

# RIGHT NOW, WHAT IS HAPPENING IN THE WORLD OF LEARNING?

- ◉ Commercialization of Knowledge :  
Infiltration of the business ethic into the sphere of academic knowledge  
↔ A postmodern moment for knowledge
- ◉ Globalization of Knowledge : Prevalence of American systems  
↔ A post-colonial moment for knowledge
- ◉ Digitalization of Knowledge :  
Destruction of the class of readers of books about the humanities or refined books  
↔ A post-Gutenberg moment for knowledge

Dynamic shift in the production/distribution platform of knowledge :

- Digitalization of knowledge throughout the world due to Google (a mammoth electronic library)
- Development of digital archives and knowledge databases in various locations throughout the world.
- Development of search systems on the Internet such as Wikipedia

- The subdivision and closed nature of knowledge, and corresponding loss of an ability to see the whole.  
⇒ How can we revive a love of learning and active interest in society and the future?

# RIGHT NOW, WHAT IS HAPPENING IN THE UNIVERSITIES?

## ■ Structural shift at Japanese universities since the 1990s

### 1. Structural reform

- ① Deregulation of University Act = dismantling of Liberal Arts Program
- ② Greater focus on graduate schools
- ③ Change of status for national universities to university public corporations

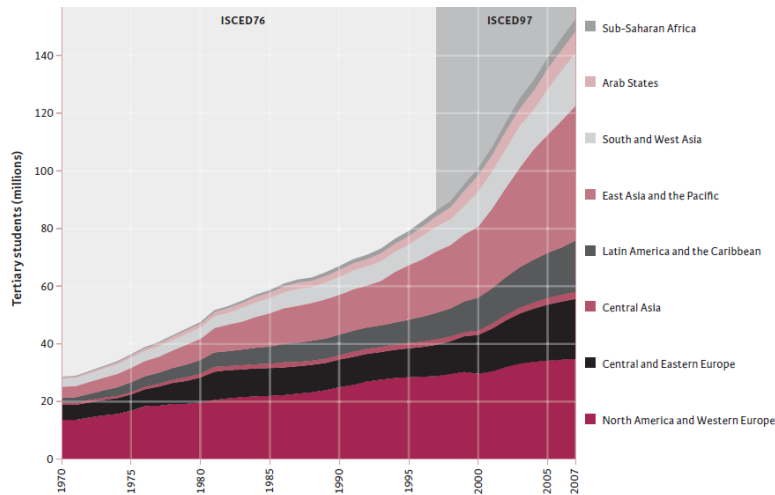
### 2. Decrease in the number of 18 year olds ↔ Increase in the number of universities

∴ Decline in quality (marketing to applicants Destruction of the “career path”)

## ■ Intensification of competition among universities around the world (explosive development of universities)

⇒ Restructuring of “learning”? Redefinition of the “university”?

Number of students entering institutions of higher learning by region (1970-2007)



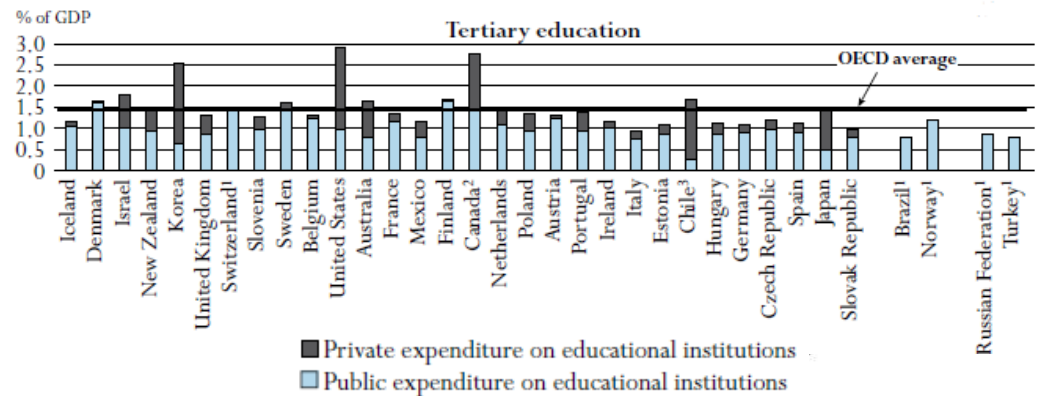
Note: Data before 1998 are classified according to ISCED76. Some programmes classified as post-secondary non-tertiary education with ISCED97 were included in tertiary education using ISCED76. To provide consistent time series, tertiary enrolment data after 1998 include post-secondary non-tertiary education. This accounts for more than 100,000 students in Australia, Canada, Kazakhstan, Morocco and the United States. Therefore, enrolment presented here exceeds regional figures based on ISCED97 by approximately 1 percentage point.

Source: UNESCO Institute for Statistics, Time Series Data, Table 1.

Source: UNESCO 「Global Education Digest 2009」 p.1, FIGURE1  
ユネスコ「Global Education Digest 2009」をもとに作成  
(used by permission of UNESCO)

## Insufficient public financing for universities

Public expenditures on educational institutions as a percentage of GDP (Higher Education) (2006)



Source: OECD 「Education at a Glance 2009」 p.211, Chart B2.2.

# TOWARDS A REDEFINITION OF THE UNIVERSITY

The university has already suffered one death.

→ Are they heading toward a second death and then to a third birth?

- Birth of the university during the Middle Ages
  - ↔ The rise of networks among cities (people as the medium)
- Death of the university in the early modern period
  - ↔ Printing technology, vocational schools, academies, the Encyclopedists
- Rebirth of the university in the 19<sup>th</sup> century
  - ↔ the State/imperialism

# WHAT IS KNOWLEDGE?

- Students are preparing reports by copying information from the Internet.
  - Using information from the Internet without sufficient background investigation/confirmation has caused journalists to make errors.
    - ⇒ Hardliners: Shouldn't we completely outlaw the use of information recovered from the Internet for academic reports and newspaper articles?
    - ⇔ Accommodators: Are there really essential differences between what is found on the Internet and extracts from books and dictionaries?
- Can information from the Internet serve as a basis for knowledge?

What is the difference between information on the Internet and knowledge found in library books?

- Who creates knowledge? : Someone's knowledge versus everyone's knowledge
- Books: Writers, who have reputations in various sectors, **take the bet of having their work published in order to win a reputation in society.** ⇒ Responsibility remains with the individual.
- Internet: The concept of something that has been written and put out before the public belonging to a certain individual is weak, and the concept that **knowledge belongs to "everyone" is strong.** ⇒ Responsibility is shared collectively.

# WHAT IS KNOWLEDGE?

- **What about its structure?** : Knowledge has a structure which connects mutually related elements.
- Knowledge: This is not the haphazard collection of information and data, but rather **the mutual tying together (synthesizing) of the contents of various concepts and expressions of phenomena**, so as to create conditions under which all has become a system. (The tree of knowledge).
- Difficulties of editing a dictionary = comparing the importance of different items, and finding relationships between items.
- Most of the books that people borrow from libraries, when studied are not used to learn the meaning of individual words, but rather to grasp the structure used to spread the various concepts included.

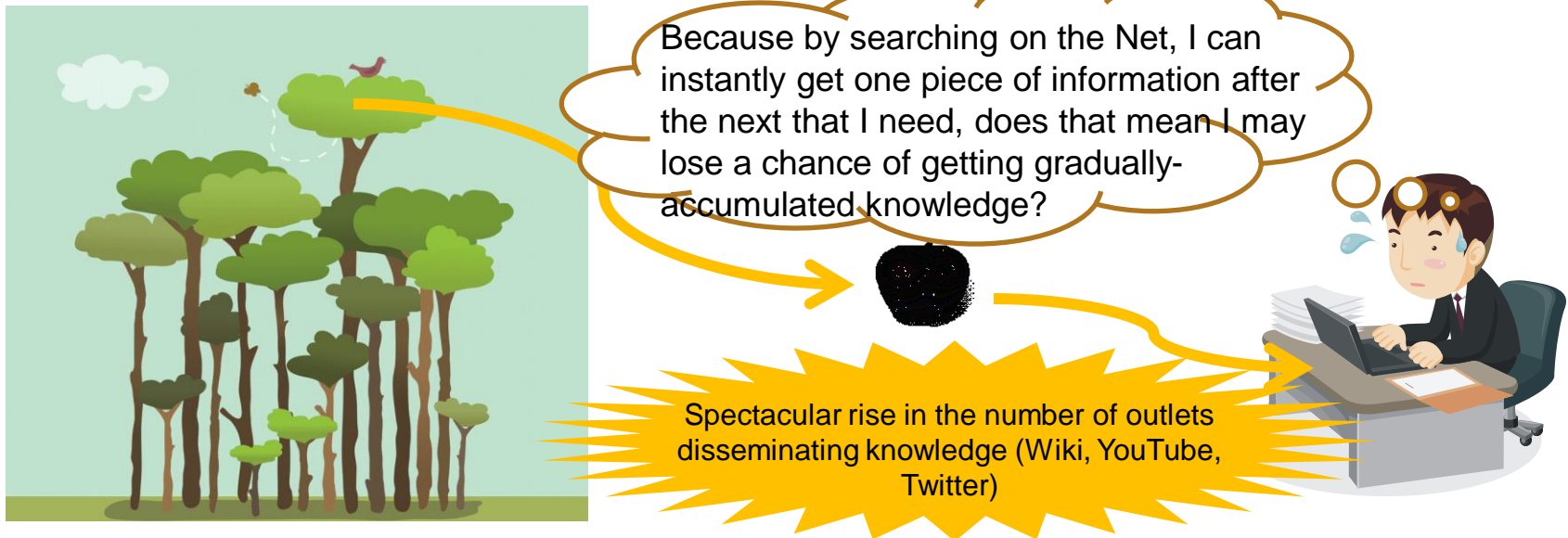
# INTERNET SEARCHES LEAD TO A DIALOGUE WITH THE PAST.

Net Searches ⇒ Even if you know absolutely nothing about the relationship between the roots and branches of knowledge, etc., you can get detailed information on things you want to know about.

= Even if you do not know what kind of tree is an apple tree or on which branches its fruit grows on, you have the magic to have an apple appear in your hand in an instant. Even though till the end you still don't know what kind of grove you are walking through.

