

The Emerging Science of Service Systems

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IBM Canada Ltd. and the Helsinki University of Technology

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This document was created in Lotus Symphony Presentations,
and is clearer when viewed as a Screen Show

Agenda

→ A. Introduction

B. The “new service economy”, and SSMED

C. The *systems* in service systems -- seriously

D. Artifacts / feeds to follow

Coevolving Innovations

... in Business Organizations and Information Technologies

Russell Ackoff, abridged

Posted on January 04, 2010 by [daviding \[e\]](#)



In Toronto — partially in response to members of the [International Society for the Systems Sciences](#) looking for sustainable alternatives to the [pattern of annual meetings](#) outside of North America every other year — we've started a [Systems Sciences Meetup](#) group. There's a rich history of people and [events in the systems sciences in Toronto](#), and we've been remiss in keeping the momentum going.

The purpose of these meetups is to enable conversations amongst like-minded people interested in (continuing to) climb the learning curve on (the) [systems science\(s\)](#). Having a keynote speaker provides a centre around which the conversations can coalesce. In November 2009, [Allenna Leonard](#) led the first meetup with a talk on "What are the Systems Sciences". Given the holiday season, we deferred the next meeting to January.

With the announcement of a [Memorial Celebration for Russell Ackoff in Philadelphia in February](#), it seemed natural to prepare a session for those unfamiliar with his life and work. Thus, for the [January 6 Systems Sciences Meetup](#), I'll be leading a talk on "Russell Ackoff, abridged". Having satisfied a personal goal to create a single double-sided page of highlights, I'll be relying on two maps as visual aids.

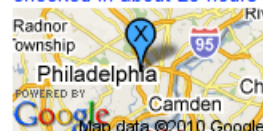
Following a style prescribed by the master himself — not just examining the system, but also its environment — the [professional timeline of Russell Ackoff](#) includes his relationships with the [Tavistock Institute for Human Relations](#) (that included [Fred Emery](#) and [Eric Trist](#)), as well as [C. West Churchman](#) and [Peter Drucker](#). Ackoff became a professor emeritus in 1986, continuing his involvement with the systems community through research institutions honouring him, and conferences featuring him for keynotes. Ackoff's legacy in the systems sciences lives on through former students in the [Social Systems Science \(S3\) program at the University of Pennsylvania \(1975-1988\)](#). A full-size view of [this professional timeline](#) is available as an interactive page with links.

Russell Ackoff Abridged: Professional Timeline

1943: Bachelor of Architecture, U. Penn.

Where is David?

checked in about 23 hours ago



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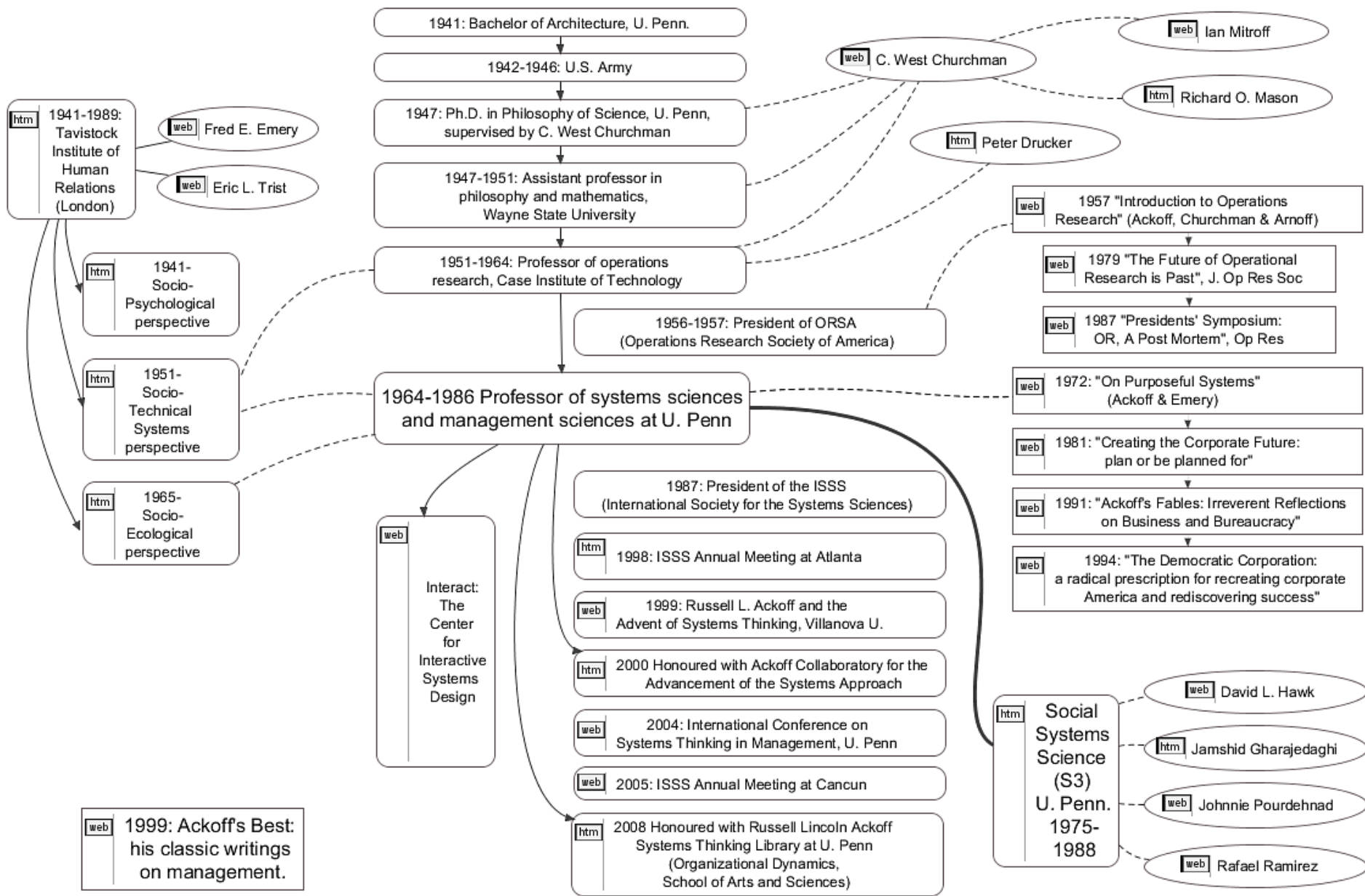


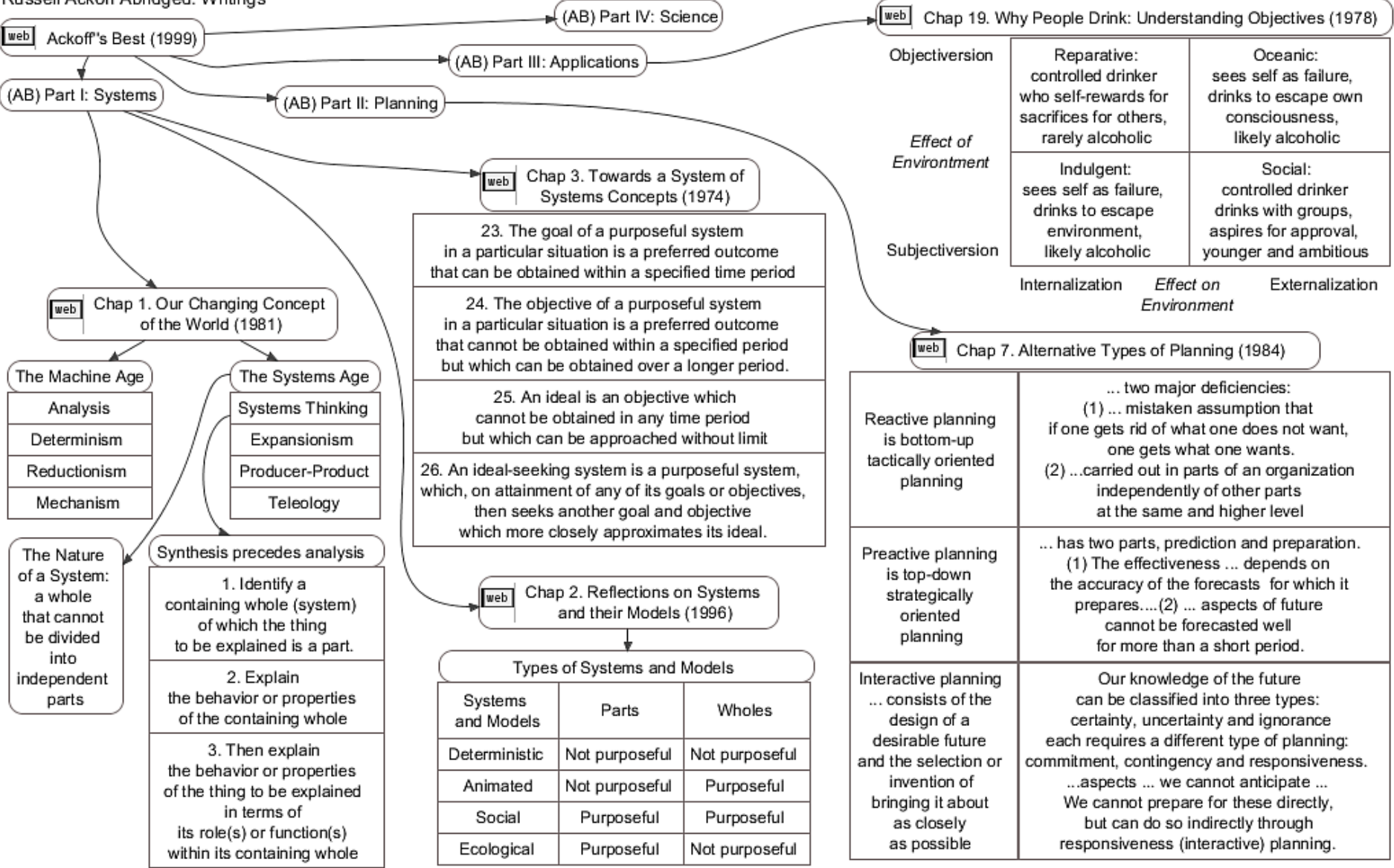
[cocomment/daviding] As a first-time rider in Philadelphia, I was confused to paying a fare at 10 p.m. at night. I... <http://bit.ly/bttvg> about 11 hours ago from [twitterfeed](#)

