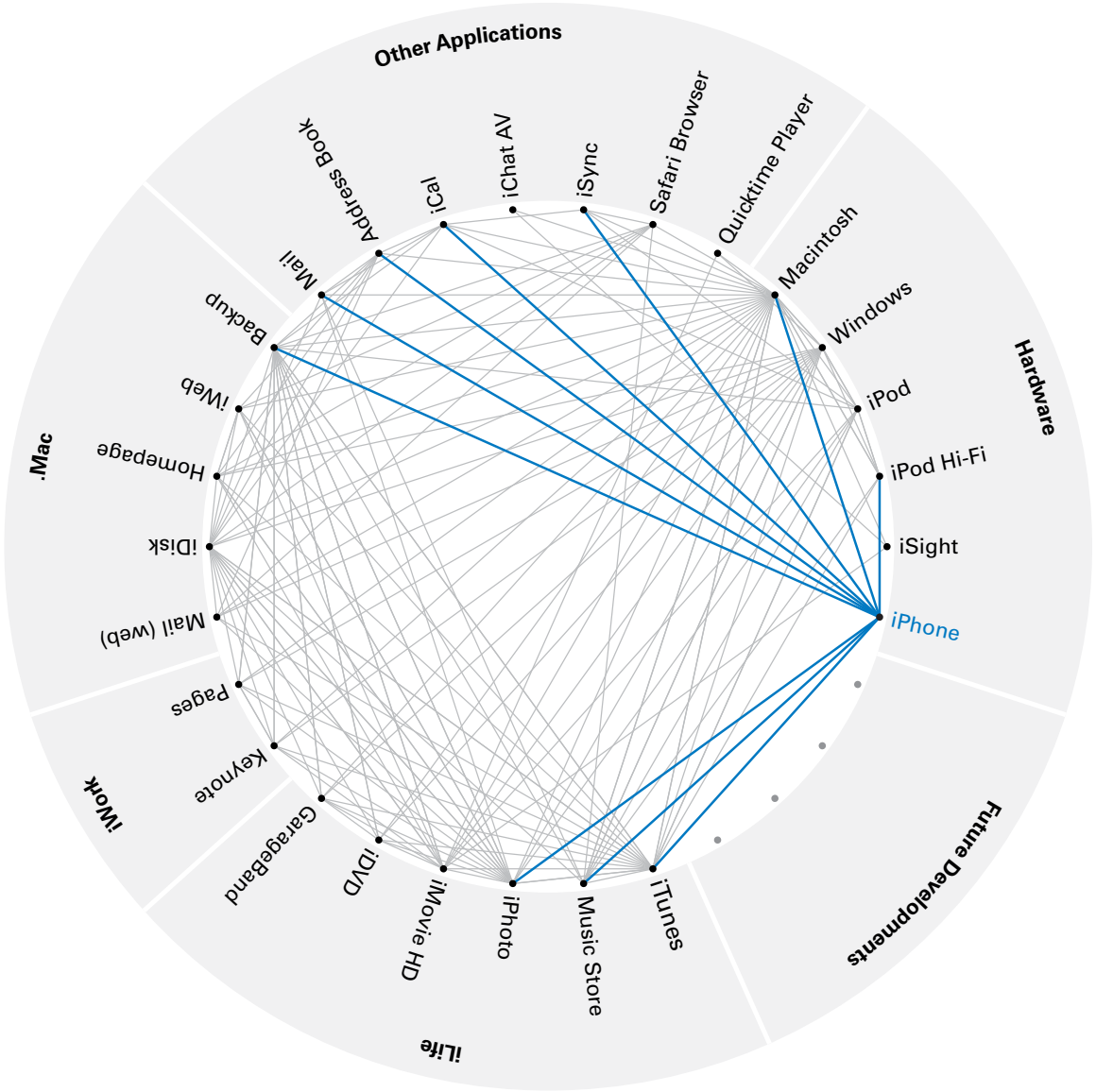
Each new participant provides value to the existing participants.



Each new system enhances the value of the existing Systems.



The iPhone connects with Apple's existing system of systems.