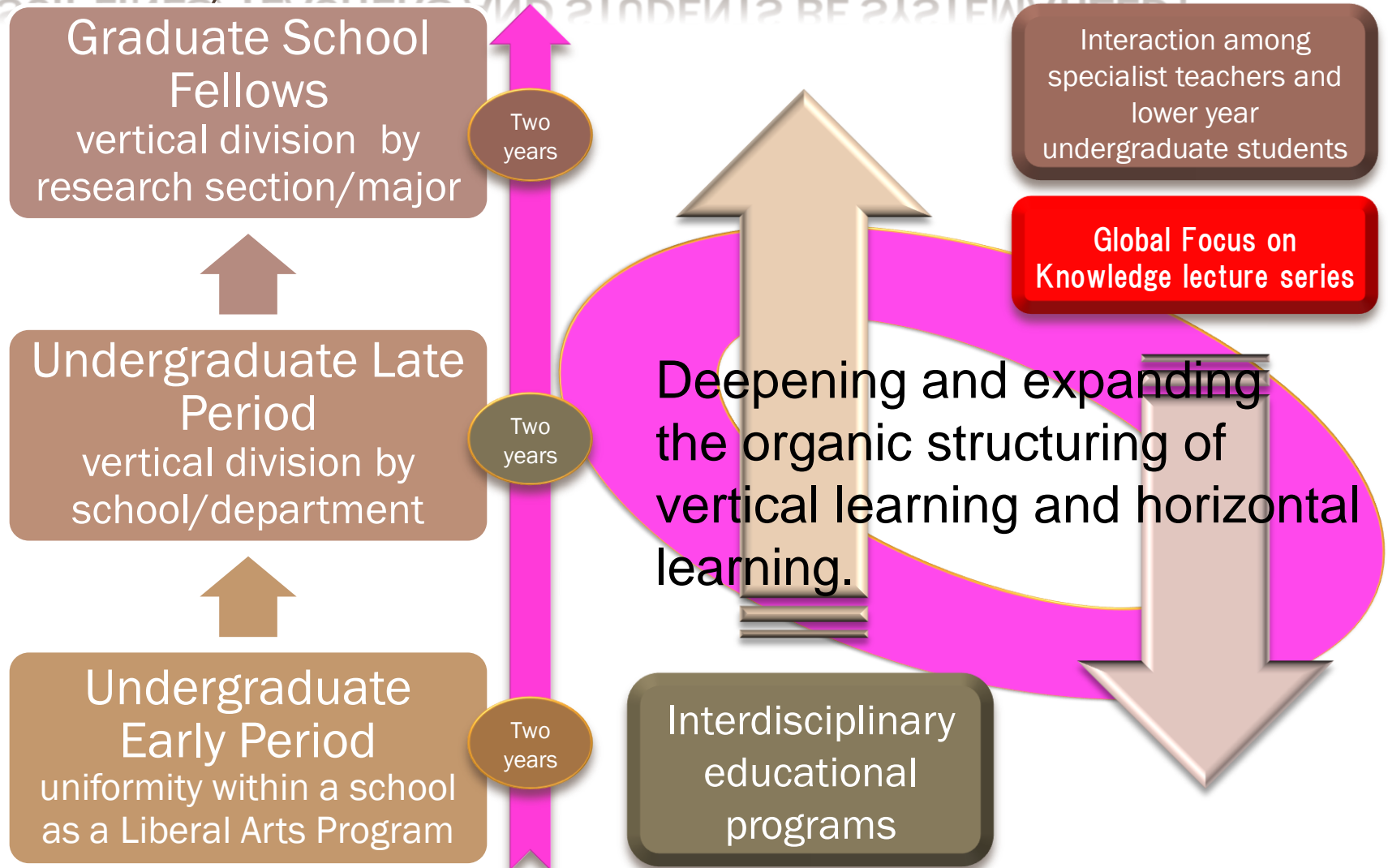
## What is a Copernican shift in knowledge?

Seeing as how this is an age in which amateurs throughout the world have access to information that would put an expert to shame, the important thing is not the elements of the information being consumed themselves, but rather systematically understanding how they are mutually tied together. New knowledge is born from conflict with knowledge from the past, and changes through the daily accumulation of thinking. Regarding the Internet of the future, we will have to see whether it can become a medium for a dialogue with the knowledge of the past, and capable of establishing a new framework for understanding.



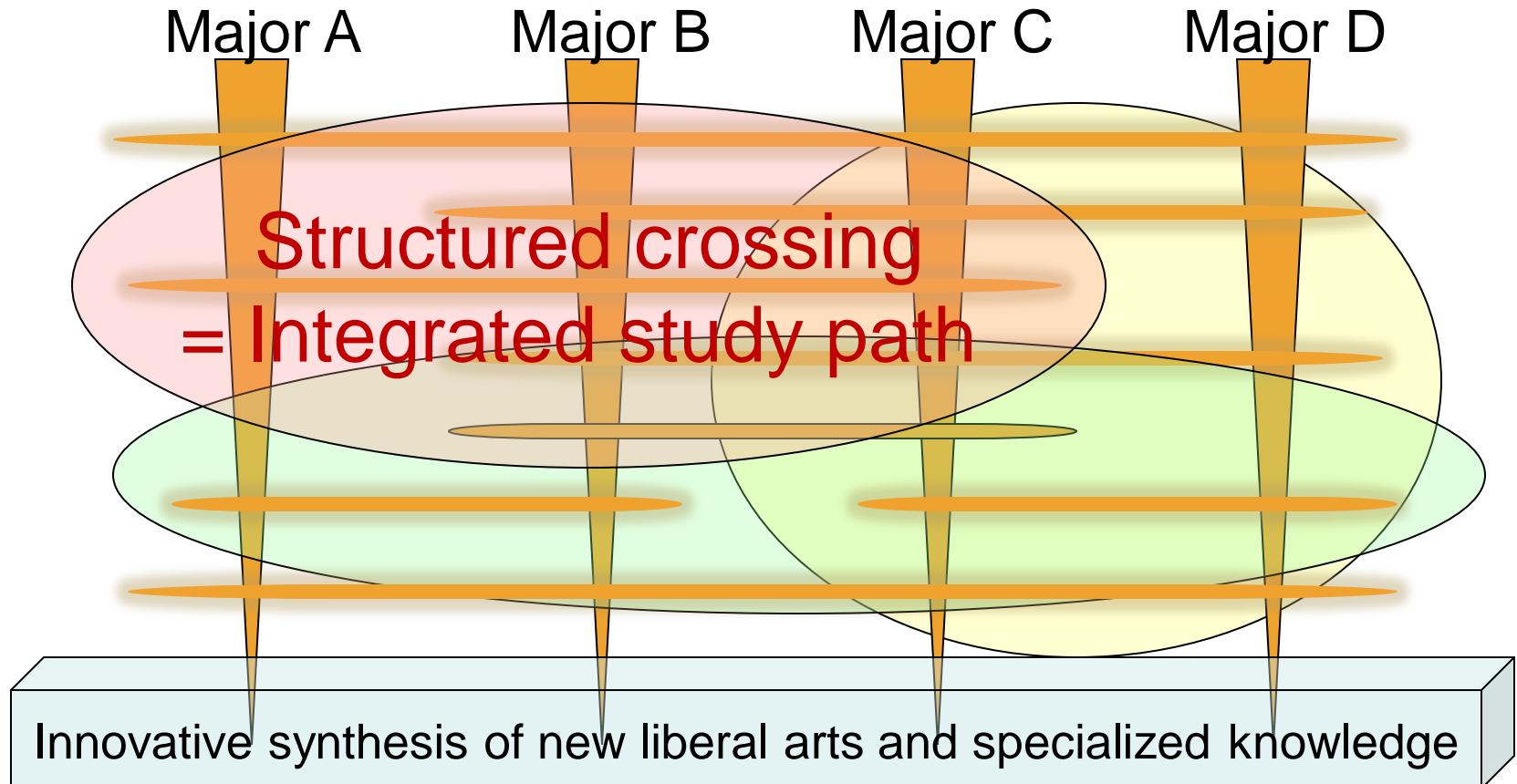
# LATE SPECIALIZATION, EARLY EXPOSURE :

## HOW SHOULD INTERACTIONS BETWEEN SPECIALIZED DISCIPLINES/TEACHERS AND STUDENTS BE SYSTEMATIZED?



# THE GLOBAL FOCUS ON KNOWLEDGE LECTURE SERIES AND STUDY LINKING THE VERTICAL AND HORIZONTAL

- Global Focus on Knowledge lectures as an experiment in early exposure
- Structuring of knowledge (→study) attuned to individual interests and talents
- Strategic employment of websites as support systems





The University of Tokyo

Global Focus on Knowledge Lecture Series



# THE UNIVERSITY OF TOKYO ON THE INTERNET

Hideki Mima (School of Engineering)

Shunya Yoshimi (Information Environment,  
Interfaculty Initiative in Information Studies)

# Outline

- I** : Structuring of knowledge and technologies for organizing
- II** : The Internet (ICT) and education, research
- III** : The University of Tokyo on the Internet
- IV** : Discussion

# ***EXPLOSIVE GROWTH***

---

- around 19 million/60,000 per month

# ***EXPLOSIVE GROWTH***

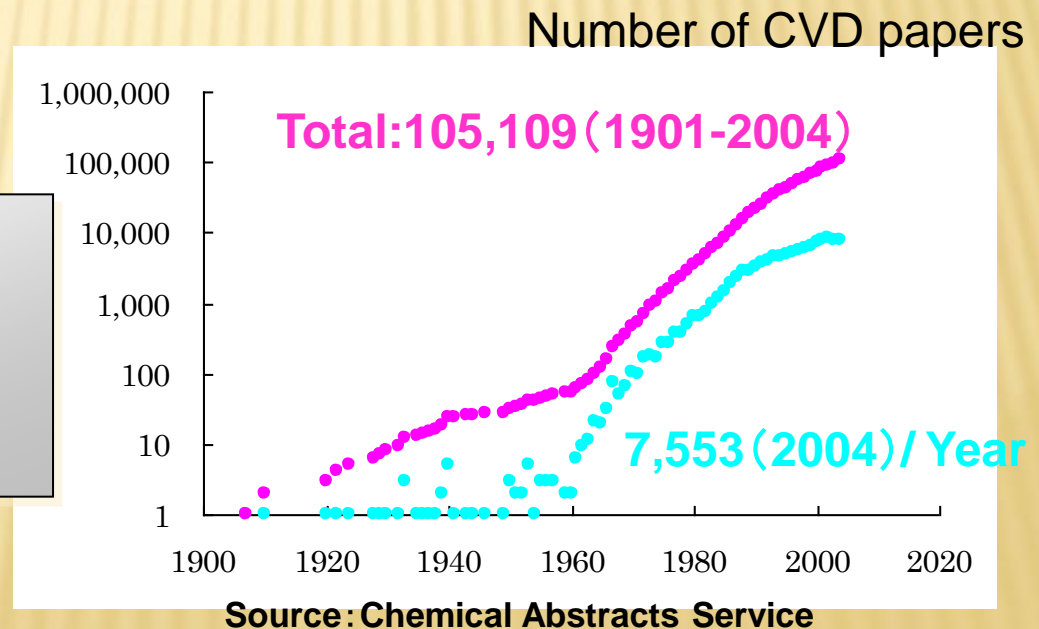
---

- around 19 million/60,000 per month
  - The number of documents registered on the medical journal articles database (MEDLINE)/number increasing per month

# EXPLOSIVE GROWTH

- around 19 million/60,000 per month
  - The number of documents registered on the medical journal articles database (MEDLINE)/number increasing per month

Exponential increase  
in the amount of scholarly  
knowledge/information available  
— A question of **quantity** —



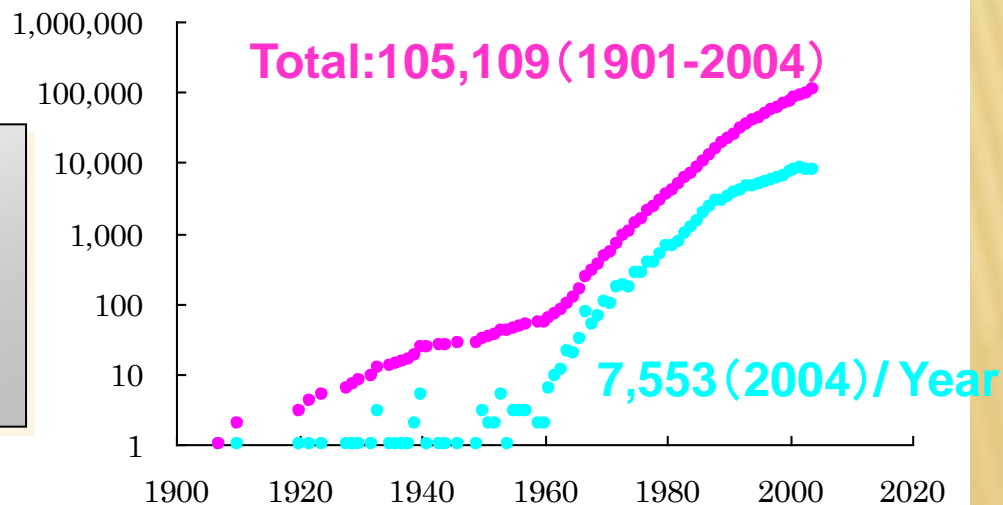
# EXPLOSIVE GROWTH

- Around 19 million/60,000 per month
- The number of documents registered

**A Super-Abundance of Knowledge**  
increasing per month

Number CVD papers

Exponential increase  
in the amount of scholarly  
knowledge/information available  
— A question of **quantity** —