[daviding.com] 2009/02/24 Vegetarian cuisine at Jiyugaoka: Since I have strong preferences in food — some choices ... <http://bit.ly/d39yev> about 13 hours ago from [twitterfeed](#)

Giwa serves good quality Korean food in Philadelphia's city centre. Just a few blocks west of Broad... <http://www.urbanspoon.com/x/alg> about 13 hours ago from [Urbanspoon](#)

[brightkite.ing] daviding checked in @ University of Pennsylvania <http://bit.ly/aPf6Vd> about 22 hours ago from [twitterfeed](#)





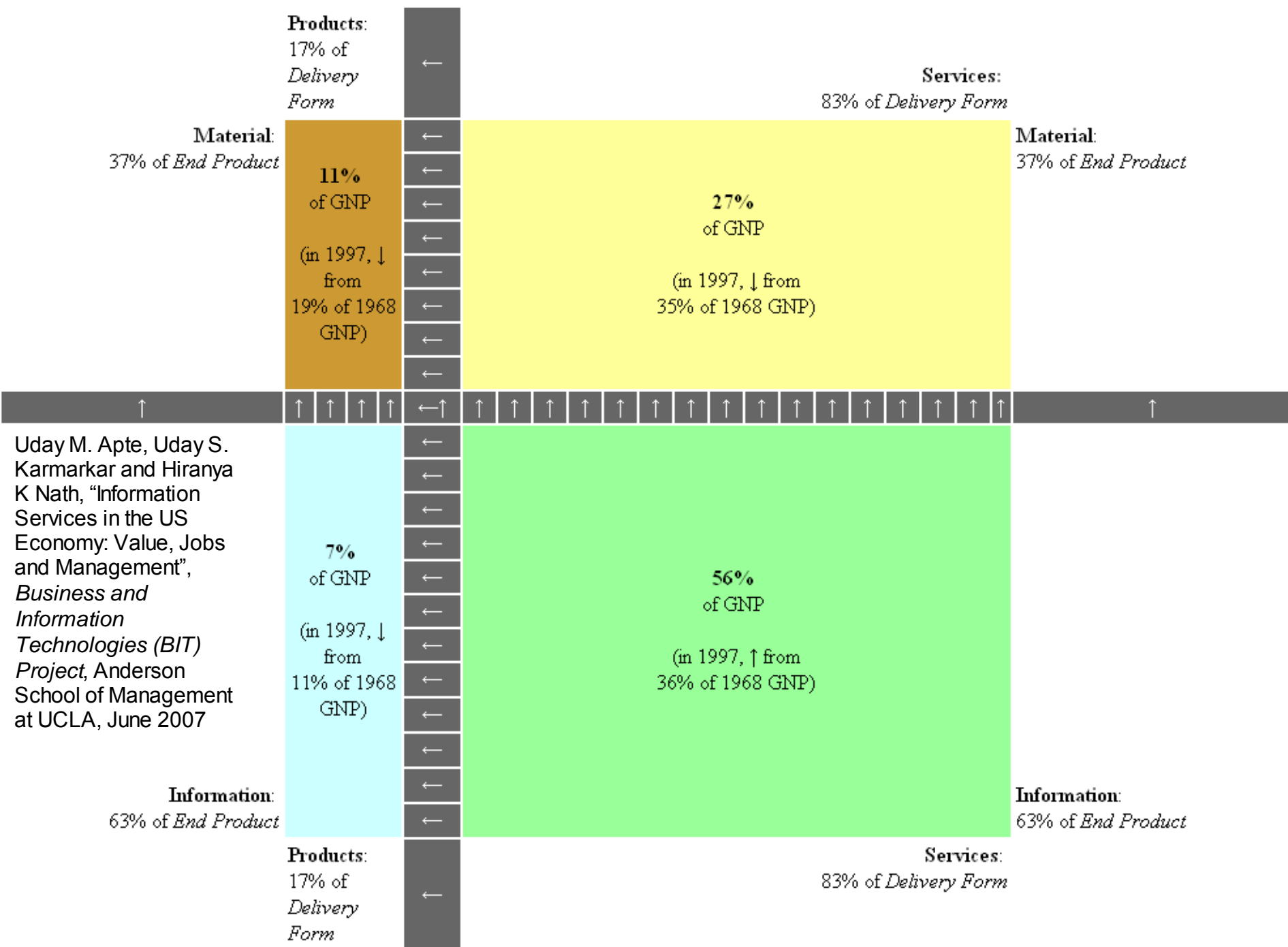
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Contributions to GDP growth, G7 countries, 1995-2000 and 2000-05¹

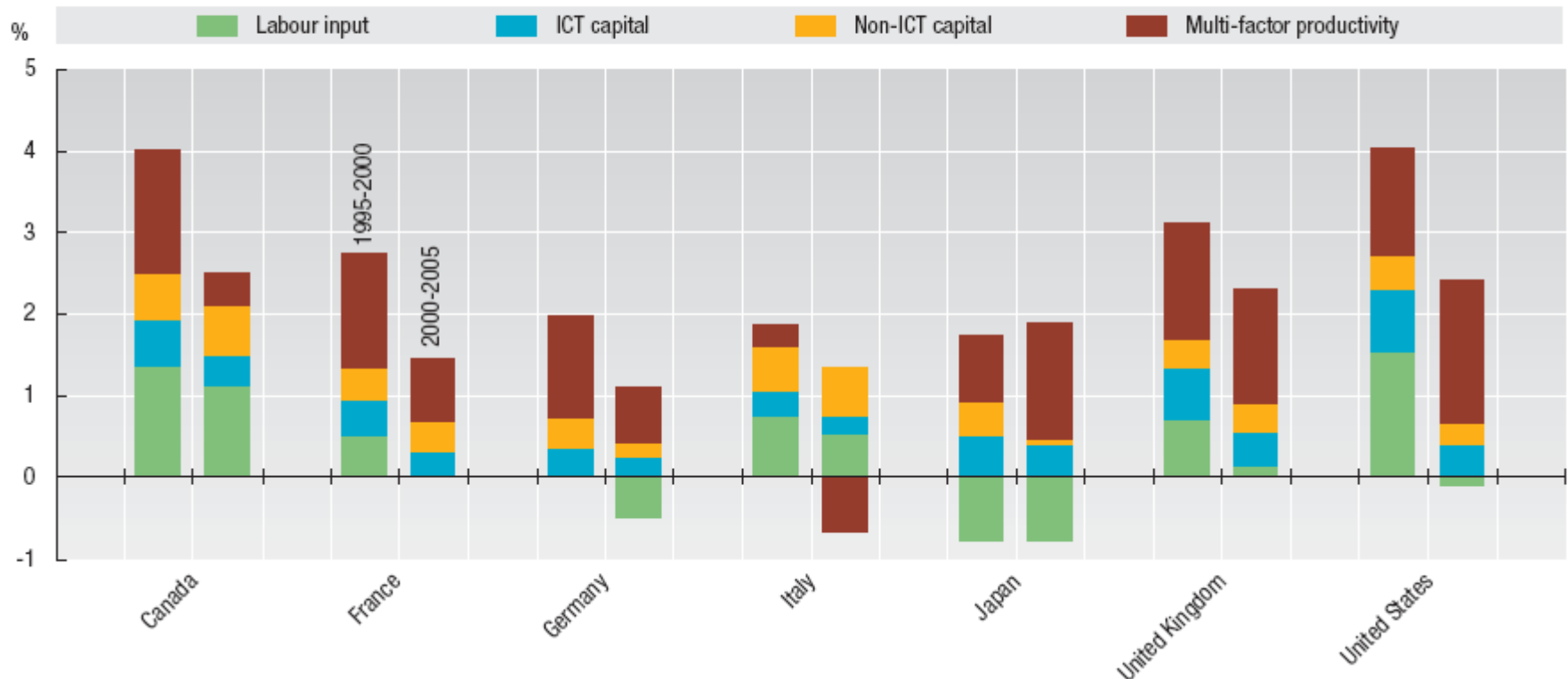
Percentage points



OECD Science, Technology and Industry Scoreboard 2007: Innovation and Performance in the Global Economy, p. 206, available from oecd.org.