Product as object	**Service system**
Possesses	**Delivers**
Visceral	**Connected**
Immediate	**Takes longer to develop**
Rapidly judged	**Takes more effort to unseat**
Physical	**Supporting**
About components	**About relationships**
Node	**Links**
More Static	**More dynamic**

A platform is a system with clear rules for its extension.

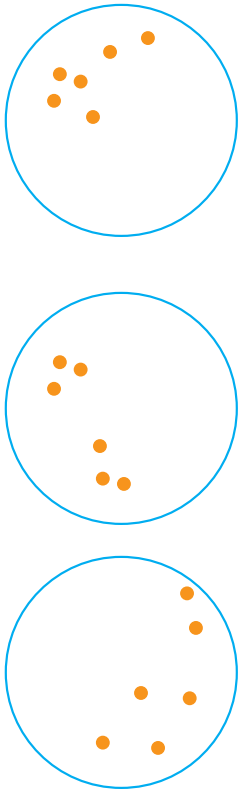
A platform is a system with clear rules for its extension.

The range of possible extensions can be narrow or wide.

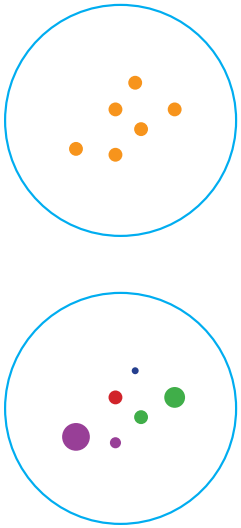
Extensions can be created by the original author or by others