Source: Chemical Abstracts Service

# ***SUBDIVIDING OF KNOWLEDGE***

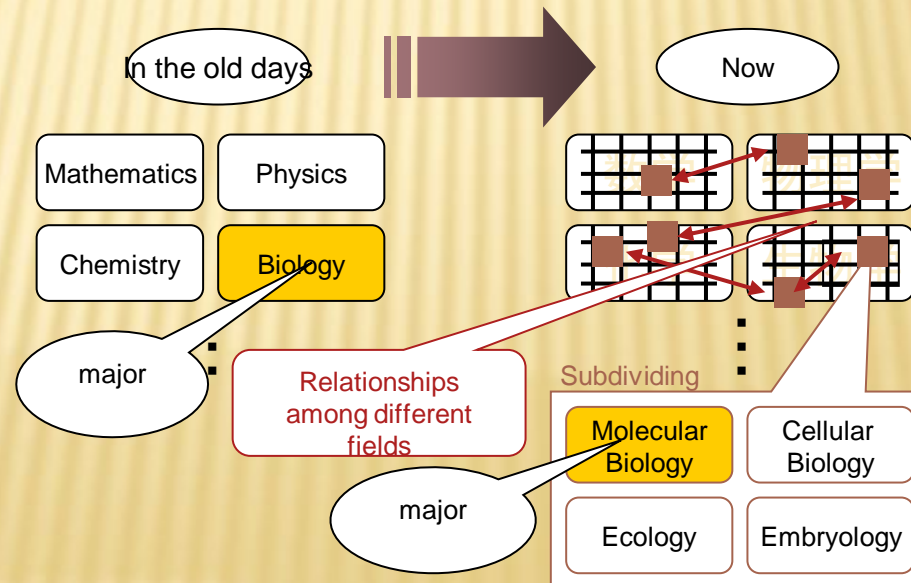
---

✘ Around 900

# SUBDIVIDING OF KNOWLEDGE

- ✘ Around 900
- ✘ Number of lectures in the School of Engineering, the University of Tokyo

Subdividing of academic disciplines,  
inadequate preparation in terms of terminology,  
appearance of knotty issues that cannot be  
responded to by existing academic systems  
—A question of **quality**—





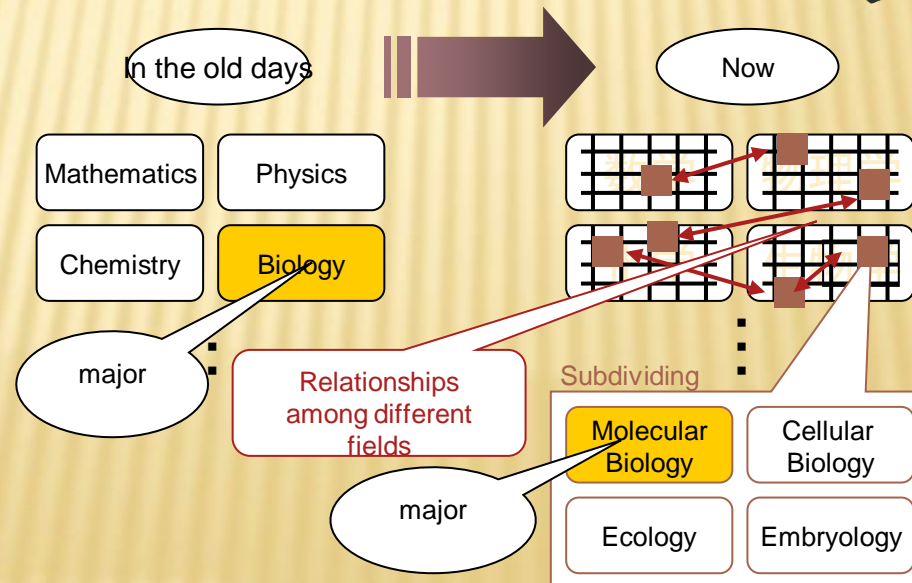
# SUBDIVIDING OF KNOWLEDGE

around 900

number of lectures in the School of Engineering, the

**Unorganized Diversity**

—A question of **quality**—





# PROBLEMS WITH SUBDIVIDING

✘ Paths a search for “automobile can lead to

The screenshot shows a Windows Internet Explorer browser window with the address bar at <http://127.0.0.1/applet/view.html>. The search bar contains the text '自動車' (Automobile). Below the search bar, a 'Web検索' (Web Search) section displays a list of search paths:

- 検索経路 公害 北九州 地球 宇宙 水俣病
- 検索経路 光電池 太陽 日光 電気 電池
- 検索経路 そう音 排出ガス
- 検索経路 輸入 輸出
- 検索経路 ガソリン
- 検索経路 人
- 検索経路 工業

The main content area displays a complex network diagram. At the top is a yellow box labeled 'Society'. Below it, a large yellow oval contains several nodes connected to a central red node labeled '自動車' (Automobile). The nodes in the yellow oval include: '他' (Other), '電話' (Telephone), 'テレビ' (Television), 'ホームページ' (Homepage), '情報' (Information), 'インターネット' (Internet), '人' (Person), '環境' (Environment), '地球' (Earth), '宇宙' (Space), '公害' (Pollution), '北九州' (North Kyushu), '水俣病' (Minamata Disease), '他' (Other), and 'ガソリン' (Gasoline). Below the yellow oval, a red node labeled '自動車' (Automobile) is connected to several other nodes: '他' (Other), '輸出' (Export), '電気' (Electricity), '他' (Other), '輸入' (Import), '他' (Other), '排出ガス' (Exhaust Gas), '他' (Other), 'そう音' (Sound), '他' (Other), '光電池' (Solar Cell), '電池' (Battery), '日光' (Sunlight), and '太陽' (Sun). The bottom-left part of the diagram shows a cluster of nodes related to industry, including '塩酸' (Hydrochloric Acid), 'アルミニウム' (Aluminum), 'かさ' (Hat), '金属' (Metal), '工業' (Industry), '機械工業' (Mechanical Industry), 'せんい工業' (Textile Industry), '中京工業地域' (Chukyo Industrial Area), '重化学工業' (Heavy Chemical Industry), '京浜工業地域' (Keihin Industrial Area), and '京葉工業地域' (Keiyo Industrial Area). A '単語検索' (Single Word Search) button is located in the top right corner of the diagram area, and a 'ドラッグしてみよう' (Try Dragging) button is in the bottom right corner.

# PROBLEMS WITH SUBDIVIDING

✖ Paths a search for “automobile” can lead to

The screenshot shows a Windows Internet Explorer browser window with the address bar displaying `http://127.0.0.1/applet/view.html`. The search bar contains the text "自動車" (Automobile). Below the search bar, a "Web検索" (Web Search) section lists several search paths:

- 検索経路 公害 北九州 地球 宇宙 水俣病
- 検索経路 光電池 太陽 日光 電気 電池
- 検索経路 そう音 排出ガス
- 検索経路 輸入 輸出
- 検索経路 ガソリン
- 検索経路 人
- 検索経路 工業

The main content area displays a complex network diagram. The diagram is divided into two main sections, "Society" and "Science", both highlighted in yellow. The "Society" section includes terms like "インターネット", "ホームページ", "情報", "人", "公害", "地球", and "宇宙". The "Science" section includes terms like "自動車", "排出ガス", "そう音", "輸入", "輸出", "電気", "光電池", "太陽", "日光", "工業", "機械工業", "せんい工業", "中京工業地域", "重化学工業", "京浜工業地域", "京葉工業地域", "アルミニウム", "かさ", "金属", "塩酸", "公害", "北九州", "地球", "宇宙", "水俣病", "インターネット", "ホームページ", "情報", "人", "公害", "地球", "宇宙", "自動車", "排出ガス", "そう音", "輸入", "輸出", "電気", "光電池", "太陽", "日光", "工業", "機械工業", "せんい工業", "中京工業地域", "重化学工業", "京浜工業地域", "京葉工業地域", "アルミニウム", "かさ", "金属", "塩酸".

At the bottom right of the diagram, there is a button labeled "ドラッグしてみよう" (Try dragging).

Search



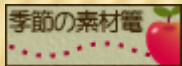
apple

Search



# apple

Search



# apple

Search

## fruit

## IT





# **STRUCTURING OF KNOWLEDGE**

---

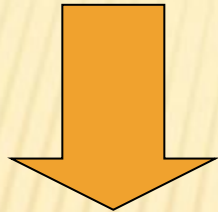
**WE NEED “STRUCTURING OF KNOWLEDGE” IN ORDER TO MAKE ACTIVE USE OF INFORMATION WHICH HAS BECOME CHAOTIC.**

**“Being able to arrange knowledge in such a way that its use can transcend fields, organizations and prevailing conditions.”**

# TECHNOLOGIES FOR STRUCTURING KNOWLEDGE

---

- ✘ Taking the enormous amount of information available and putting it into “categories” and making it “abstract.”



“Connection” recognition

- Identifying special characteristics.
- Gauging the degree to which items are similar.