Contributions to GDP growth, G7 countries, 1995-2000 and 2000-05¹

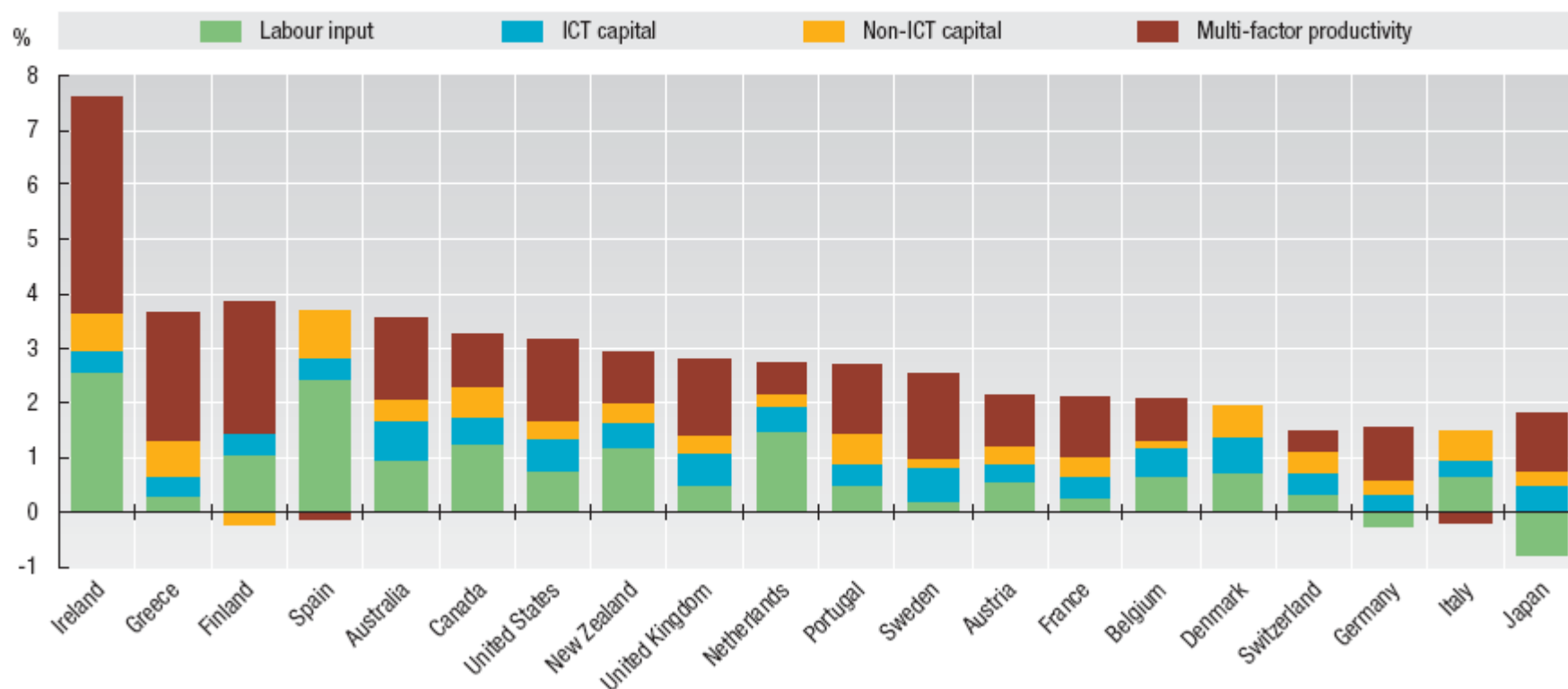
Percentage points



OECD Science, Technology and Industry Scoreboard 2007: Innovation and Performance in the Global Economy, p. 206, available from oecd.org.

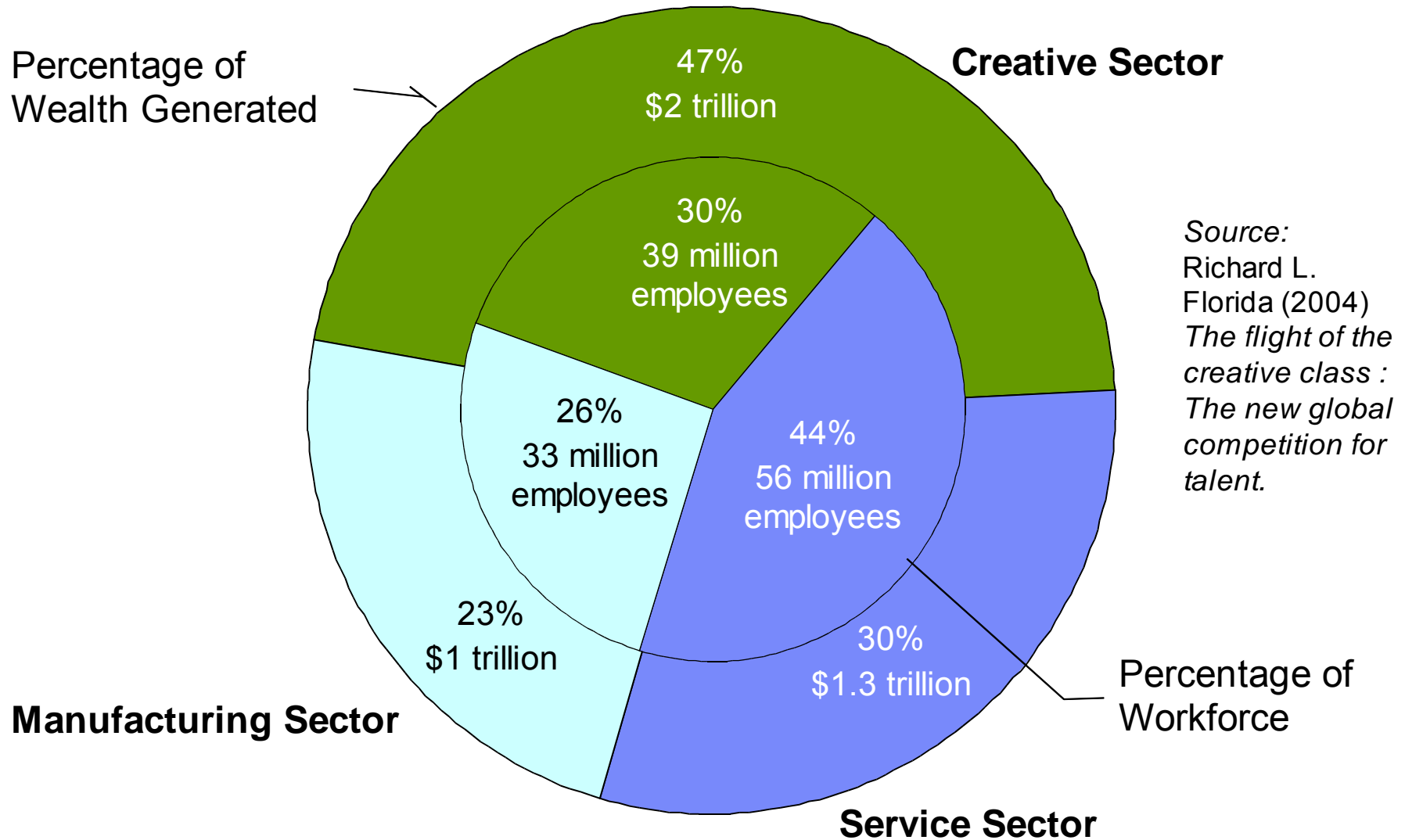
Contributions to GDP growth, OECD countries, 1995-2005²

Percentage points



OECD Science, Technology and Industry Scoreboard 2007: Innovation and Performance in the Global Economy, p. 206, available from oecd.org.