A platform can be extended in three ways

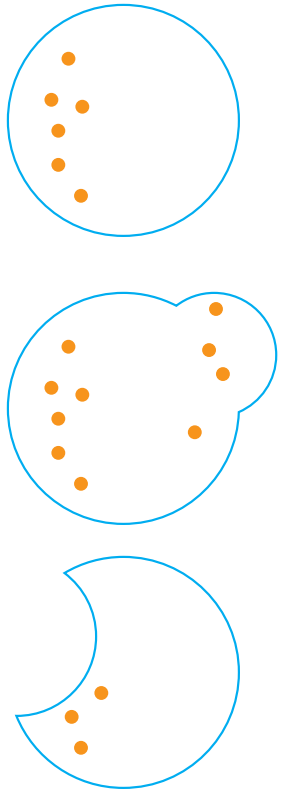
1. Rearrange



2. Modify



3. Add/Delete



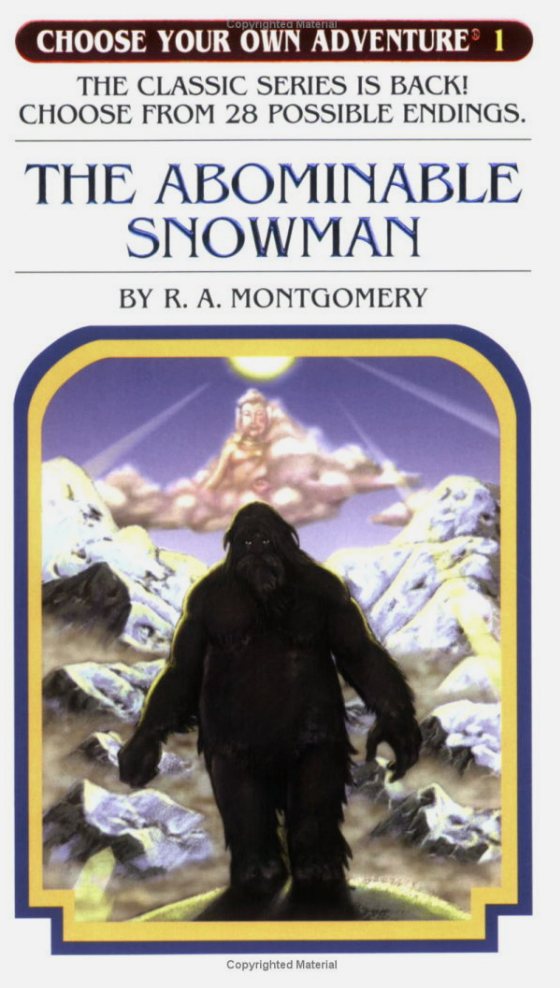
Rearrange

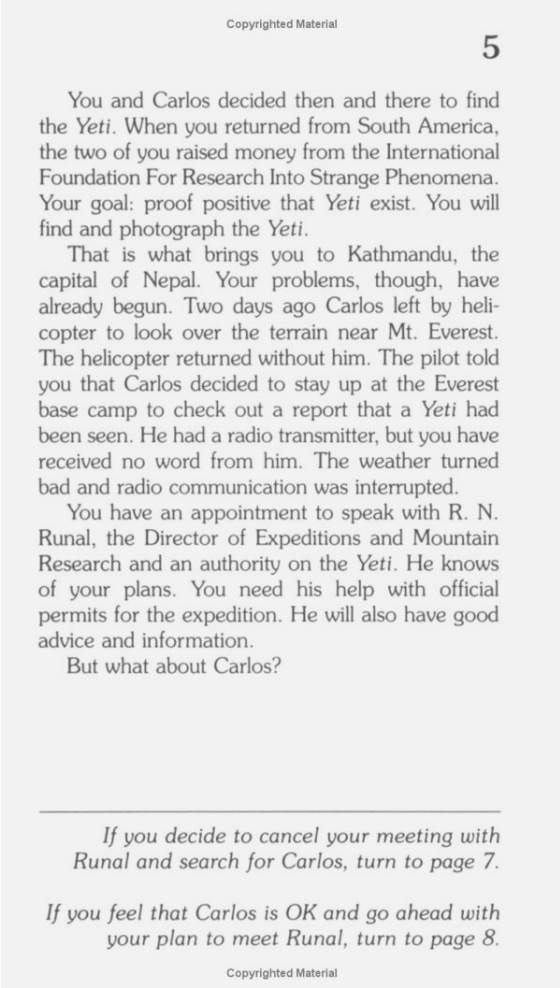
Transformers

Rearrange

Flap sofa

Rearrange





Choose Your Own Adventure Novels

Modify

Mini Cooper (Color Options)

Modify

Nelson Daybed (Color Options)

Add/Delete

Bugaboo

Add/Delete

Lego

Add/Delete

SmartCubes Shelving

Add/Delete

iPod

Platform Types

	Before manufacture or release	After manufacture or release
For Extension	Theme + Variation eg. Grid systems	(Design) languages components and grammars kit of parts + rules for integrating
For Configuration	"choice" by line extension	Personalization Customization Re-use by re-configuring

Platform Types

	Before manufacture or release	After manufacture or release
For Extension		
For Configuration		

Platform for extension (before manufacture or release)

Theme and variations
- in music
- in architecture
- in fonts
- Masons's marks
- symbol systems

Grid systems

Size systems
- S M L XL XXL
- shoe sizes

Surface systems
- color, pattern, texture, material (e.g. blonde maple)

Platform for configuration (before manufacture)

Body variation on a standard frame
- Model T
- Burritos and other wraps or Asian noodles or soups

Detail variation
- Mini Cooper
- ordering furniture “to build”
- ordering sandwiches or burgers
(e.g. with lettuce and tomato, without onions)
- “Have it your way.”

Platform for configuration (after manufacture)

Personalization (pushed by the supplier)
- classic direct mail, based on previous purchases
- collaborative filtering (e.g. Amazon's recommendations)

Customization (pulled by the user)
- choosing news sources (e.g. configuring MyYahoo)
- skins
- decals (applied detail)
- adding condiments (e.g. extra mustard)

Platform for extension (after manufacture or release)

Language (to create “new” ideas)
- components and grammars

Standard building blocks
- letters (also to create new ideas)
- construction sets (bricks, Legos, TinkerToys)
- moveable type
- board games, playing cards

Open source projects
- OED
- Linux
- Mozilla

For extension – “expert tools”

Programming languages
- Java

Construction kits
- IDEs (Integrated Development Environments)
- version control systems (e.g. CMS systems)
- blog platforms (Blogger, WordPress, JotSpot)

Operating system platforms
- CPM, DOS, etc.

