Considerations on Society as a Global System - 2

Symbiosis of societies

in the absence of government (Continued)

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Game Theory (Review)

- Zero sum game and Non-zero sum game
- Minimax as a methodology for decision making
- Standard to assess common values for a particular situation:
  - Pareto efficiency
  - Fairness
- Nash’s equilibrium to assess the degree of stability in a particular situation

Versions of Non-zero Sum Game

- Cooperation is mutually favored:
  - This game has a Nash's equilibrium when Minimax would achieve Pareto optimality as an equality between players.
- Negotiation Game:
  - Traffic rules, frequency allocation, currency, and language
  - Computing strategies by Minimax theorem is not a solution. Nash's equilibrium is achieved when Pareto efficiency would be achieved.
- Unfair negotiation game:
  - Dating game, and standard setting (keyboard, mobile phone, VTR, OS, etc.)
  - Computing strategies by Minimax theorem is not a solution. This game has a Nash's equilibrium when Pareto optimality would be achieved, but not as an equality.

Rousseau's Parable of Deer Hunting

If a deer was to be taken, every one saw that, in order to succeed, he must abide faithfully by his post: but if a hare happened to come within the reach of any one of them, it is not to be doubted that he pursued it without scruple, and, having seized his prey, cared very little, if by so doing he caused his companions to miss theirs. (Part II)

Jean-Jacques Rousseau [tr. G. D. H. Cole, 1754]

Discourse on the Origin of Inequality

Available at http://www.constitution.org/jjr/ineq.htm

Deer Hunting Game

A \ B	To abide faithfully by his post	To seize his prey (a rabbit)
To abide faithfully by his post	3, 3	0, 2
To seize his prey (a rabbit)	2, 0	1, 1

In the end, the man captured a rabbit instead of a deer. What would be the best solution for both?

Lessons learned from the deer hunting game

- Even when both parties would obviously have gains, players may accept the second best option to minimize the maximum loss (or minimax). Therefore, the outcomes that are Pareto efficient are avoided.
- However, Pareto optimality can be attained with a certain signal or enforced action. (Nash's equilibrium)
- In some cases, situations are more mysterious.

Prisoner’s Dilemma

- Two suspects will make a choice, who are arrested by the police as conspirators.
- They are separately being kept in a solitary cell.
- They can choose to confess or remain silent.
- If both decide to confess, both will need to serve five years.
- If both decide to remain silent, both will serve two years for a minor crime.
- If one chooses to confess and the other keeps silent, he will be released and the other will serve ten years.
- If one keeps silent and the other betrays, he will serve ten years while the other will be released.
- What would they do?

Prisoner's Dilemma

Prisoner B / Prisoner A	To keep silent	To confess
To keep silent	-2 -2	0 -10
To confess	-10 0	-5 -5

According to the Minimax principle…

Prisoner B / Prisoner A	To keep silent	To confess
To keep silent	-2 -2	0 -10
To confess	-10 0	-5 -5

Both prisoners decide to confess, which will result in the second-best situation.

Even when the Minimax principle is not applied…

Prisoner A \ Prisoner B	To keep silent	To confess
To keep silent	-2 -2	0 -10
To confess	-10 0	-5 -5

The option of confession will yield a better result regardless of the other's choice. (A dominant strategy exists.)

The dilemma faced in the prisoner's dilemma

- When players take a dominant strategy with rationality stricter than the minimax rules, the outcome is Nash's equilibrium. (A player cannot help but betray unless he/she knows the counterpart would not betray.)
- The dilemma they face is that the solution based on the minimax rules and Nash's equilibrium is Pareto inferior. Perfect rationality of individual players will not achieve optimality for a team.
- Moreover…

How about in Prisoner's dilemma?

Prisoner B / Prisoner A	To keep silent	To confess
To keep silent	-2 -2	0 ? -10
To confess	? -10 0	-5 -5

The payoff is always better when a prisoner unilaterally betrays the counterpart! Pareto optimality does not equal to Nash's equilibrium.

Deep dilemma in Prisoner's dilemma

- The payoff function yields gains for both parties by chance. However, even in such a case, players may choose to betray in the next game. Past experience does not bring future benefits?
- In case players can discuss in advance (for instance, they have a cell phone), they are still tempted to betray.
- Does Prisoner's dilemma rarely occur?

Dilemma in Security

A \ B	Arms Control	Military Expansion
Arms Control	-2 -2	0 -10
Military Expansion	-10 0	-5 -5

Versions of the Prisoner's Dilemma

- Dilemma in security issues
- Tragedy of the commons
- NHK subscription fees
- Supply of public goods
- Observance of a wide variety of rules

- Prisoner's dilemma is not always evil.
  - The case of prisoners; carte formation

Chicken Game

- A version of the game that people play to demonstrate that they are not cowards (chicken).

- Two drivers on motorcycles both head for a single lane from opposite directions. The motorcycles run at top speed. The first to put on the brakes, a chicken, will lose.
- Drivers on motorcycle head for a cliff. The motorcycles run side by side at top speed. The first to put on the brakes, a chicken, will lose.

Chicken

A \ B	Brake	Accelerator
Brake	0 0	5 -5
Accelerator	-5 5	-10 -10

Nature of Chicken Game

- The function of the game proves the Minimax equals, at least not the worst solution (Pareto inferior).
- However, Nash’s equilibrium is not given. In the other two situations, Pareto efficiency is achieved under an unequal distribution.
- Therefore…

What if a player pretends to be out of their mind?

A \ B	Brake	Accelerator
Brake	0 0	5 -5
Accelerator	-5 5	-10 -10

Accelerator for oneself and brake for the other?