Creative class generates greater wealth per employee



Classification by occupation, not education or output

The most current system of occupational classifications was introduced by the U.S. government in 1998. This, the 1998 Standard Occupational Classification (SOC) System, is the most up-to-date system available [p. 328]

Creative Class: The Creative Class has two major sub-components: a SuperCreative Core and Creative Professionals

Super-Creative Core

- Computer and mathematical occupations
- Architecture and engineering occupations
- Life, physical, and social science occupations
- Education, training, and library occupations
- Arts, design, entertainment, sports, and media occupations

Creative Professionals

- Management occupations
- Business and financial operations occupations
- Legal occupations
- Healthcare practitioners and technical occupations
- High-end sales and sales management

Working Class:

- Construction and extraction occupations
- Installation, maintenance, and repair occupations
- Production occupations
- Transportation and material moving occupations

Service Class: The Service Class is composed of the following major occupational categories:

- Health care support occupations
- Food preparation and food-service-related occupations
- Building and grounds cleaning and maintenance occupations
- Personal care and service occupations
- Low-end sales and related occupations
- Office and administrative support occupations
- Community and social services occupations
- Protective service occupations

Agriculture:

- Farming, fishing, and forestry occupations [pp. 328-329]

Source:
Richard L.
Florida (2002).
*The rise of the
creative
class : And
how it's
transforming
work, leisure,
community
and everyday
life.*

Economic development: Technology, Talent, Tolerance

... 3Ts of economic development: Technology, Talent and Tolerance. Economists have typically emphasized the first two Ts, but **to truly prosper in the creative age**, all 3 Ts, and especially the third one, tolerance, are essential

The **first of the three** is also the **least controversial**; economists have long argued that **technology is the key to growth**. [...] [p. 37]

Talent is the second variable in my model. Leading economists, including Nobel Prize winner Robert Lucas, have argued that growth is a consequence of **human capital**, a view shared by Harvard's Edward Glaeser. [...] I capture the role of talent by substituting a measure of creative occupations for the typical education-based measure of human capital, thus emphasizing **what people actually do over past educational achievements**. [pp. 37-38]

This brings me to the third T, **tolerance**. [...] **Resources** like **technology, knowledge and human capital** differ in a fundamental way from more traditional factors of production like land or raw materials; they **are not stocks, but flows**. People are not forever wedded to one place; they can and do move around. The technology and talent that people therefore equally bring with them are **mobile factors**, and accordingly flow into and out of places. [p. 38]

Source: Richard L. Florida (2004) The flight of the creative class : The new global competition for talent.

Arming American Scientists: NSF and the Provision of Scientific Computing Facilities for Universities, 1950-1973

WILLIAM ASPRAY
BERNARD O. WILLIAMS

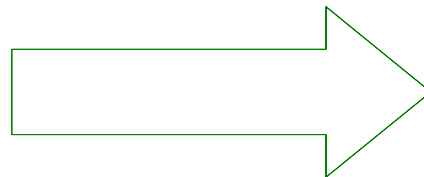
This article discusses the role of the US National Science Foundation in the provision of scientific computing facilities for colleges and universities in the period 1950 to 1973. In this period, the NSF played a major role in establishing computing facilities on American campuses for the purposes of scientific research and science education. By the end of this period, most of these programs at NSF had been disbanded, and the foundation was concentrating its support for computing not on the service of other scientific disciplines, but instead on the establishment of a theoretically oriented discipline of computer science. The primary focus here is on NSF institutional history, with only a few examples of the impact of NSF programs. But it is an important part of a larger story of the role of the federal government in establishing American hegemony in computing in this era.

Physicists

Electrical Engineers

Mathematicians

Philosophers (Boolean Logic)



Computer Science

Academic interest in computing grew to the point that, by 1959, 150 colleges and universities had introduced on campus some research or instructional use of computers. A survey of university computing conducted by Louis Fein for Stanford Uni-

The single strongest impulse for introducing computers on campuses in the mid-1950s did not come from the schools themselves or from any federal agency, but instead from IBM.

versity reported — perhaps with some overstatement — that universities, government, and industry were reorganizing to invent and apply new techniques of linear programming, game theory, automata theory, artificial intelligence, adaptive mechanisms, psychometrics, neural psychology, learning machines, information theory, coding theory, statistics, cybernetics, and a wide range of modeling techniques. Fein soberly reported that the universities were “having a hard time learning to cope with their new role in society in general and, in particular, learning how to effectively incorporate these new fields into the academic structure.”¹⁰

W.B. Aspray and B. O. Williams 1994. Arming American scientists: NSF and the provision of scientific computing facilities for universities, 1950-1973. *IEEE Annals of the History of Computing*, 16 (4), 60-74.

SSMED (Service Science, Management, Engineering and Design) ↔ Science of Service Systems

A **service system** can be defined as
a dynamic configuration of **resources**
(**people, technology, organisations and shared information**) that
creates and delivers **value**
between the provider and the customer through service.

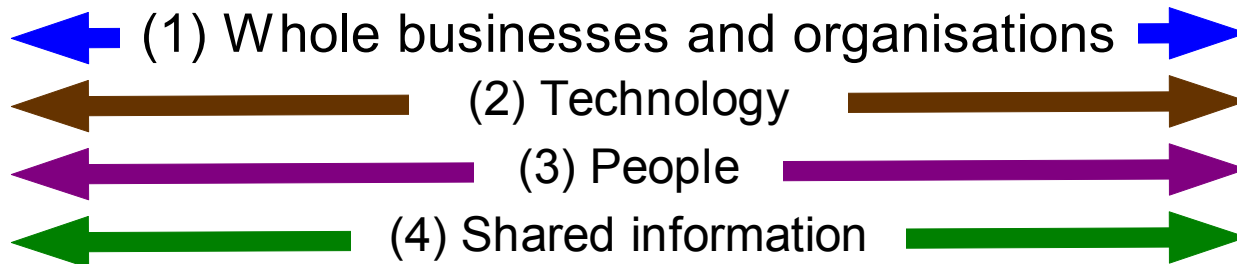
In many cases, a service system is a **complex system** in that
configurations of resources interact in a non-linear way.

Primary **interactions** take place at the interface
between the provider and the customer.

However, with the advent of ICT,
customer-to-customer and supplier-to-supplier interactions
have also become prevalent.

These complex interactions create a system whose behaviour is
difficult to explain and predict. (IfM and IBM, 2008, p. 6)

Develop T-shaped professionals along 4 resource types



Studied primarily by schools of management (marketing, operations management, operations research and management sciences, supply chain management, innovation management)

Studied primarily by schools of science and engineering (industrial engineering, computer science, statistical control theory)

Studied primarily by schools of information (communications, management information systems, document engineering, process modelling, simulation)

Studied primarily by schools of social sciences and humanities (economics, cognitive science, political science, design, humanities and arts)

Source: IfM and IBM 2008.

Recommendations ...

... for education ...

- 1 Enable graduates from various disciplines to become **T-shaped professionals**, who are adaptive innovators with a service mindset and can make early contributions to the service-driven economy.
- 2 Promote **SSME education programmes and qualifications** as a way of developing a **service mindset**, in conjunction with industry recognition and recruitment of SSME qualified graduates.
- 3 Develop a **modular template-based SSME curriculum** in higher education, add new materials and refinements as research develops over time, and then extend to all levels of education.
- 4 Explore **new teaching methods** for SSME related education.

... for business ...

- 1 Establish **employment policies and career paths** for T-shaped professionals.
- 2 Review existing approaches to service innovation and provide **grand challenges** for **service systems research**.
- 3 Provide **funding** for **service systems research**.
- 4 Develop appropriate organisational arrangements to enhance **industry-academic collaboration**.
- 5 Work with stakeholders to include **sustainability measures** and create **actionable service innovation roadmaps**.

... for research ...

- 1 Develop an **inclusive interdisciplinary and intercultural approach** to service research.
- 2 **Build bridges** between disciplines through **grand research challenges**.
- 3 Establish **service system** and **value proposition** as **foundational** concepts.
- 4 Work with practitioners to **create data sets** to better understand the nature and behaviour of service systems.
- 5 Create **modelling and simulations tools** for service systems.

... for government ...

- 1 **Promote service innovation** for all parts of the economy and **provide funding** for SSME education and research.
- 2 **Demonstrate the value** of Service Science to **government agencies**, and thereby **create methods, data sets, and tools** to inform and challenge current education and research support.
- 3 Develop **relevant measurements** and **reliable data** on knowledge-intensive service activities across sectors to underpin leading practice for service innovation.
- 4 Make **government service systems** more comprehensive and citizen-responsive.
- 5 Encourage **public hearings, workshops, briefings** with other stakeholders to develop service innovation roadmaps.