Mash-up platforms
- network OS API’s
- Google, Yahoo, eBay

For extension – “end-user programming”

Virtual worlds / God games
- The Sims
- Second Life

Plug-in platforms
- Photoshop

Mark-up languages / stylesheets
- HTML
- CSS

Scripting languages
- Hypertalk
- Javascript
- Flash

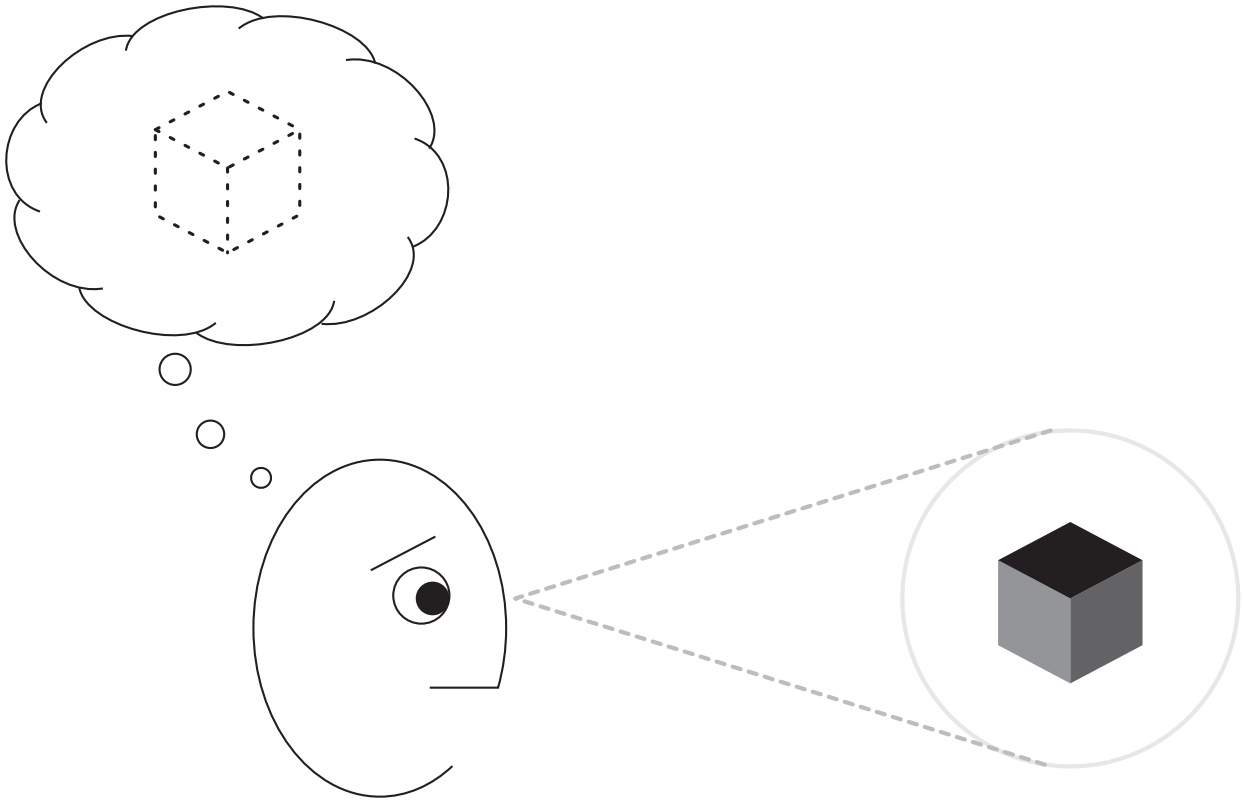
What skills do designers need to deal with change?

When designing platforms
or designing for evolution
or creating opportunities for participation
designers need to think
in terms of systems.

That means thinking conceptually.

That requires models.