# EXAMPLES OF PUTTING INFORMATION TO WORK BY MAKING IT “**ABSTRACT**”:

---

- × Transport Safety

- + **Video filming** of driving conditions for trains/taxis



- × Medical Safety

- + **Video filming** of conditions during operations

# EXAMPLES OF PUTTING INFORMATION TO WORK BY MAKING IT “**ABSTRACT**”:

## ✘ Transport Safety

+ Video filming of driving conditions for  
trains/taxis

**Monitoring**



## ✘ Medical Safety

+ Video filming of conditions during  
operations

**Safety  
Peace of Mind**

**FROM “ABLE TO SEARCH” TO “ABLE TO  
UNDERSTAND”**

---

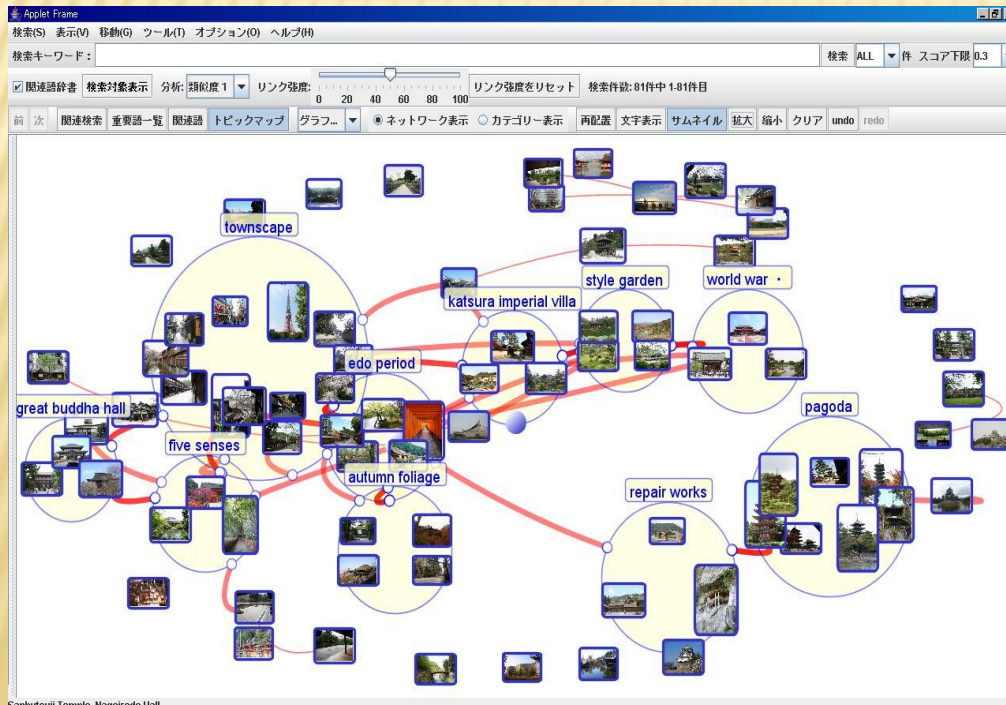
# **MIMA RESEARCH DEMONSTRATION**

# TECHNOLOGIES FOR STRUCTURING OF KNOWLEDGE

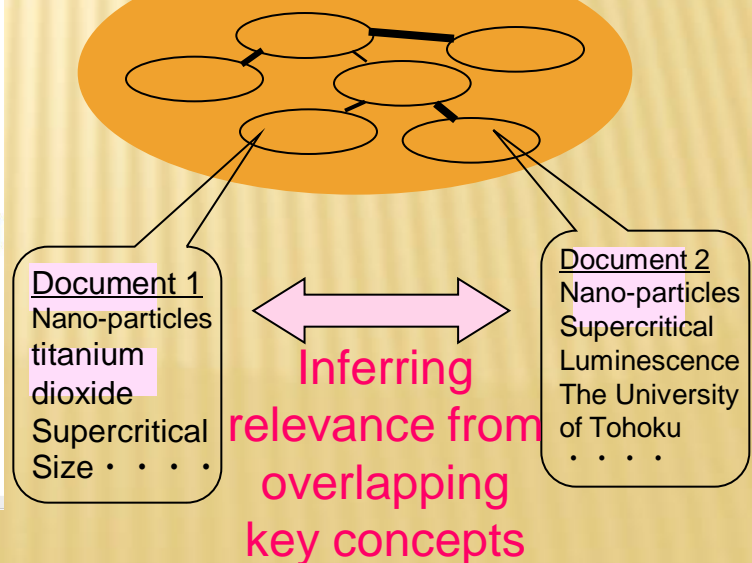
HIDEKI MIMA THE UNIVERSITY OF TOKYO

1. Accumulation of knowledge
2. Analysis/categorization of knowledge
3. Visualization of knowledge

Analysis of the text  
to extract key concepts



Carrying out recognition of relevancy





# Unstructured Knowledge

-Life forms are diverse-



# Unstructured Knowledge

-Life forms are diverse-

bacteria  
microbes  
spirochete

algae  
amoeba  
flagellates



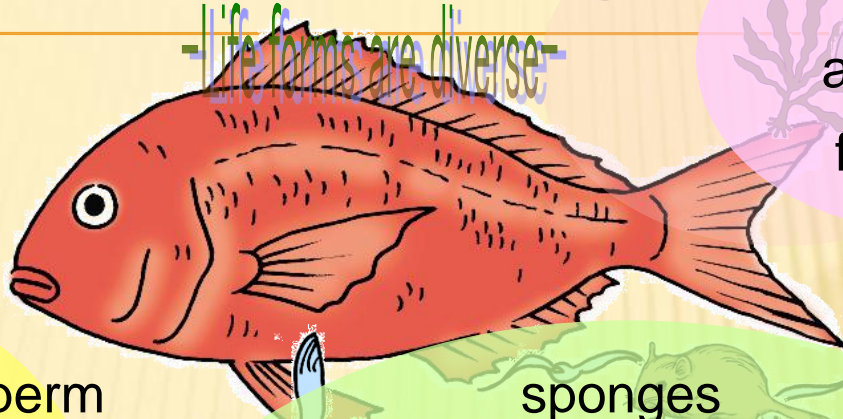
wheat  
pine  
rice  
chrysanthemums  
gingko  
orchids  
angiosperm  
moss(es)  
ferns  
gymnosperm  
Japanese sago palms

kinoko  
mold  
yeast  
mushrooms  
fungi

sponges  
jellyfish, sea anemone, corals  
amphibians  
shellfish, squid, octopi  
spiders, scorpions  
reptiles  
sea urchins, starfish, sea cucumbers  
earthworms, lugworms  
crustaceans  
insects  
mammals  
birds

# Unstructured Knowledge

-life forms are diverse-



bacteria  
microbes  
spirochete

algae  
amoeba  
flagellates

wheat angiosperm  
pine moss(es)  
rice ferns gymnosperm  
chrysanthemums  
gingko Japanese sago palms  
orchids

sponges  
jellyfish, sea anemone, corals  
amphibians earthworms, lugworms  
shellfish, squid, octopi crustaceans  
spiders, scorpions insects  
reptiles mammals  
sea urchins, starfish, sea cucumbers  
birds

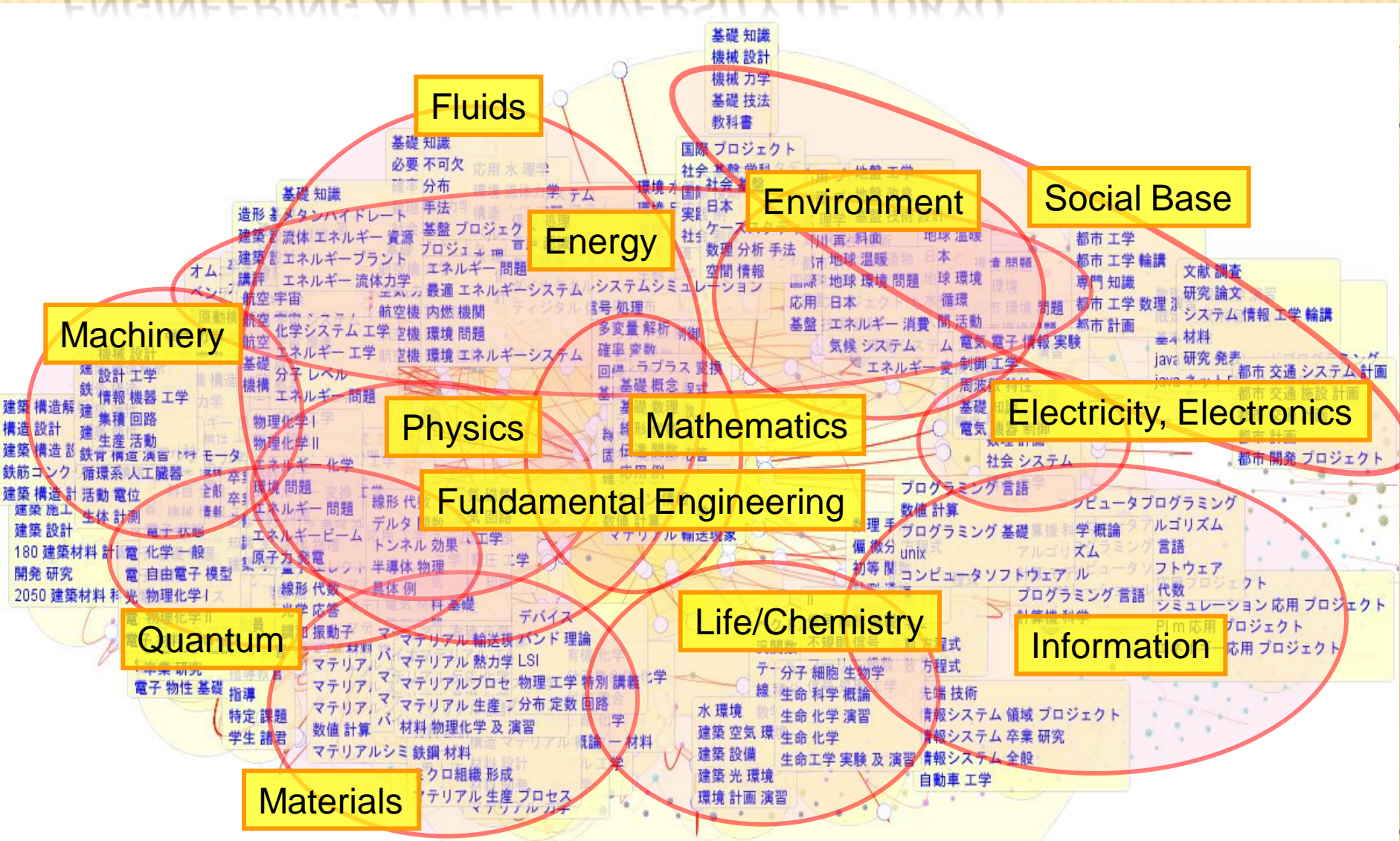
kinoko mushrooms  
mold  
yeast fungi

# **CONCENTRATION AND OMISSION OF KNOWLEDGE**

---



# STRUCTURING OF LECTURES IN THE SCHOOL OF ENGINEERING AT THE UNIVERSITY OF TOKYO



Source: MIMA Search (the School of Engineering at the University of Tokyo, Center for Innovation in Engineering Education)