Source: IfM and IBM. (2008). *Succeeding through Service Innovation: A Service Perspective for Education, Research, Business and Government*. University of Cambridge Institute for Manufacturing, available at <http://www.ifm.eng.cam.ac.uk/ssme/>

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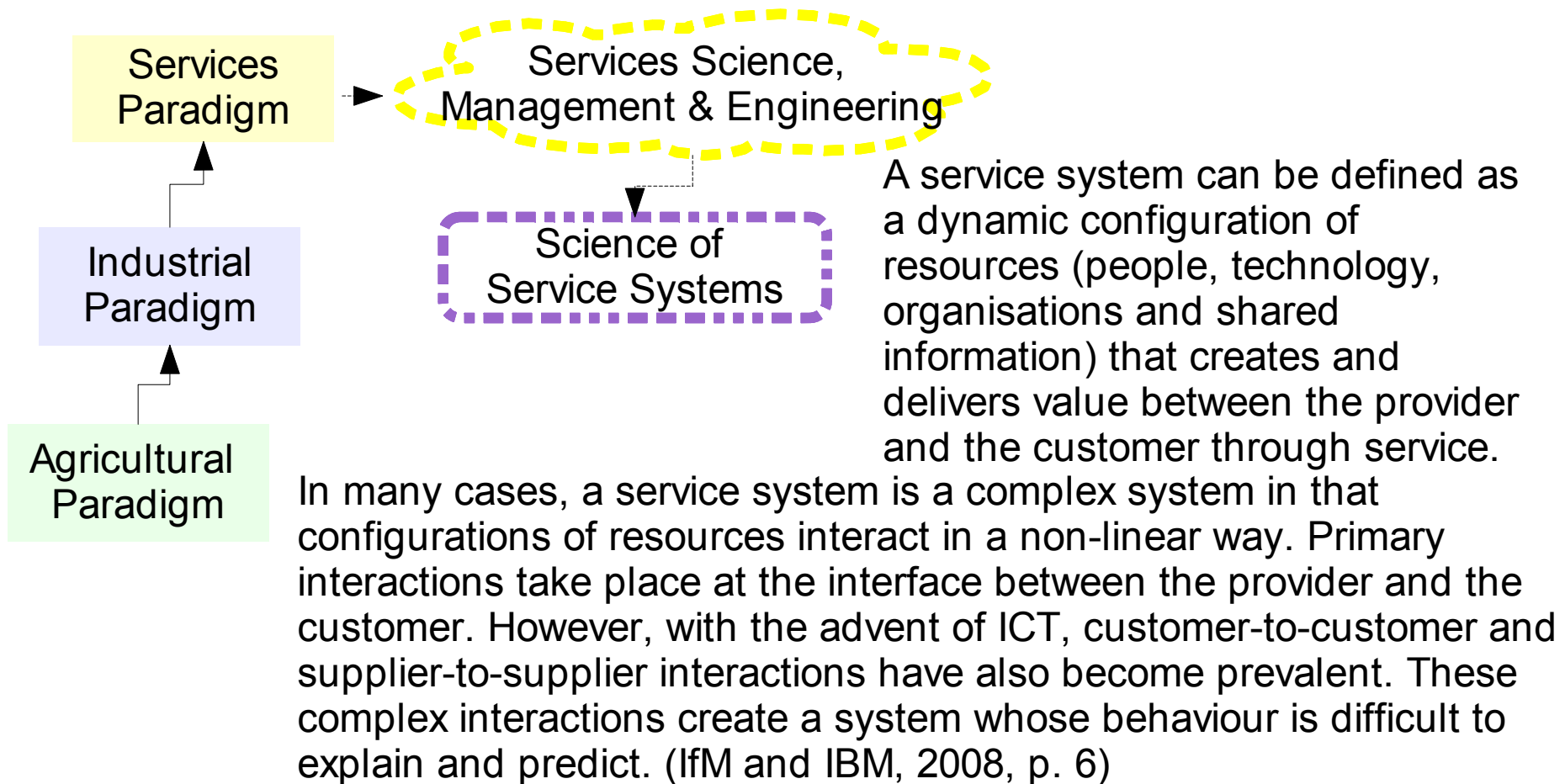
Vargo & Lusch (2004), "New Dominant Logic for Marketing"

Dominant Logic	<i>Traditional Goods-Centered</i>	<i>Emerging Service-Centered</i>
Primary unit of exchange	People exchange for goods .	People exchange to acquire the benefits of specialized competences (knowledge and skills), or services .
Role of goods	Marketers take matter and change [goods] form, place, time, and possession .	[Goods] are intermediate "products, that are used by other operant resources (customers) as appliances in value-creation processes.
Role of customer	The customer is the recipient of goods.	The customer is a coproducer of service.
Determination of value	Value is determined by the producer .	Value is perceived and determined by the consumer on the basis of " value in use ."
Firm-customer interaction	Customers are acted on to create transactions with resources.	Customers are active participants in relational exchanges and coproduction.
Source of economic growth	Wealth is obtained from surplus tangible resources and goods . Wealth consists of owning , controlling, and producing operand resources.	Wealth is obtained through the application and exchange of specialized knowledge and skills , it represents the right to the future use of operant resources.

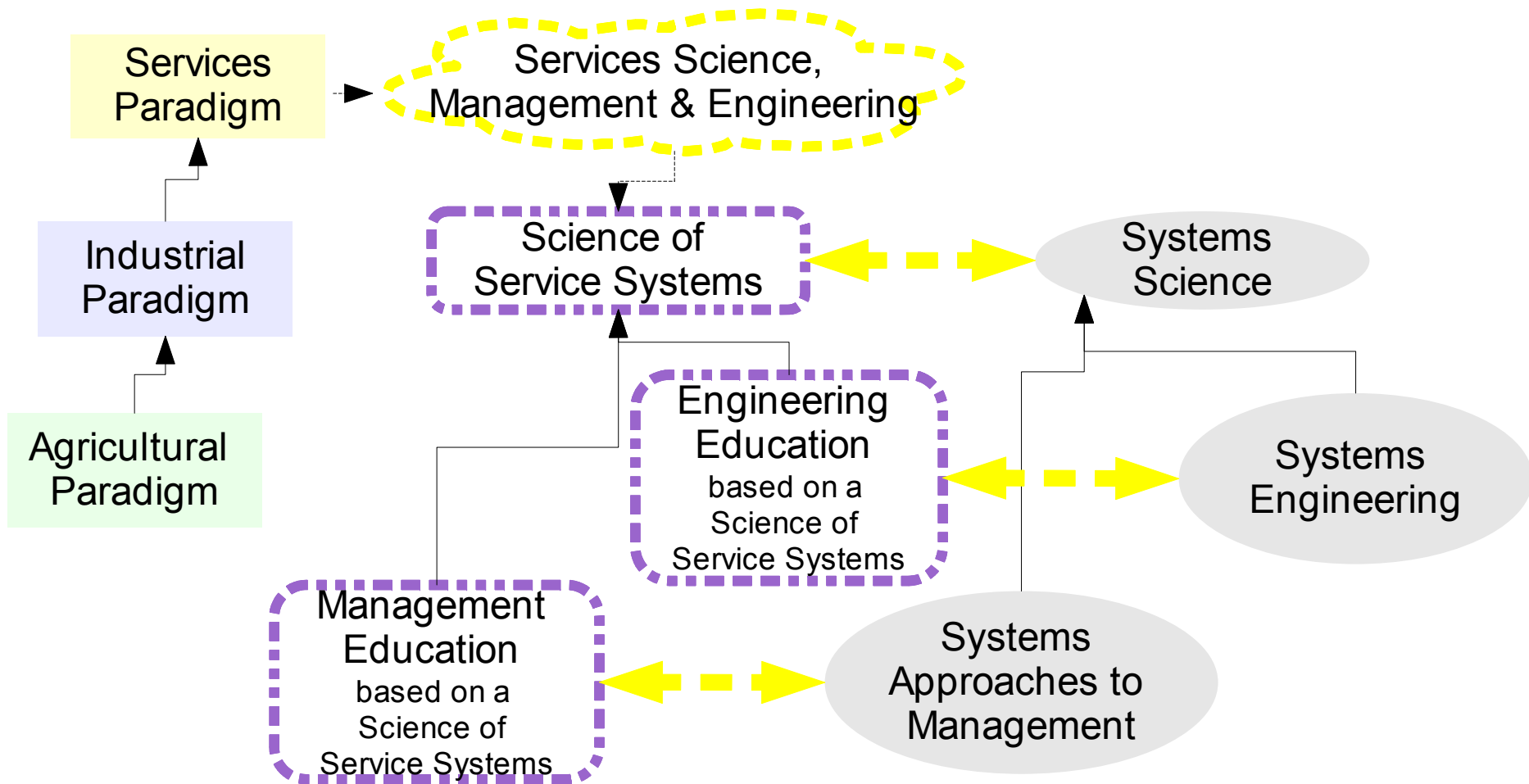
Bolton (2004), "Commentaries"

Day	<ul style="list-style-type: none">• "information technology advances that enable universal access to knowledge"• "firms need to select whether to make superior relational value a central or a supportive element of their strategy"
Gummesson	<ul style="list-style-type: none">• "Providers stand between consumers and need-satisfaction."• "... joint contributions through interaction."• The parties become partners.
Hunt	<ul style="list-style-type: none">• For resource-advantage theory, resources are the "tangible and intangible entities available to the firm that enable it to produce efficiently and/or effectively a market offering that has value for some market segment(s)," and resources are categorized as financial, physical, legal, human, organizational, informational, and relational.
Prahalad	<ul style="list-style-type: none">• (1) ubiquitous connectivity ..., (2) convergence of technologies, and (3) globalization of information• 1. Customers, customer communities, and firms interact.• 2. ... what is cocreated is the experience.• 3. New building blocks are ... dialogue ..., access and transparency to information ... and risk assessment• 4. ...Often, a network of firms must work together ...