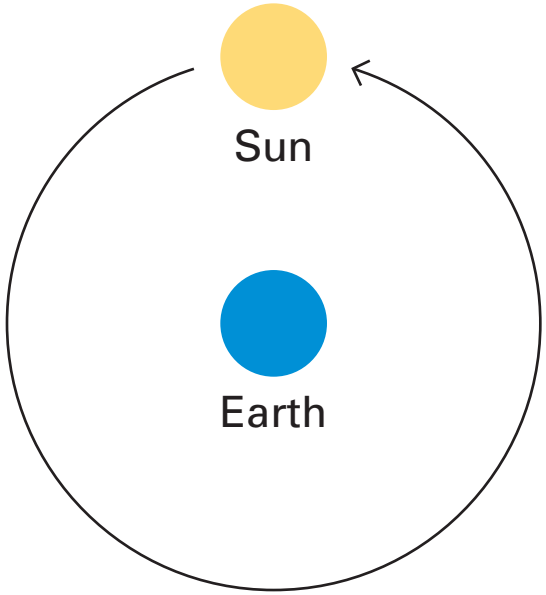
A model is an idea about how part of the world works



We do most of our thinking with models…
And these models are our voodoo dolls.” –Alan Kay

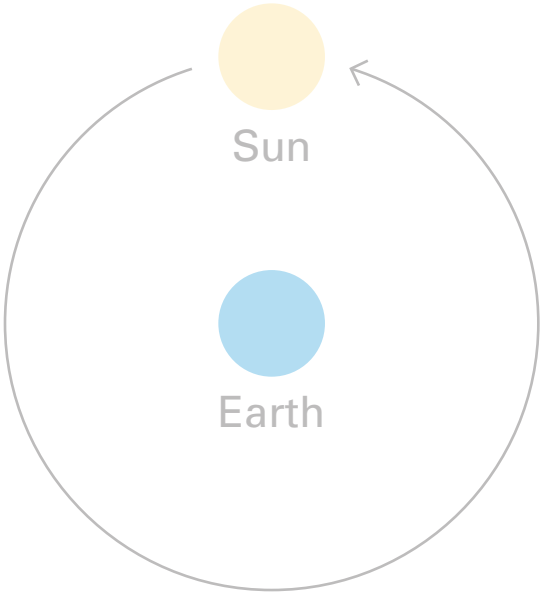
For example, we see the sun rise in the east and set in the west…

The apparent motion of the sun suggests this model

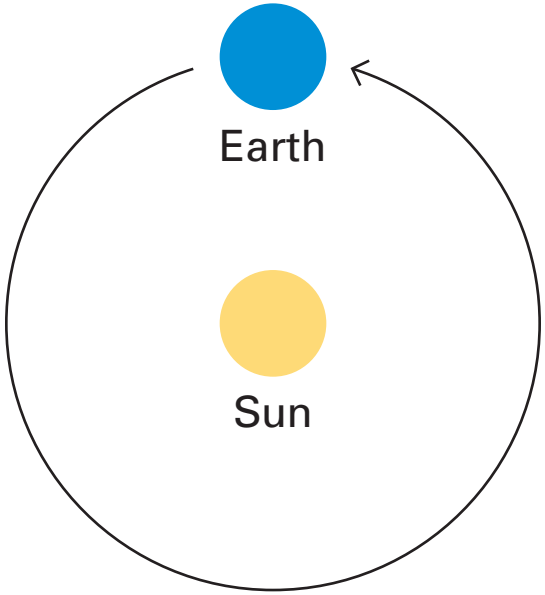


—Ptolemy

**Despite what we see everyday,
we think of the earth as revolving around the sun.
Why? What observations support this model?**