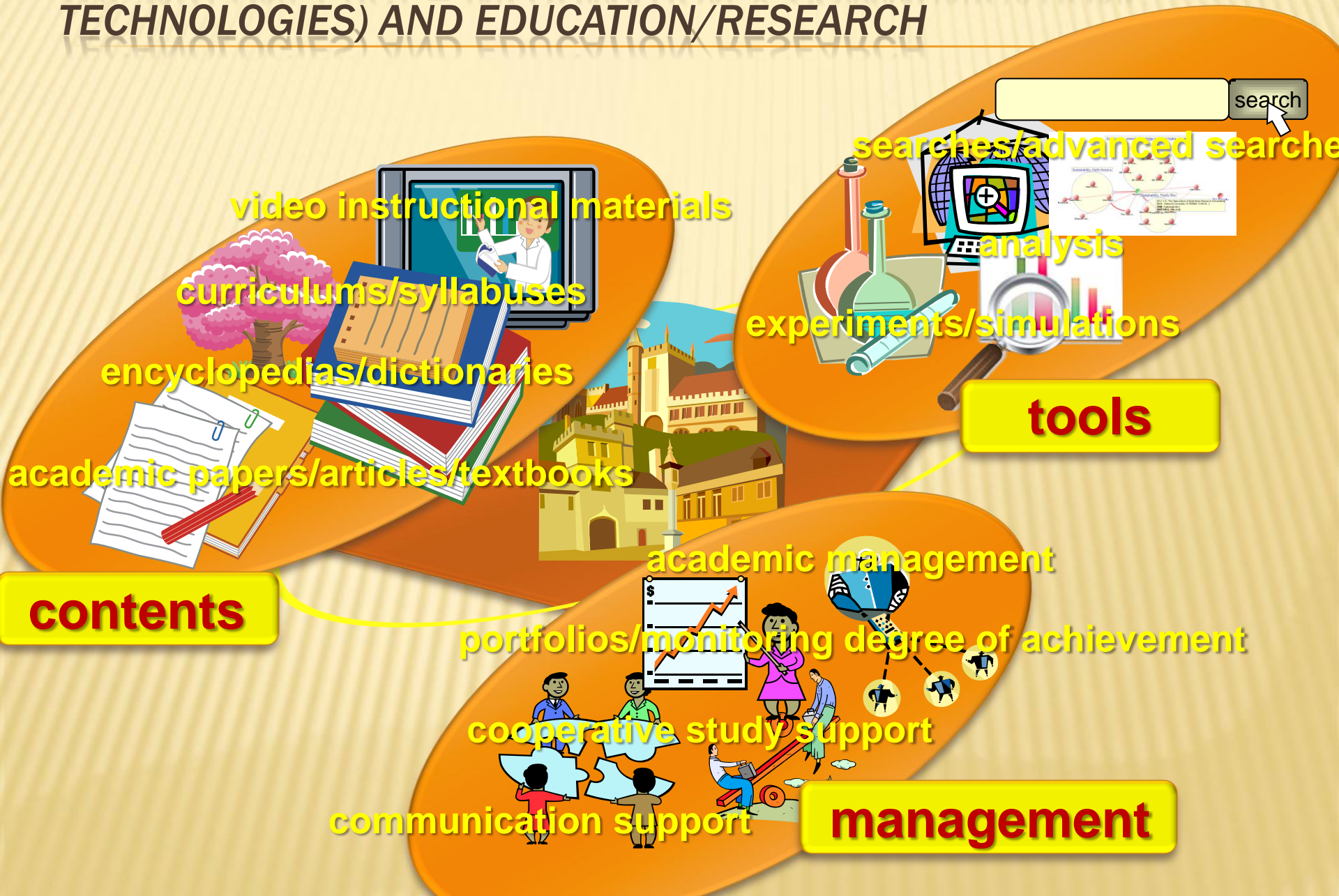


**THE INTERNET (ICT = INFORMATION &  
COMMUNICATIONS TECHNOLOGIES) AND  
EDUCATION/RESEARCH**

---



# THE INTERNET (ICT = INFORMATION & COMMUNICATIONS TECHNOLOGIES) AND EDUCATION/RESEARCH



video instructional materials

curriculums/syllabuses

encyclopedias/dictionaries

academic papers/articles/textbooks

**contents**

searches/advanced searches

analysis

experiments/simulations

**tools**

academic management

portfolios/monitoring degree of achievement

cooperative study support

communication support

**management**

# THE UNIVERSITY OF TOKYO ON THE INTERNET

# THE UNIVERSITY OF TOKYO ON THE INTERNET

- × Educational Content
  - + Curriculums/Syllabuses
    - × The University of Tokyo Course Catalog (<http://catalog.he.u-tokyo.ac.jp/>)
    - × OCW(Open Course Ware) (<http://ocw.u-tokyo.ac.jp/>)
    - × Engineering Education Promotion Syllabus NAVI (<http://ciee.t.u-tokyo.ac.jp/snavi/>)
  - + Textbooks
    - × Progressive Textbooks (<http://utht.t.u-tokyo.ac.jp/>)
    - × Ideal Textbooks
- × Research-use Content
  - + Databases for Various Kinds of Research Materials and Academic Papers
    - × GACoS (<http://www.dl.itc.u-tokyo.ac.jp/gacos/>)
    - × Digital Library Division, Information Technology Center (<http://www.dl.itc.u-tokyo.ac.jp/>)
    - × Affiliated Libraries (<http://www.lib.u-tokyo.ac.jp/>)
- × e-Learning Study Materials
  - + Lecture/Seminar Archives
    - × Center for Innovation in Engineering Education Archives
    - × TODAI.TV (<http://todai.tv/>)
    - × etc.
  - + WBT(Web Based Training)
    - × HWB (<http://hwb.ecc.u-tokyo.ac.jp/current/>)
    - × Snowballs (Self Navigation Web-Based Literacy Learning System) –Cooperative-type Literacy Study Assistance System
      - \* From distinct learning by field to virtual communication
- × Support for Student Living
  - + Todai Navi (<http://utnav.jp/>) 、 UT-Life (<http://www.ut-life.net/>)
  - + ...

# IDEAL TEXTBOOKS

## × UT-eTEXT

UT-eTEXT

※ ホーム

### UT-eTEXT とは・・・

UT OpenCourseWare (以下、UT OCW : 東大オープンコースウェア) ですすめている本学の知の  
を、更に発展させたものがこの「UT-eTEXT (理想の教科書)」です。  
これは、講師の生の声での語りに耳をかたむけながら、講義資料、講義内容を文章化したもの、更  
に補う参考資料や関連情報にアクセスし学習することができる、理想的な電子教科書です。  
より広範な大学生、高校生や中等教育教員等が使うのに適した  
に教材を提供しています。

#### 最新情報

ただいま実験公開中!

#### 講義の一覧

年度別、シリーズ別に講義の一覧を  
表示します。



いろい  
ありま  
索でき

UT-eTEXT

※ ホーム ※ 講義シリーズ一覧 ※ タイトル一覧



#### 2005年度【學術俯瞰講義】物質の科学 - その起源から応用まで -

コーディネーター：岡村定矩  
ナビゲーター：永田敬

#### 物質はどのように創られたのか

講義タイトル



第1回 2005年10月17日 物質はどのように創られたのか 小柴昌俊

#### 物質の生い立ち - 素粒子、原子、宇宙 -



第2回 2005年10月24日 私たちは物質世界をどのように認識してきたか - 物質の階層構造 - 佐藤勝彦

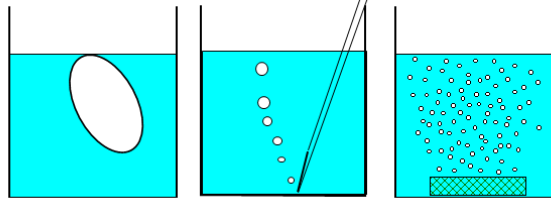


第3回 2005年10月31日 物質世界はどのように運動するのか - 物理法則 - 佐藤勝彦



第4回 2005年11月7日 時空、物質の連続の無い世界 - 佐藤勝彦

### 多様な沸騰: 核発生



突沸

毛細管

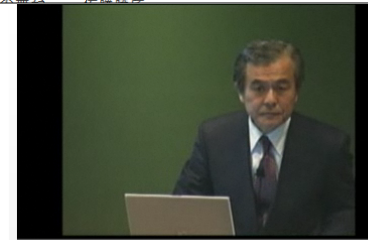
多孔体

テキストをビデオと同期しない [前へ](#) [次へ](#)

沸騰という現象を見てみましょう。まず今お話した「突沸」です(左図)。突然、沸騰する現象です。

ここに毛細管を1本入れたとします。その先が刺激になります。水を刺激するものですから100°Cちょっとでポコポコと沸騰がはじまります。このような沸騰の仕方もあります(真ん中の図)。

もっと細かい穴がたくさん空いたもの、多孔体を入れて沸騰させたら、細かい泡が出ながら沸騰します(右図)。そうした沸騰形態もあります。実際、このようにして危険な突沸という現象を防ぐこともあります。このような石(多孔体)を沸騰石と呼びます。



10:06 / 79:17

- 00:10:00 多様な沸騰:核発生
- 00:11:25 1.2 沸騰は無限核発生→粒晶
- 00:14:20 沸騰は無限:鉄の状態図
- 00:16:00 1.3 物質は平衡状態にない
- 00:18:40 1.4 物質の性質は構造に依存する
- 00:21:45 1.5 物質製造プロセスの定義と要素
- 00:22:20 製造プロセスの4要素

# SNOWBALLS

## ✕ Self Navigation Web-Based Literacy Learning System

Self-Learning Web-based literacy-educational IT system

**SNOWBALLS**  
[ Self Navigation Web Based Literacy Learning System ]

東京大学  
The University of Tsukuba

User ID  
Password  
 パスワードを記憶  
LOGIN

MESSAGE  
管理者からのお知らせは特  
にありません。

■ 総合ランキング

RANK	NAME
1位	けんけん
2位	KUMKO
3位	うるーずリー
4位	おがちゃん
5位	スーダ
6位	あっきー
7位	ヌコスキー
8位	やまびー
9位	ああ
10位	ちょっちゃん

■ 連続正解ランキング

RANK	NAME
4	おがちゃん
4	おがちゃん
4	おがちゃん
4	おがちゃん
4	おがちゃん

ヘルプ TOPへ ログアウト

KUMKO

雪玉1000コ

MESSAGE  
管理者からのお知らせは特  
にありません。

Calendar  
2010年04月 05月  
日 月 火 水 木 金 土  
04 05 06 07 08 09 10  
11 12 13 14 15 16 17  
18 19 20 21 22 23 24  
25 26 27 28 29 30

イベント情報  
春の先取りファッションショー イベント開催中!!

お問合わせ

イベント広場へ

# SCREEN IMAGES FOR STUDY SECTIONS

Individual “avatars” always are shown

If you give many correct answers, you can get a snowball.

1 工学系に必要な英語  
1-2 線の名称と角度  
1-2-1 線の名称と角度 ?

それでは下記のような線をどう呼ぶのでしょうか。  
日本語では実線、点線、破線などといいます。グラフを説明するときに線の名称が必要になります。

solid line

sigmoid [sigmoidal] curve

dotted line

short-dashed line

dashed line, broken line

鋭角  
acute angle

理解度: ○未読 ○少し理解 ○半分理解 ○大体理解 ○全部理解

Section from textbook

1 工学系に必要な英語  
1-2 線の名称と角度  
1-2-3 問題1-2-2

Tell me the names of these lines.

A \_\_\_\_\_

B \_\_\_\_\_

C \_\_\_\_\_

Line A is a [ \_1\_ ] line, B is a [ \_2\_ ] line, and C is a [ \_3\_ ] line.

【結果】正解

1. [dotted] dotted

【結果】正解

2. [shortdashed] shortdashed

【結果】正解

3. [dashed] dashed

Collection of questions

New Web Textbooks UT— e TEXT

# **PROGRESSIVE TEXTBOOKS**

# BACKGROUND

---

- ✘ Explosive growth in knowledge
  - + Engineering Department/Number of lectures in School of Engineering 900/700
- ✘ Dilution of knowledge ties
  - + Deleterious impact of sub-dividing of academic fields
  - + From primary schools, secondary schools to universities and society
- ✘ Real time nature
  - + Frontline research, social conditions reflected in education

**Quantity, Quality, Speed**



# STRUCTURING OF KNOWLEDGE AND EDUCATION

## × “Broad, Deep”

- + Broad knowledge and deep understanding
- + Theme-oriented model, Problem-solving model

## × Knowledge Management (including time series)

- + Shifts in knowledge and needs

## × Knowledge Circulation

- + Greater efficiency, enhancement of education

## × Knowledge Ties

- + Ties with other databases and educational materials
- + Providing more knowledge and assessing the degree of achievement