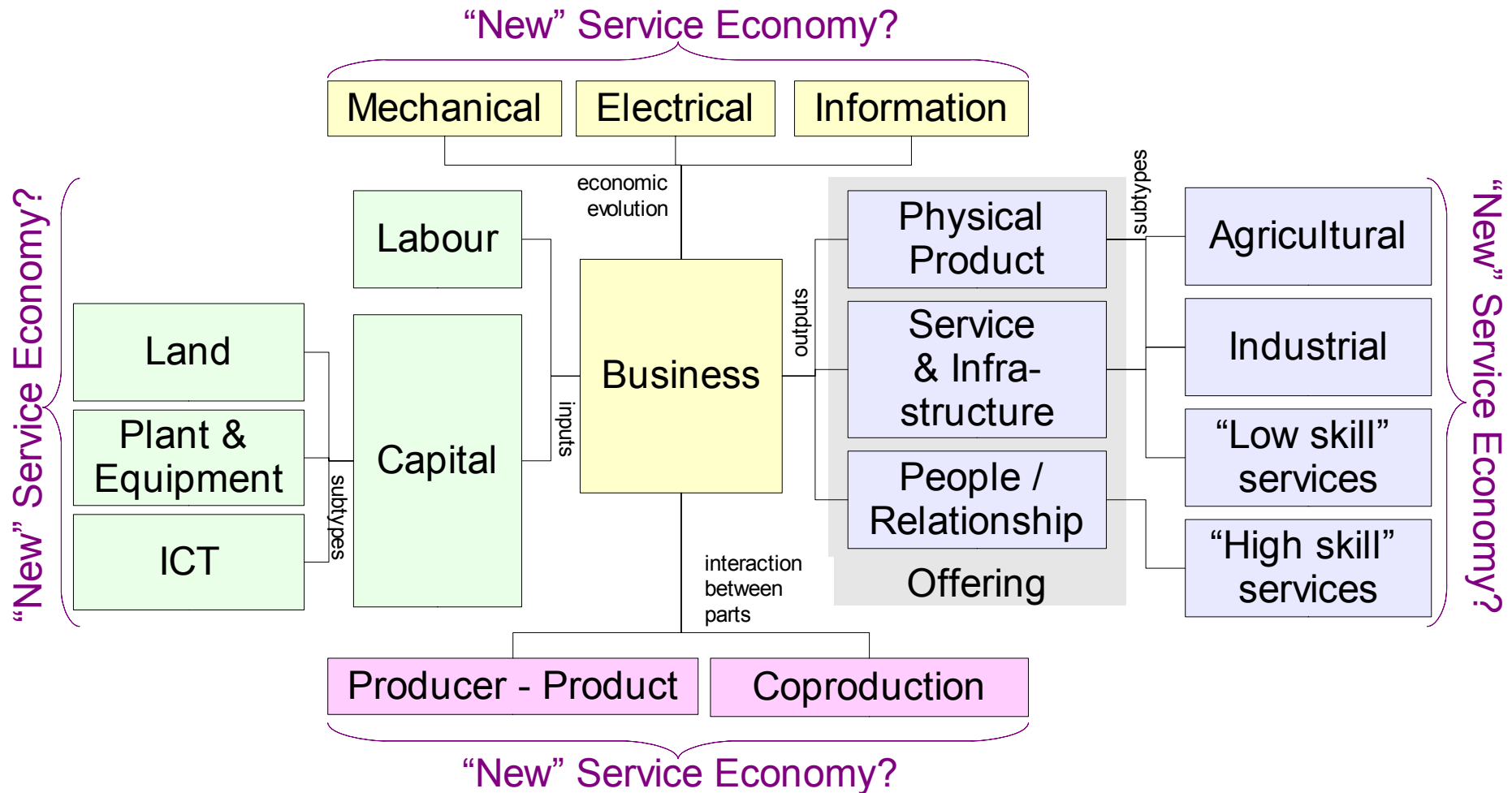
The challenge of evolving economic paradigms ...



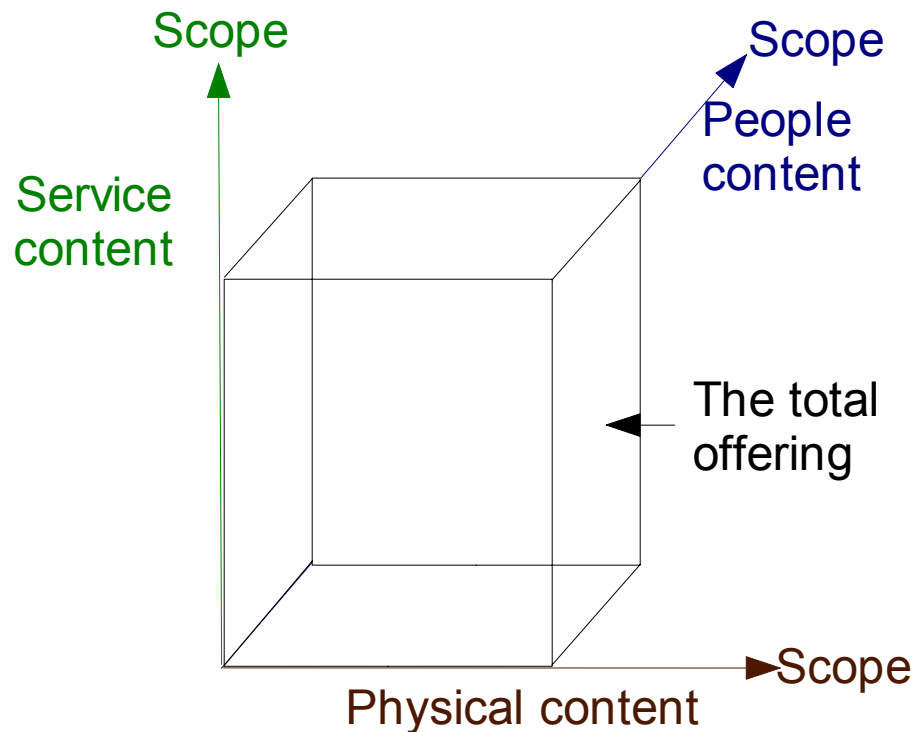
... with engineering, management, and systems



... from multiple perspectives ...



... and an understanding of offerings



... it is useful to examine the **offering** in terms of a **three-dimensional activity package**

- The **physical content** of the offering consists of elements such as the core product, the packaging, the quality and dependability of the good and its material components, the product range, etc.
- The **service content** includes distribution, technical support, product modifications, customer training, on-line advice, troubleshooting, warranties and other trust-supporting insurance aspects, information brochures, brand reputation, complaint handling, invoicing, integrated information systems, etc.
- The **people content** covers issues like long-term partnerships, interpersonal trust, reputation, human resource co-development, etc.

... **different customers** will **emphasize different axes** of the offering.

Rafael Ramirez and Johan Wallin. *Prime Movers: Define Your Business or Have Someone Define It Against You*, 2000, pp. 58-59.

Coevolving Innovations

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2010/01 Service Systems in Changing Paradigms: An Inquiry through the Systems Sciences

Submitted by daviding on Mon, 02/15/2010 - 12:18.

Author

David Ing

Abstract

For professionals at the beginning of the 21st century, much of the conventional wisdom on business management and engineering is founded in the 20th century industrial / manufacturing paradigm. In developed economies, however, the service sector now dominates the manufacturing sector, just as manufacturing prevailed over the agricultural sector after the industrial revolution.