—Ptolemy



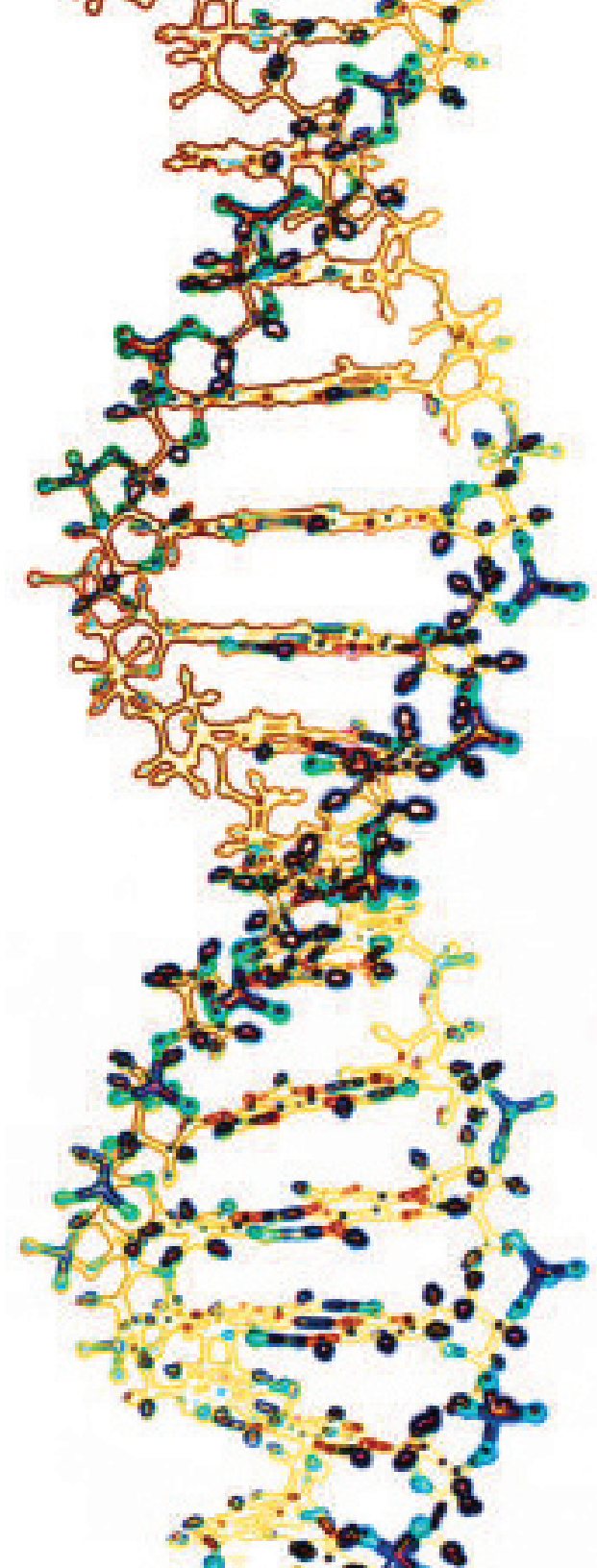
—Copernicus

**Mars sometimes appears to travel backwards;
both Ptolemy and Copernicus explain Mars' retrograde motion,
but the Copernican model is much simpler**

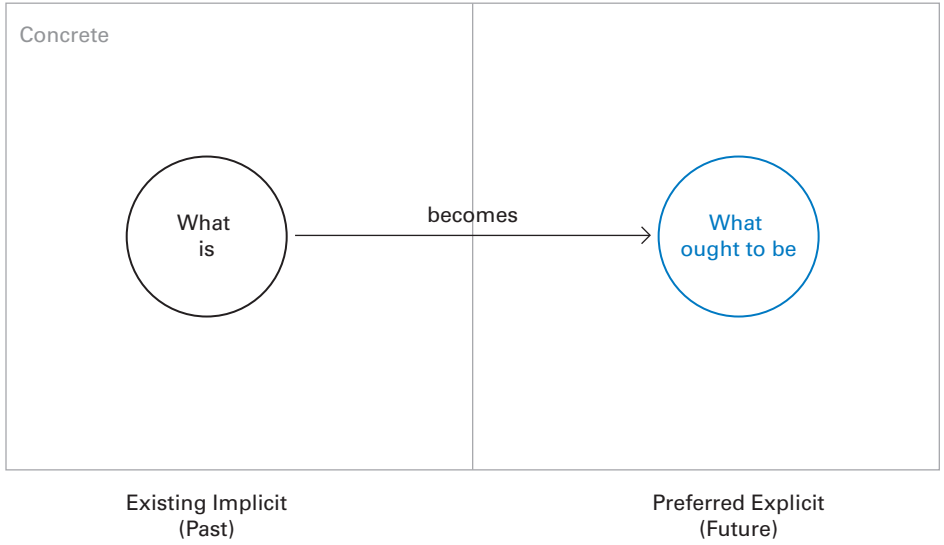
Another example, this x-ray photo taken in 1952 by Rosalind Franklin…