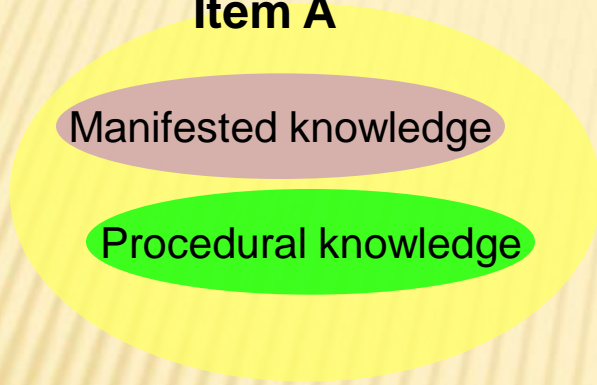
# “CIRCULATION” AND “REUSING” OF KNOWLEDGE – CONTINUITY AND SYNTHESIS

---

**Item A**

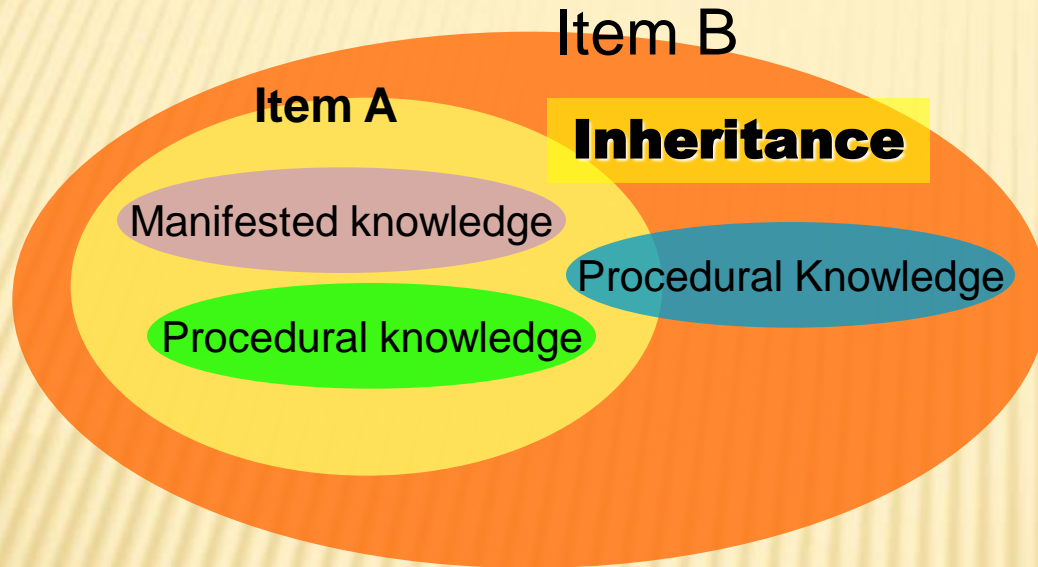
Manifested knowledge

Procedural knowledge

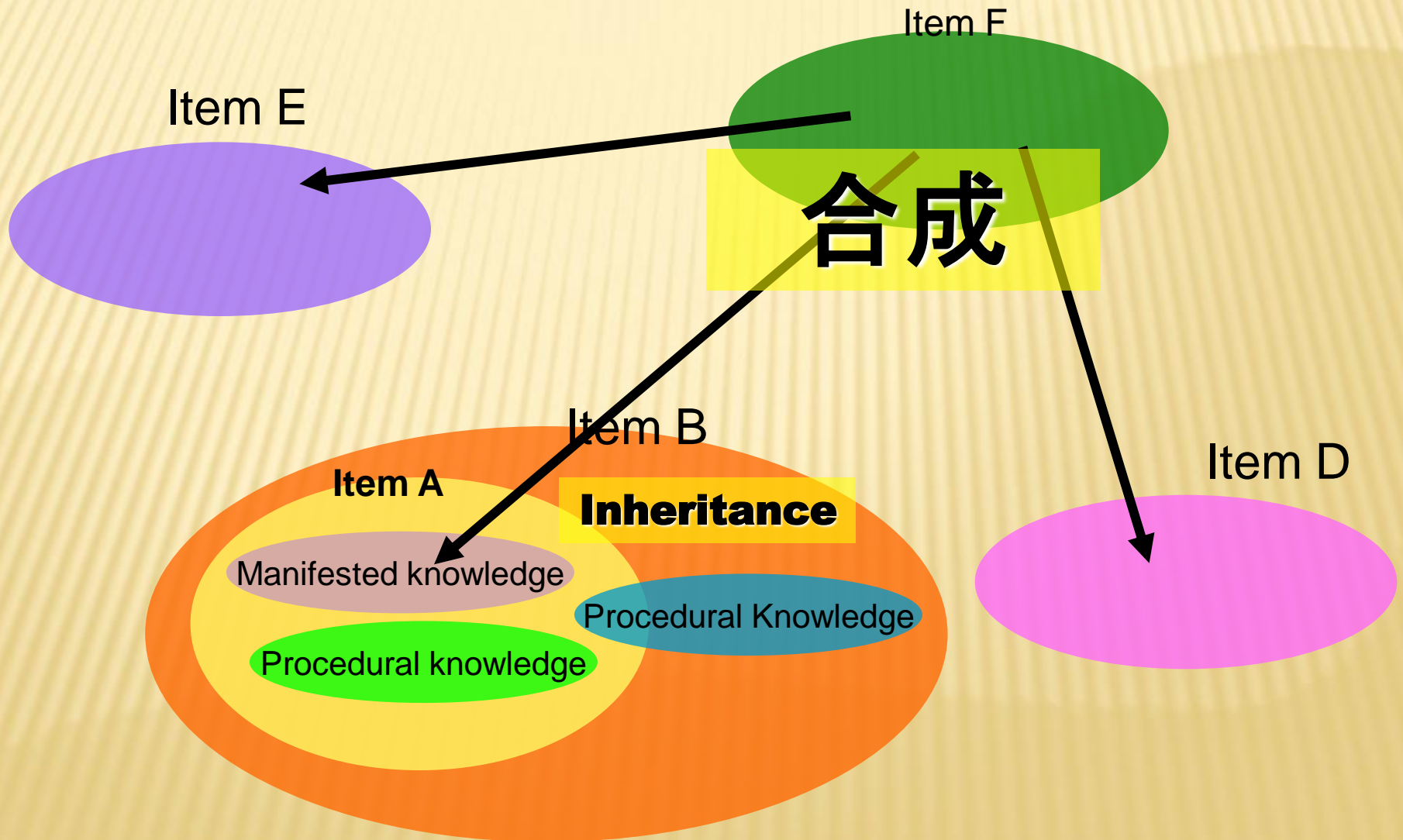


# “CIRCULATION” AND “REUSING” OF KNOWLEDGE – CONTINUITY AND SYNTHESIS

---

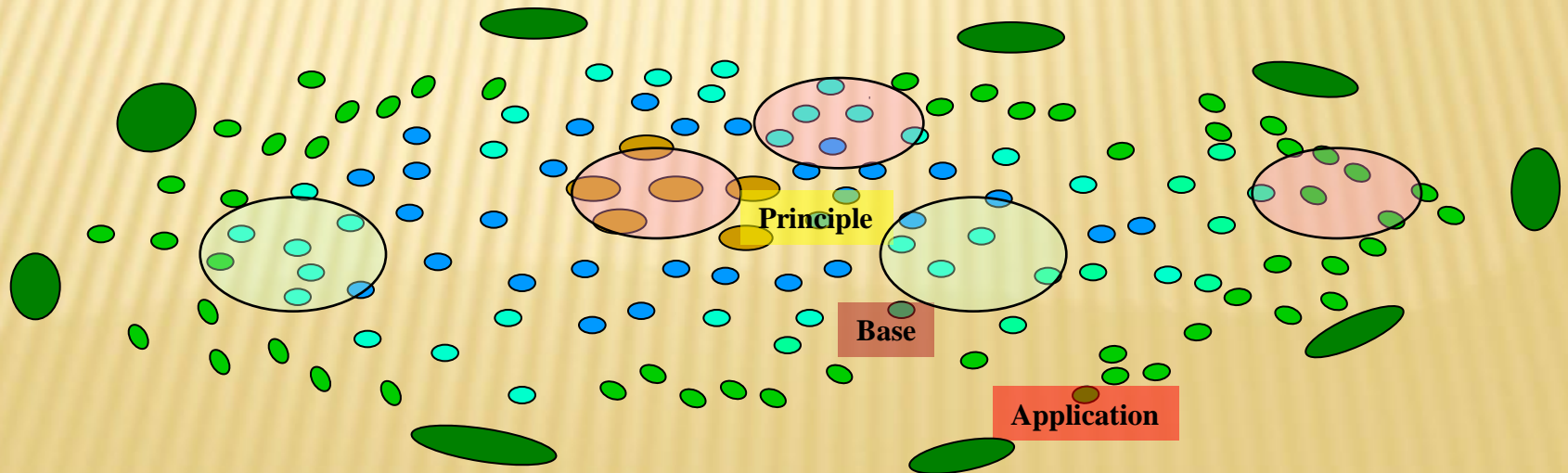


# “CIRCULATION” AND “REUSING” OF KNOWLEDGE – CONTINUITY AND SYNTHESIS



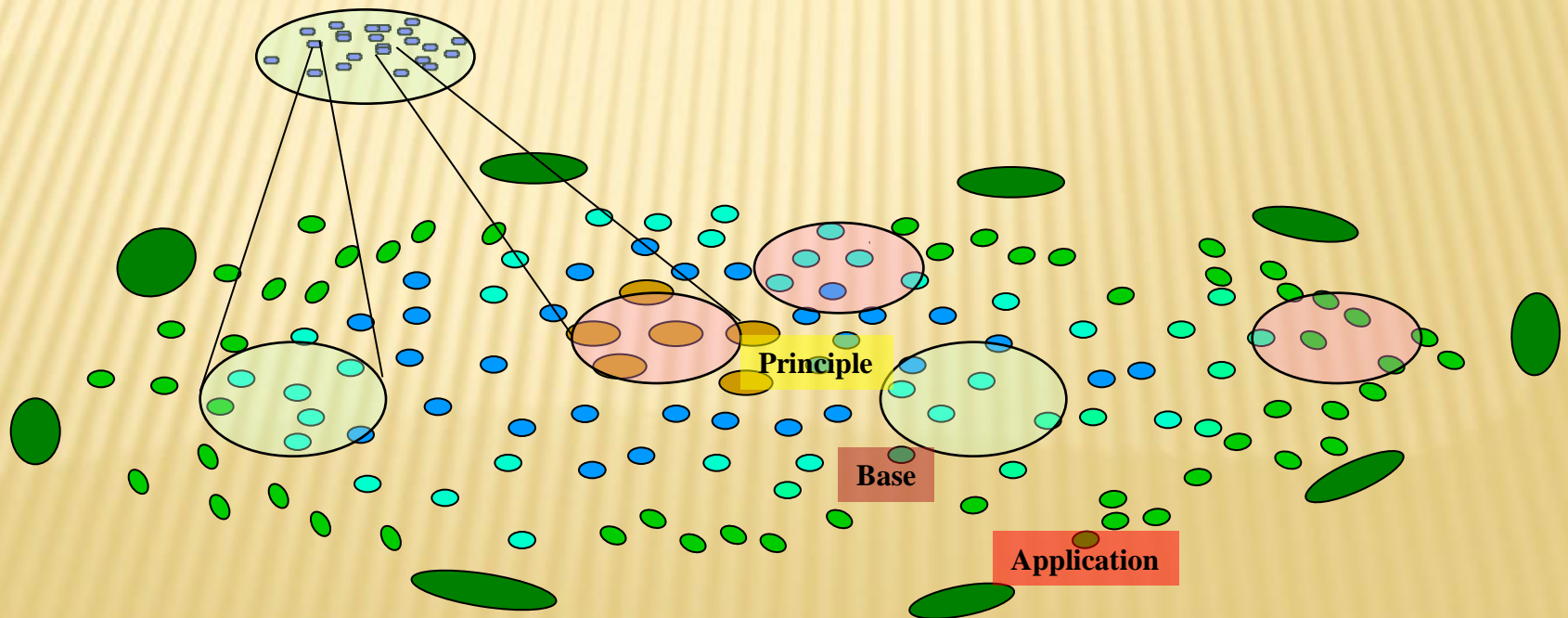
# PROCESS OF PROGRESSION

**Synthesis leading to synthesis leading to inheritance leading to synthesis leading to . . .**



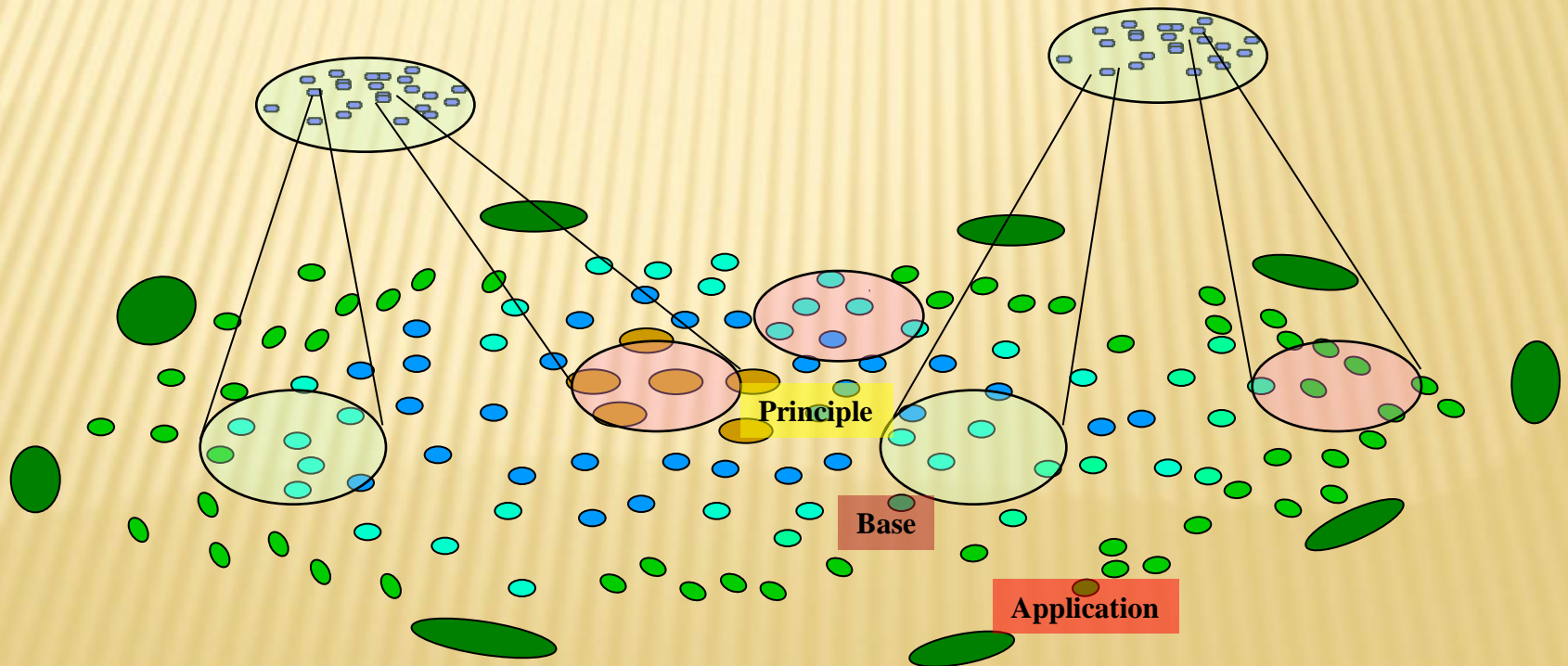
# PROCESS OF PROGRESSION

**Synthesis leading to synthesis leading to inheritance leading to synthesis leading to . . .**



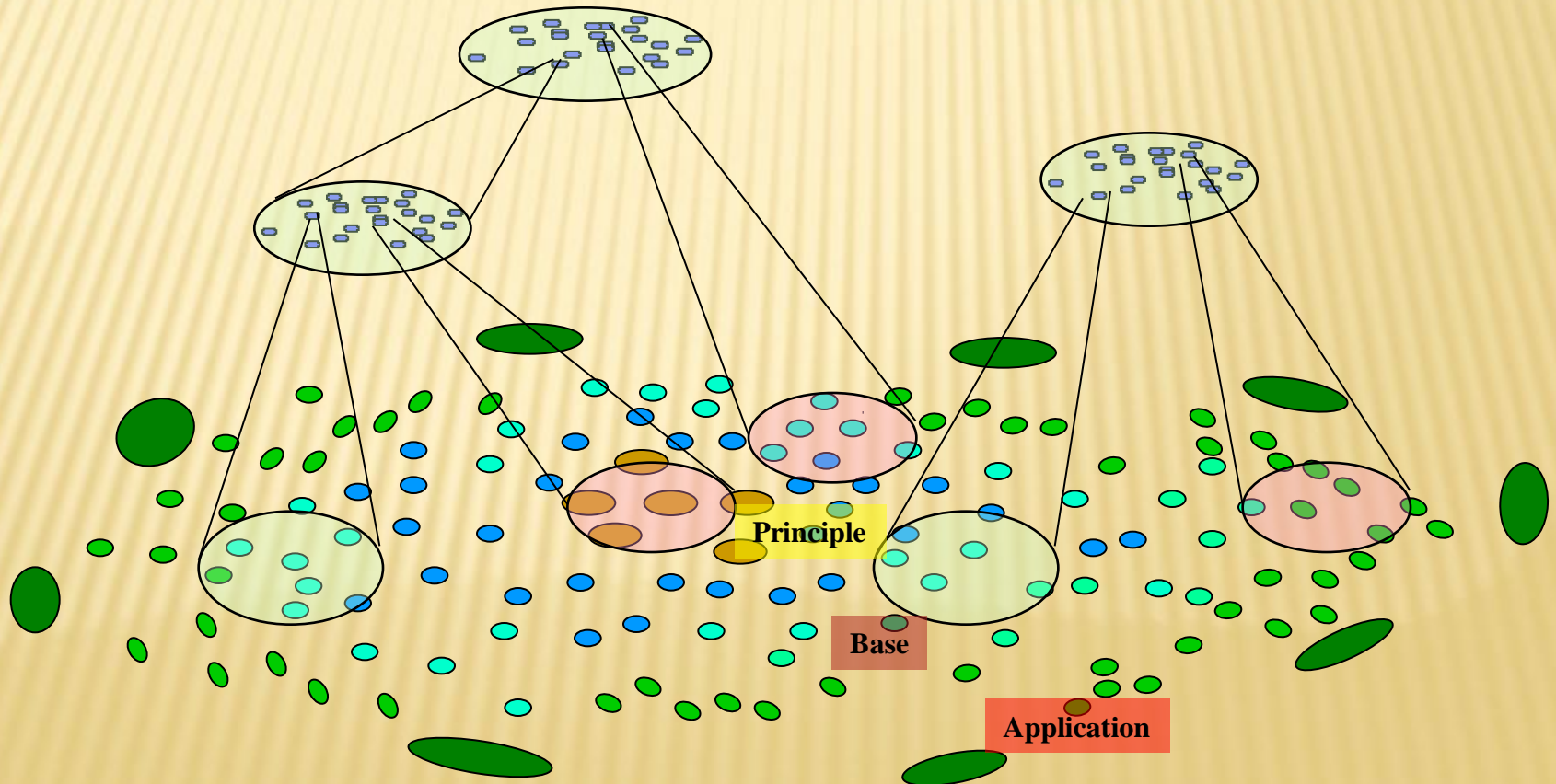