This chapter proposes the development of a body of knowledge on services systems, based on foundations in the systems sciences. The approach includes the design of the systems of inquiry, acknowledging that body of knowledge on 21st century service systems is relatively nascent. A program of action science is proposed, with an emphasis on multiple realities and knowledge development through dialectic. The outcome pursued is an increased number of T-shaped people with depth and breadth in service systems, in communities of inquiry of researchers and practitioners.

Keywords: service systems, service science, inquiring system, action science, paradigms

Content

- [\[view/download this article as PDF\]](#) (206 Kb)
 - The chapter was accepted by the book editors in January 2010, in response to the call at http://www.public.asu.edu/~hdemirka/index_files

Publications

- 2005/10 Negotiated Order and Network Form Organizations
- 2007/11 Services Engineering and Management, Value Coproduction, and Situated Practices
- 2008/07 Business Models and Evolving Economic Paradigms: A Systems Science Approach
- 2008/09 Offerings as Commitments and Context: Service Systems from a Language Action Perspective
- 2008/10 SSMED and SOA: Service Science, Management, Engineering and Design and Service Oriented Architecture
- 2009/07 Envisioning Innovation in Service Systems: Induction, Abduction and Deduction
- 2009/09/02 Conversations on an Emerging Science of Service Systems
- 2009/09/10 Dynamics of Service Businesses
- 2010/01 Service Systems in Changing Paradigms: An Inquiry through the Systems Sciences

Search

Coproducing education: What do you know about what you don't know?

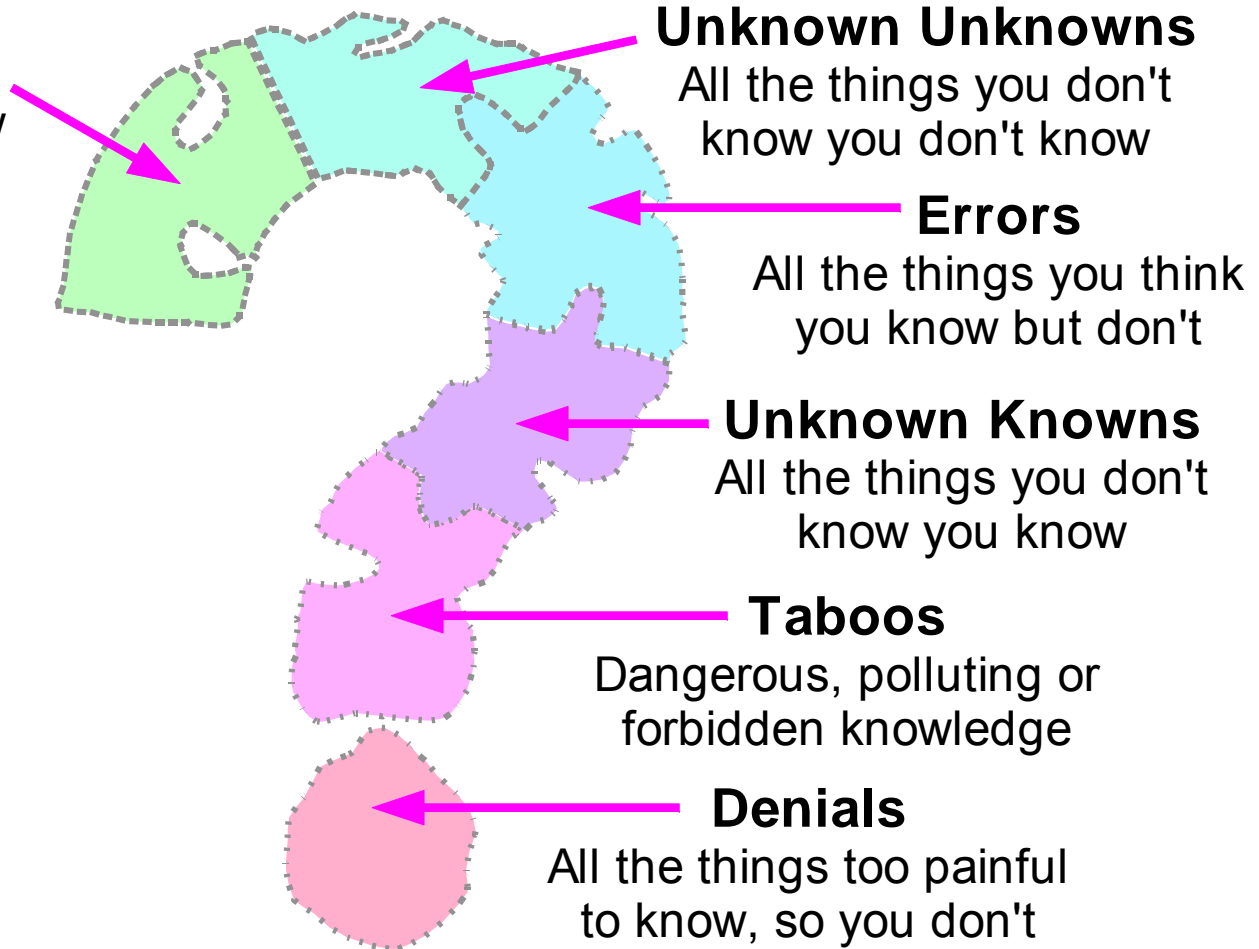
Known Unknowns

All the things you know
you don't know

Ignorance Maps

Marlys H. Witte,
Ann Kerwin, and
Charles L. Witte,
The University of Arizona
College of Medicine

"Curriculum on Medical and Other
Ignorance: Shifting Paradigms on
Learning and Discovery", *Memory
Distortions and their Prevention*,
Margaret-Jean Intons-Peterson and
Deborah L. Best, editors, Lawrence
Erlbaum Associates, 1998



The Design of Inquiring Systems & Action Science

Way of knowing	<i>Mitroff and Linstone 1993</i>	<i>Mitroff 1998</i>	<i>Churchman 1971</i>
First	Inductive-Consensual	Expert Consensus	Locke: consensus
Second	Analytic-Deductive	Expert Modeling	Leibniz: fact nets
Third	Multiple Realities	Multiple Models	Kant: representations
Fourth	Conflict	Conflict	Hegel: dialectic
Fifth	Unbounded Systems Thinking	Systemic Reasoning	Singer: progress

[Action science] is an inquiry into social practice, broadly defined, and is interested in producing knowledge in the service of such practice. Thus, what counts as a solution for action science both overlaps with and diverges from prevailing scientific criteria. Like the empirical-analytic tradition, action science requires that knowledge include empirically disconfirmable propositions that can be organized into generalizable theory. But at the same time, it also requires that these propositions be falsifiable in real-life contexts by the practitioners whom they are addressed.

Like applied research, action science requires knowledge to be useful. Yet in so doing it emphasizes the designing and implementation of social action, and it rejects the current dichotomy between basic research and applied research. It instead asks that its knowledge illuminate basic issues in ways that are at once generalizable and applicable in particular cases. [Argyris, Putnam and Smith 1985, p. 232]

Ten topics for inductive study ... page 1 of 10

1.	Service systems, business models, and value creation
2.	Ignorance and knowledge
3.	Boundary
4.	Order, purpose, self-organization
5.	Living, being, becoming
6.	Energy and complexity
7.	Form, networks and power laws
8.	Information, communication and meaning
9.	Coevolution, competition and variety
10.	Aesthetics, ethics and morals

Why study service systems?

- Science of service systems (IfM 2008)
- The “new” service economy: Wolfl 2005; OECD 2000; Florida 2002, 2004
- Engineering and services systems: Tien & Berg 2003
- Technology loosening constraints (Normann 2001)
- Business models: Ramirez & Wallin 2000

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Which aspects of services systems are known, knowable and unknowable?

- Competence development (Ing, Takala & Simmonds 2003)
- College on Medical Ignorance (Witte, Kerwin & Witte 1978)
- Unbounded Mind (Mitroff 1993)
- Design of Inquiring Systems (Churchman 1971)
- Ecology of mind (Bateson 1972)

Ten topics for inductive study ... page 3 of 10

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Where do we draw lines delimiting service systems from their environments?

- Social interaction through mediating spaces (Ing & Simmonds 2002)
- Business design (Ackoff 1994)
- Pattern languages (Alexander, Ishikawa et al. 1977)
- Value constellations (Normann & Ramirez 1994)
- Critical systems theory (Jackson 2000)

Ten topics for inductive study ... page 4 of 10

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Which parts of service systems should be actively designed, and which parts should emerge?

- Rule-based and negotiated order (Parhankangas, Ing et al. 2005, Strauss 1978)
- Turbulent environments (Emery & Trist 1965)
- Goal, objectives, ideals (Ackoff 1981)
- Context and coordination (Haeckel 1999)
- The cathedral and bazaar (Raymond 2000)
- Heterarchy (Hedlund 1986)
- Polycentric, geocentric organization (Perlmutter & Heenan 1979)

Ten topics for inductive study ... page 5 of 10

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Can service systems effectively evolve?