Another example, this x-ray photo taken in 1952 by Rosalind Franklin…

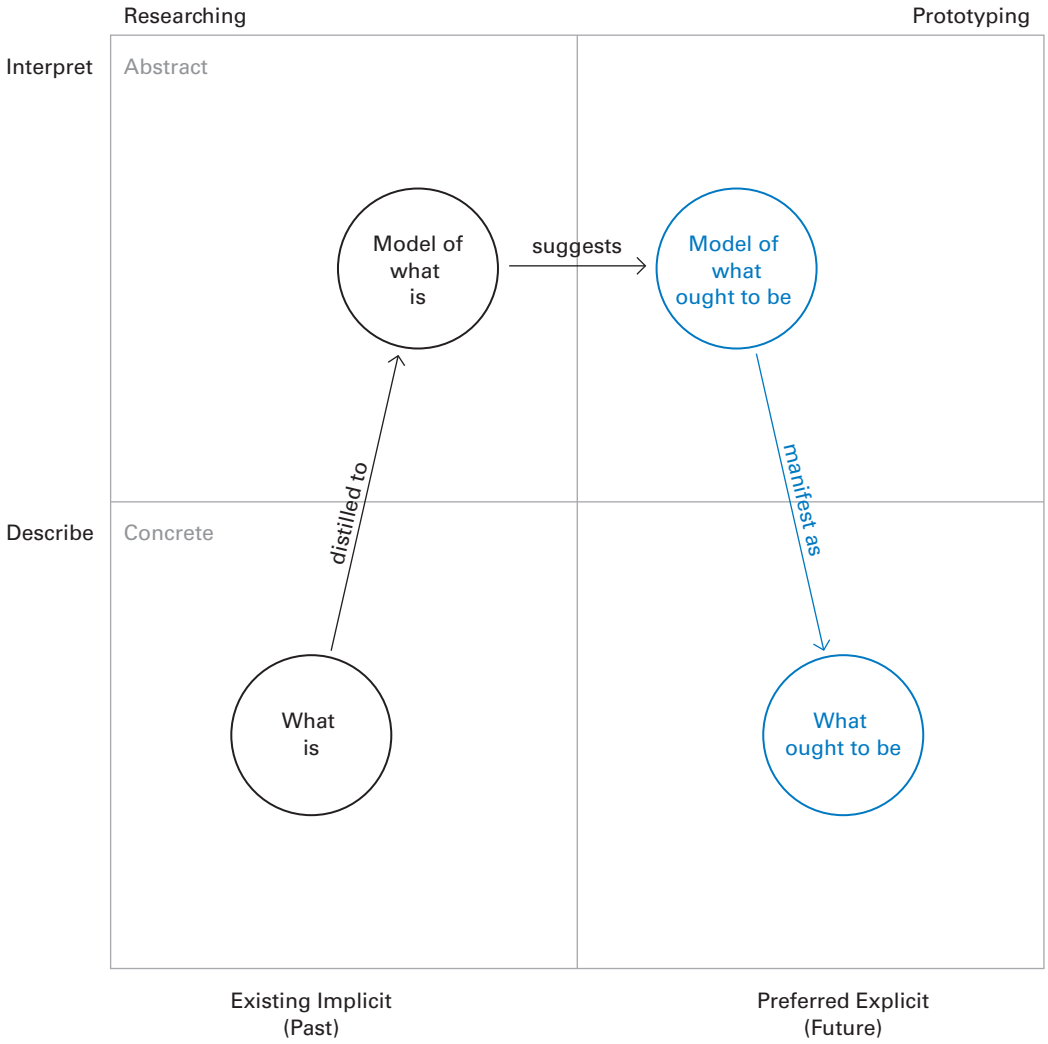
aided the development of our model of DNA



Design is rarely direct making



Models are a bridge between research and form-giving



new opportunities
new practices

thus a need for

new tools
new methods
new language

and more conversation

Thank you.