# PROCESS OF PROGRESSION

**Synthesis leading to synthesis leading to inheritance leading to synthesis leading to . . .**



# PROCESS OF PROGRESSION

**Synthesis leading to synthesis leading to inheritance leading to synthesis leading to . . .**



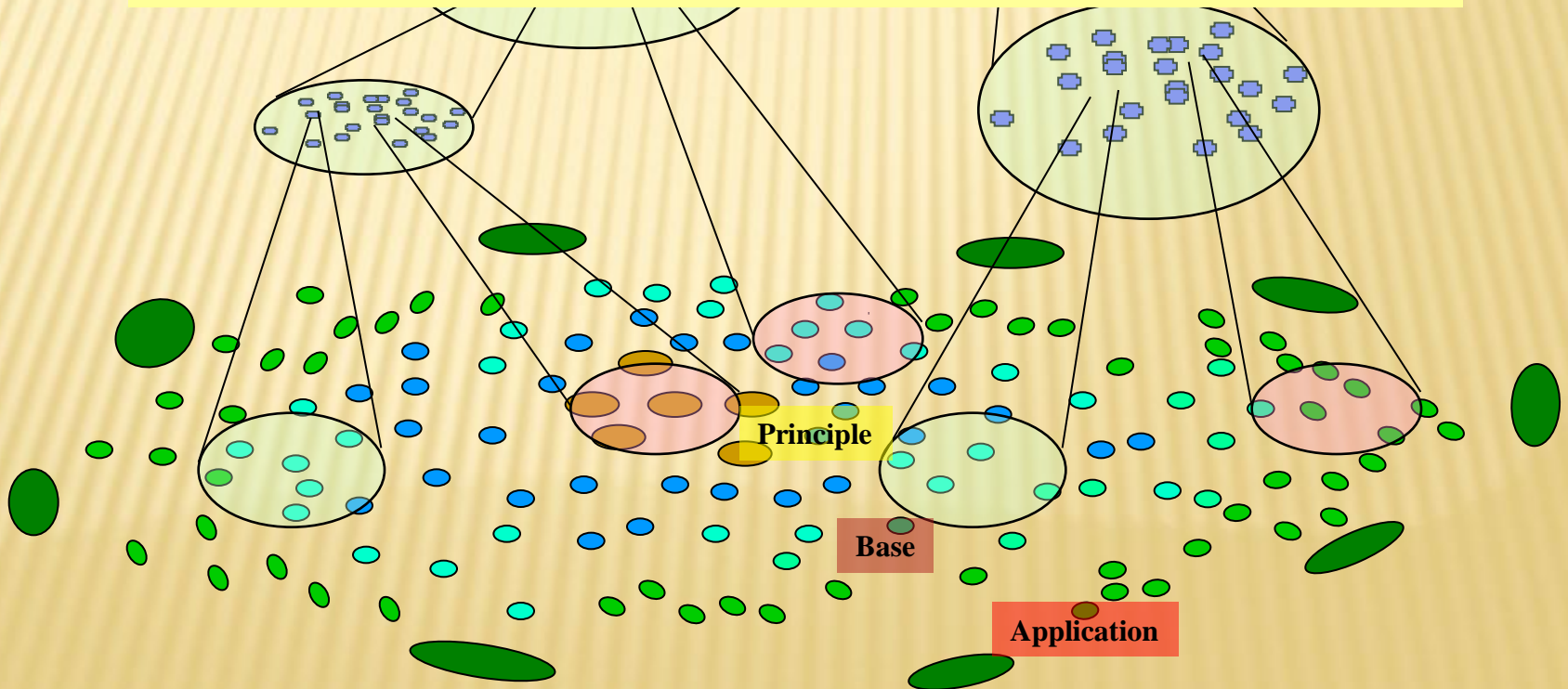


# PROCESS OF PROGRESSION

**Synthesis leading to synthesis leading to inheritance leading to synthesis leading to . . .**

**Vertical axis and horizontal axis by the field**

**Elimination of minor items which are rarely consulted about**



# SUPPORT FOR KNOWLEDGE CIRCULATION

Creativity

Creation of Individual Items with Wiki

Selection  
Synthesis

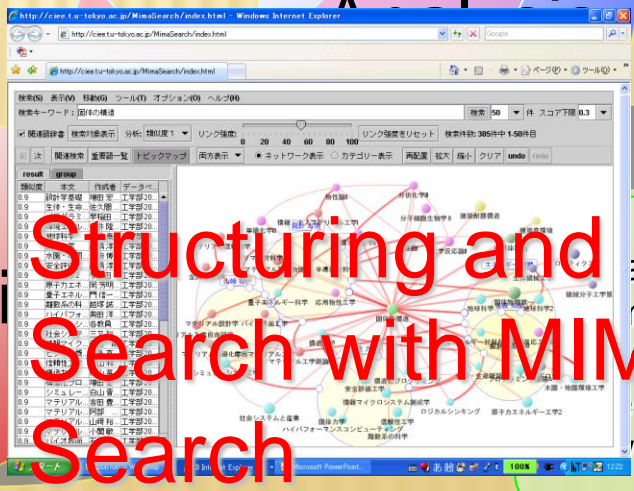
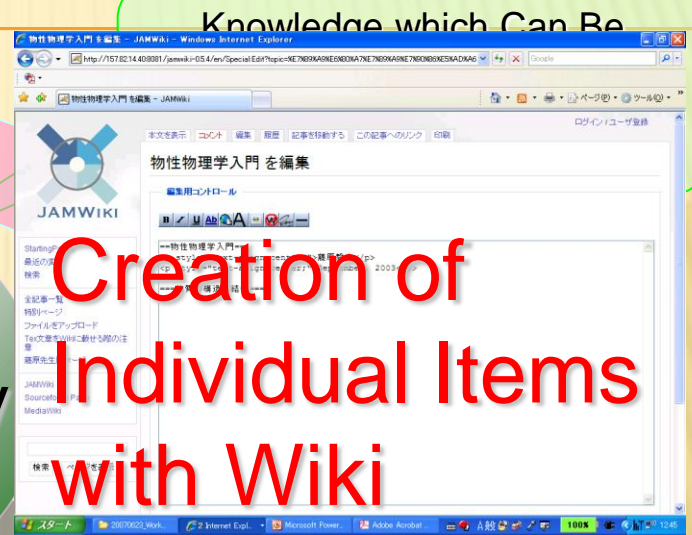
Search