- Deterministic, animate, social and ecological purposes (Ackoff & Gharajedaghi 1996)
- Living systems theory (Miller 1978)
- Viable systems model (Beer 1972/1981, 1979)
- Anticipatory systems (Rosen 1985)

Ten topics for inductive study ... page 6 of 10

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How can service systems be sustainable?

- Complication and complexification (Allen, Tainter & Hoekstra 1999, 2003)
- Mystery of capital (de Soto 2000)
- Energy, power and society (Odum 2007)
- Entropy law and economics (Hawk 1999, Georgescu-Roegen 1971)
- Nature of economies (Jacobs 2001)

Ten topics for inductive study ... page 7 of 10

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Over which scales, scopes and speeds can service systems effectively function?

- Cellular form organization (Miles, Snow et al. 1997)
- How buildings learn (Brand 1994)
- Normal accidents (Perrow 1984)
- Social networks (Benkler 2002)
- Wealth of networks (Benkler 2006)
- Long tail (Anderson 2006)

Ten topics for inductive study ... page 8 of 10

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How can service systems be coordinated?

- Language action perspective (Ing 2008)
- Speech acts (Flores & Ludlow 1980, Winograd & Flores 1986)
- Banathy-style conversations (Rowland 2004, Walton 2004)
- What computers still can't do (Dreyfus 1992)
- Communities of practice (Wenger 1998)

Ten topics for inductive study ... page 9 of 10

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How can a service system operate in the context of others?

- Interactions between species (Odum 1983)
- Increasing returns (Arthur 1996)
- Requisite Variety (Ashby 1956)
- Diversity (Page 2007)
- Exit, voice and loyalty (Hirschman 1970)
- Upside of down (Homer-Dixon 2006)
- Post-normal science (Ravetz 2004)

Ten topics for inductive study ... page 10 of 10

- | | |
|-----|--|
| 1. | Service systems, business models, and value creation |
| 2. | Ignorance and knowledge |
| 3. | Boundary |
| 4. | Order, purpose, self-organization |
| 5. | Living, being, becoming |
| 6. | Energy and complexity |
| 7. | Form, networks and power laws |
| 8. | Information, communication and meaning |
| 9. | Coevolution, competition and variety |
| 10. | Aesthetics, ethics and morals |

What impacts can service systems have on the human condition?

- Systems approach and its enemies (Churchman 1979)
- Appreciative systems (Vickers, in Checkland 2005)
- Critical systemic praxis (McIntyre 2005)
- Commercial and moral syndromes (Jacobs 1992)

A demonstration: Business model reference points

	<i>(a) Organic ethos:</i> local bounty	<i>(b) Industrial ethos:</i> machine efficiency	<i>(c) Service ethos:</i> humility
<i>(1) Renewable resources:</i> Cultivate and harvest	(1a) Agroecological business model <ul style="list-style-type: none"> • (Amish) family farms 	(1b) Materials refining business model <ul style="list-style-type: none"> • Food processing • Pharmaceuticals 	(1c) Physical wellness business model <ul style="list-style-type: none"> • Health care
<i>(2) Appropriable resources:</i> Acquire and process	(2a) Handcrafting business model <ul style="list-style-type: none"> • Fashion apparel 	(2b) Lean production business model <ul style="list-style-type: none"> • Petrochemicals • Automobile 	(2c) Security business model <ul style="list-style-type: none"> • Insurance • Banking
<i>(3) Cultural resources:</i> Affiliate and practice	(3a) Performative experience business model <ul style="list-style-type: none"> • Concerts • Live theatre 	(3b) Media publishing business model <ul style="list-style-type: none"> • News • Television and movies 	(3c) Intellectual development business model <ul style="list-style-type: none"> • Education

Agenda

A. Introduction

B. The “new service economy”, and SSMED

C. The *systems* in service systems -- seriously

→ D. Artifacts / feeds to follow

Coevolving Innovations

... in Business Organizations and Information Technologies

Converging digital and physical infrastructures: instrumented, interconnected, intelligent

Posted on December 30, 2008 by [daviding](#) [e]



I was listening to [Sam Palmisano's](#) talk on "A Smarter Planet" as part of the [Technology and Foreign Policy](#) discussion at the [Council for Foreign Relations](#) — the [audio version](#), because I prefer to not sit at my computer to watch the [video](#). He said that as the [world gets "flatter"](#), smaller and more interconnected, the planet is becoming smarter. Smarter means that ...

... digital and physical infrastructures of the world are converging.

Three advances in technology are driving this change.

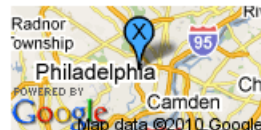
- The world is becoming *instrumented*: transistor technology is embedded in the mobile phones of 4 billion mobile subscribers today, and there will be 30 million RFID (Radio Frequency Identification) tags within 2 years.
- The world is becoming *interconnected*: the Internet not only means 2 billion people connected person-to-person, but also the ability for instruments / devices to connect machine-to-machine.
- Things are becoming more *intelligent*: since instrumented devices generate data that can be stored and analyzed, advanced analytics enables intelligence that can be translated into action — with nearly-continual real-time updates streaming from supercomputers.

The talk continued with a discussion about how much waste — in energy, gridlocked traffic, supply chain inefficiencies, unsystemic healthcare, and water usage — in the physical world might be reduced through acting smarter. In the pure information world, financial institutions were able to *spread risk*, but not *track risk*, which undermined confidence in the markets.

I follow the ideas coming from IBM more closely than most people. I've also had the benefit of

Where is David?

checked in about 23 hours ago



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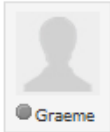
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☐ How Web-Savvy Edupunks Are Transforming American Higher Education |

"The Internet disrupts any industry whose core product can be reduced to ones and zeros," says Jose Ferreira, founder and CEO of education startup Knewton. Education, he says, "is the biggest virgin forest out there." Ferreira is among a loose-knit band of education 2.0 architects sharpening their saws for that forest. Their first foray was at MIT in 2001, when the school agreed to put coursework online for free. Today, you can find the full syllabi, lecture notes, class exercises, tests, and some video and audio for every course MIT offers, from physics to art history. This trove has been accessed by 56 million current and prospective students, alumni, professors, and armchair enthusiasts around the world. "The advent of the Web brings the ability to disseminate high-quality materials at almost no cost, leveling the playing field," says Cathy Casserly, a senior partner at the Carnegie Foundation for the Advancement of Teaching, who in her former role at the Hewlett Foundation provided seed funding for MIT's project. "We're changing the culture of how we think about knowledge and how it should be shared and who are the owners of knowledge."

But higher education remains, on the whole, a string quartet. MIT's courseware may be free, yet an MIT degree still costs upward of \$189,000. College tuition has gone up more than any other good or service since 1990, and our nation's students and graduates hold a staggering \$714 billion in outstanding student-loan debt. Once the world's most educated country, the United States today ranks 10th globally in the percentage of young people with postsecondary degrees. "Colleges have become outrageously expensive, yet there remains a general refusal to acknowledge the implications of new technologies," says Jim Groom, an "instructional technologist" at Virginia's University of Mary Washington and a prominent voice in the blogosphere for blowing up college as we know it. Groom, a chain-smoker with an ever-present five days' growth of beard, coined the term

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Distractions, reflections

David Ing, at large ... Sometimes, my mind wanders

Webstream

Most of the feeds found here are also available at <http://friendfeed.com/daviding> , with an associated [Atom feed](#).

Yesterday

Published 2009/02/24 Vegetarian cuisine at Jiyugaoka.
— 2:51am via Distractions, reflections
Satomi asked for my preferences in cuisine, and I responded that I missed vegetables when I'm visiting in Japan.

Posted daviding reviewed Giwa.
— 2:16am via Urbanspoon

Posted daviding likes Giwa.
— 2:04am via Urbanspoon

Published daviding posted a text message @ University of Pennsylvania.
— 5:10pm via Brightkite
Ackoff Memorial turns from looking backwards to looking forwards. Breakout group discussed systems in a changed world (Philly, Saturday)

Published daviding checked in @ University of Pennsylvania.
— 5:08pm via Brightkite
daviding checked in @ University of Pennsylvania

February 12th

Published septa spreading love (SEPTA fail).
— 4:14am via Cocomment
As a first-time rider in Philadelphia, I was confused to paying a fare at 10 p.m. at night. I couldn't locate a token in my pocket, and then the fare counter was closed. I now see the advertising for the \$1 fare over the next 3 days ... which is c...

Published daviding posted a text message @ The Inn at Penn. A Hilton Hotel.

Timed Out



daviding

That's you!

Lists

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