Visualization

Structuring and Search with MIMA Search

Creation of new indexed items

Clarification of related items

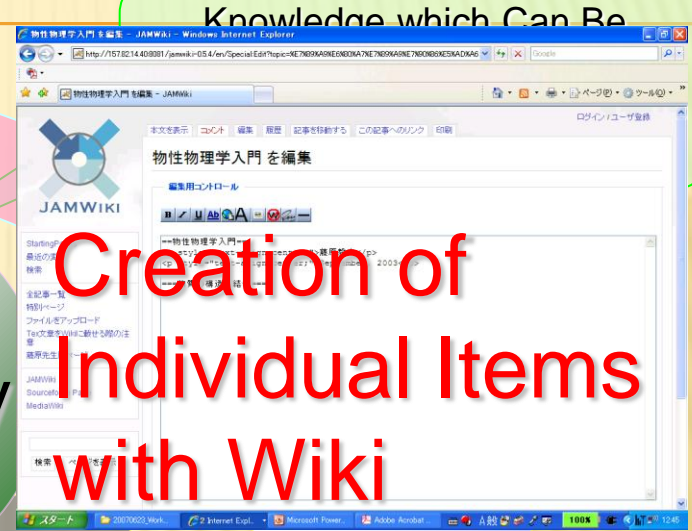


# SUPPORT FOR KNOWLEDGE CIRCULATION



Creation of new indexed items

Creation of new indexed items



Creation of Individual Items with Wiki

Creativity

Selection

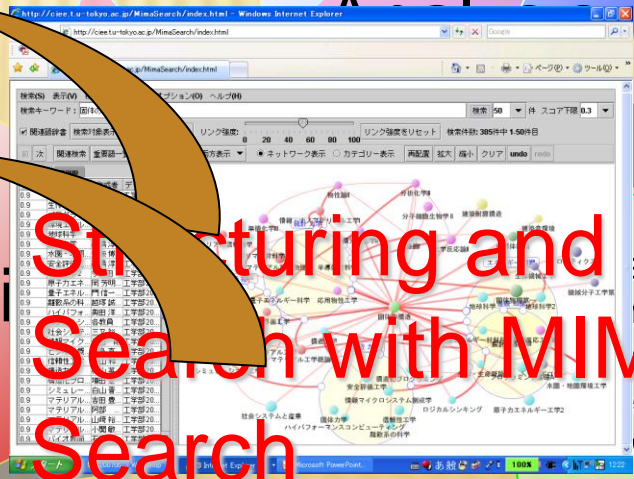
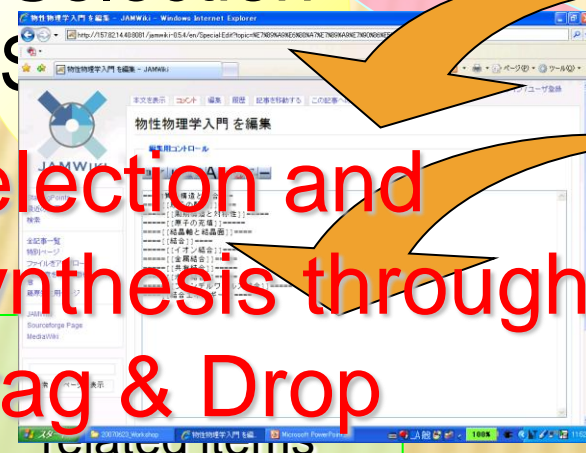
Search

Selection and Synthesis through Drag & Drop

Visualization

Structuring and Search with MIMA Search

Search and Analysis of Necessary Knowledge



# PROGRESSIVE TEXTBOOKS

29 Lectures

Roughly 240 Items

- ✕ Introduction to Condensed-Matter Physics
- ✕ Special Theory of Science & Technology in Society
- ✕ Bio-Imaging
- ✕ Biotechnology I
- ✕ Energy & Hydrocarbon Chemistry
- ✕ Introduction to Environmental Energy & Materials Chemistry
- ✕ Theories of Future Energy Development
- ✕ Economics of Environmental Energy
- ✕ Special Theory of Space Propulsion Fuel Engineering
- ✕ Segregation Engineering I
- ✕ Power Systems Engineering I
- ✕ Gas Turbines A I
- ✕ Introduction to the Environment/Energy Engineering
- ✕ Thermal Energy Engineering
- ✕ Introduction to Environmental Engineering
- ✕ Theories of Environment/Energy Policies

- ✕ Nano-Bioengineering
- ✕ Recycling Engineering
- ✕ Thermal Engineering II
- ✕ Reaction Engineering II
- ✕ Ethics for Technicians
- ✕ Theories of Environment/Energy Policies
- ✕ Nuclear Energy Engineering
- ✕ Global Environment Engineering
- ✕ Study of Environmental Health Risks
- ✕ Nano-/Micro-Fabrication
- ✕ Energy Engineering
- ✕ Mechano-Bioengineering
- ✕ Bio-Interfacing Engineering
- ✕ Thermal/Energy Engineering
- ✕ Flow Studies I

The screenshot shows a website interface with a navigation menu on the left, a table of contents in the middle, and a network diagram on the right. The navigation menu includes sections like '案内' (Introduction), '検索' (Search), and 'ツールボックス' (Toolbox). The table of contents lists various topics such as '進化する教科書 Wiki', '物性物理学入門', '科学技術社会特論', '生体イメージング', 'メカバイオエンジニアリング', 'バイオテック/ロジィ', 'エネルギー物質化学', '環境エネルギー-材料科学特論', '未来エネルギー-開発論', '環境エネルギー-経済学', '宇宙推進燃料工学特論', '分離工学 I', '電力システム工学第1', 'ガスタービンA第一', '環境・エネルギー一般論', 'エネルギー工学', '熱・エネルギー工学', '環境工学概論', '環境エネルギー-政策論', 'リサイクリング工学', and '熱工学第二'. The network diagram on the right is a complex web of interconnected nodes and lines, with labels like 'エネルギー消費', '排出量', '環境工学', 'エネルギー工学', and '環境エネルギー工学'.

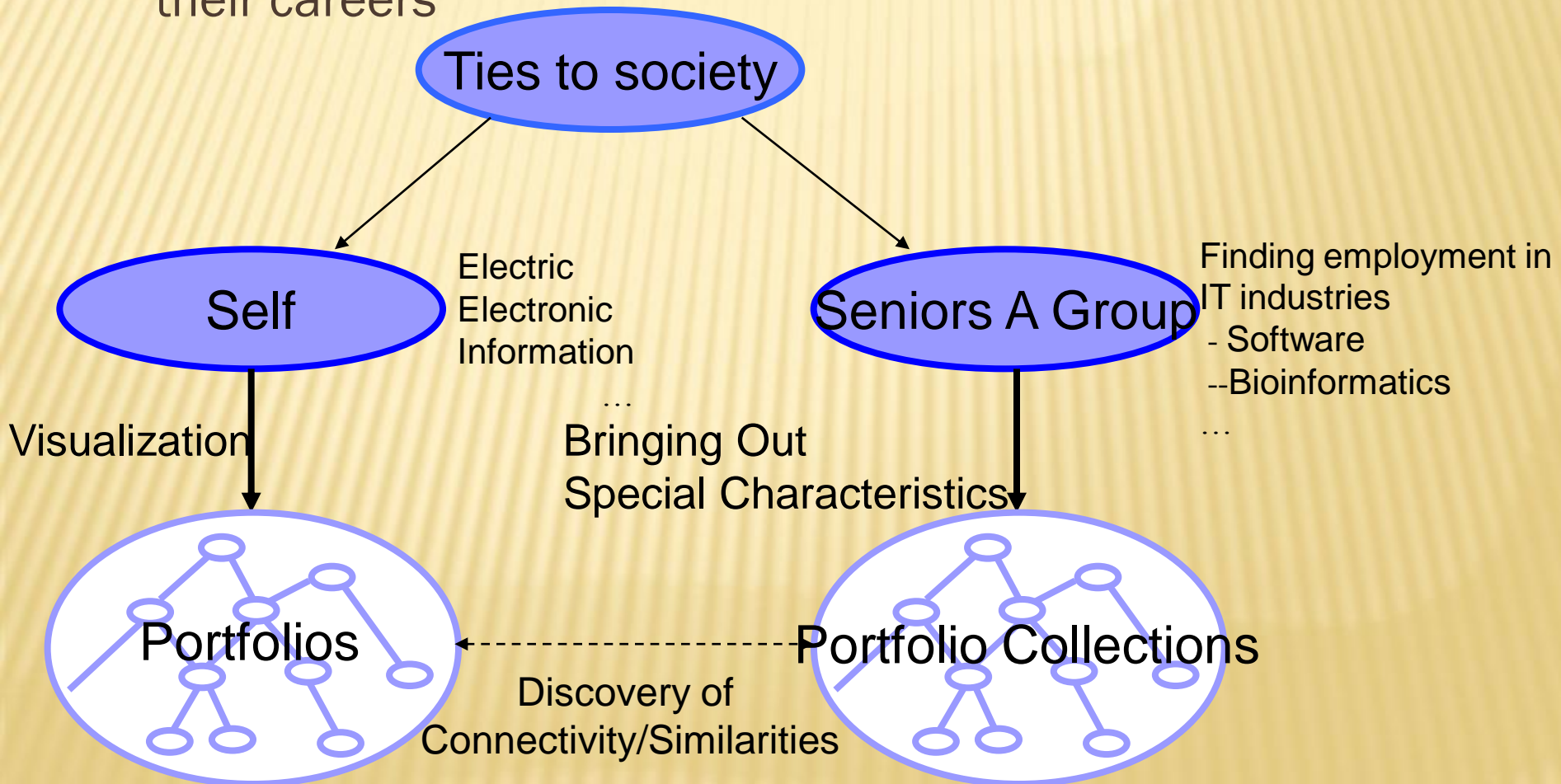
# **KNOWLEDGE TIES WHICH TRANSCEND THE UNIVERSITY LEVEL**

---



# PORTFOLIOS AND PATH SIMULATIONS

- ✘ Visualization of own degree of learning attainment
- ✘ Studying academic records of one's seniors and relationship to their careers



# SUMMARY

---



# EDUCATION, RESEARCH & UNIVERSITIES ON THE INTERNET

“Global Focus on Knowledge” and “Interfacing”



# ***NEED FOR STRUCTURING OF KNOWLEDGE***

**“Know Others”**