According to the Minimax principle…

A \ B	Brake	Accelerator
Brake	0 0	5 -5
Accelerator	-5 5	-10 -10

It is natural that both players put on the brake.

Another version of Chicken Game?

USA and North Korea	Assistance	Hard-line Measures
Abandonment of Nuclear Arms	0 0	5 -5
Nuclear Arms Development	-5 5	-10 -10

Does a player gain by pretending to be crazy?

Symbiosis of societies in the absence of government?

- Situation depends on the nature of each problem and issue.
- In some cases, players naturally come to terms with each other and act in cooperation.
- Something may trigger such cooperation among players (by chance, due to the existence of spectators, and through communication) (in negotiation games).
- Players should clarify rules in advance for stability (in the deer hunting game).
- Situation may be extremely hard (in Prisoner’s dilemma and chicken game). --> Birth of customs and government.

Considerations on Society as a Global System - 3

World Systems in

the Modern Ages and 21st Century

Topics for Section 3

- 1st Section - Remarks of forerunners (Review and contemplate on text materials.)
- 2nd Section - Simplification and theorization (Formulate a model as thinking framework)
- 3rd Section - Concept building to apply to the reality (Review correlation between concept and reality)
  - Learn from the current global system to clarify its formation process. A macro standpoint to understand history.
  - Learn technical terms (and concepts) in an organized way to study the topic above.

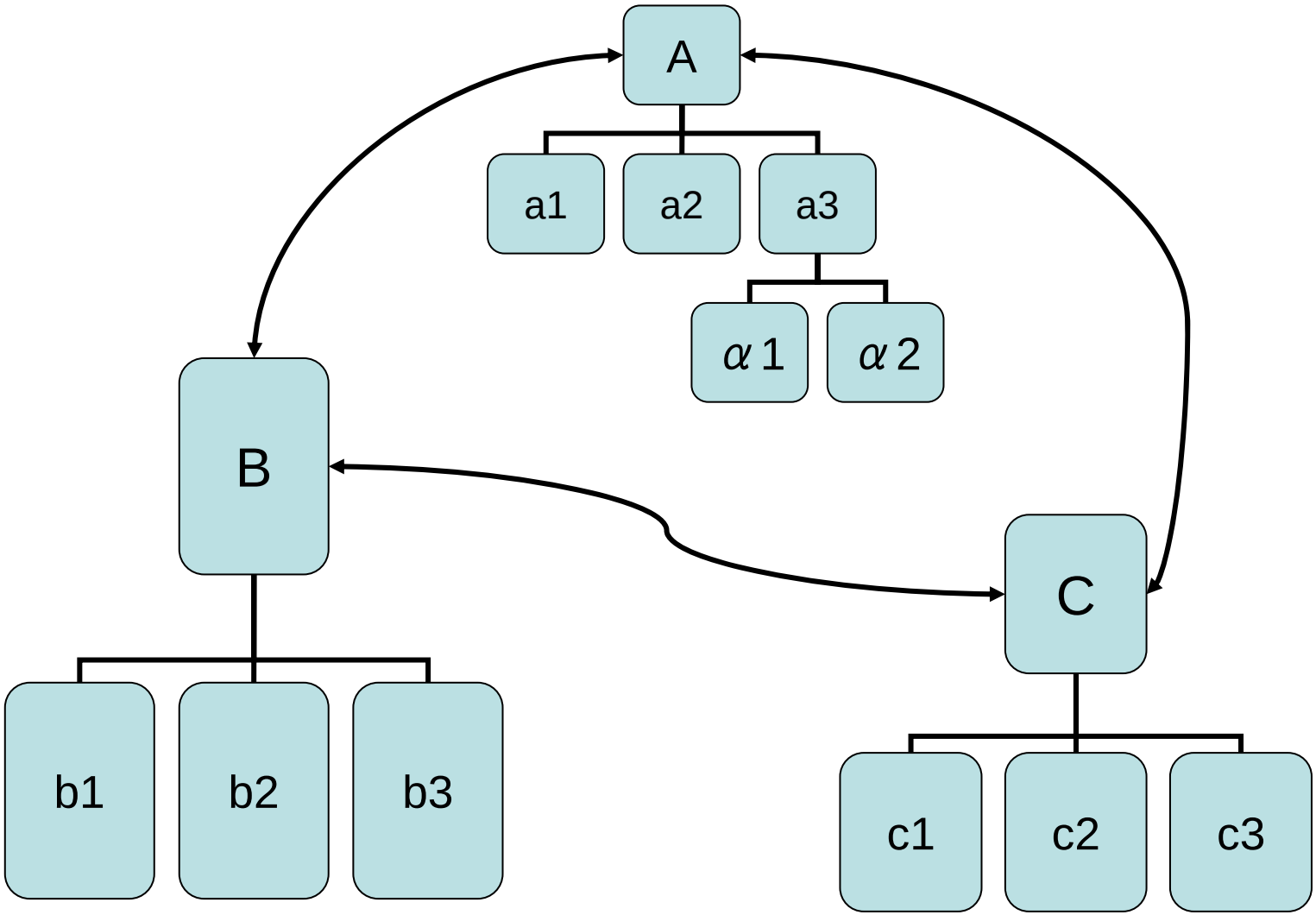
Types of Global Systems

- Entity: entities act to achieve a goal, and are self-assembled with self-awareness.
- Social system: a system consists of entities.
- Parallel entity: a social system of itself is an entity.
- State: the upper-most entity (parallel entity)
- Global system: the upper-most social entity

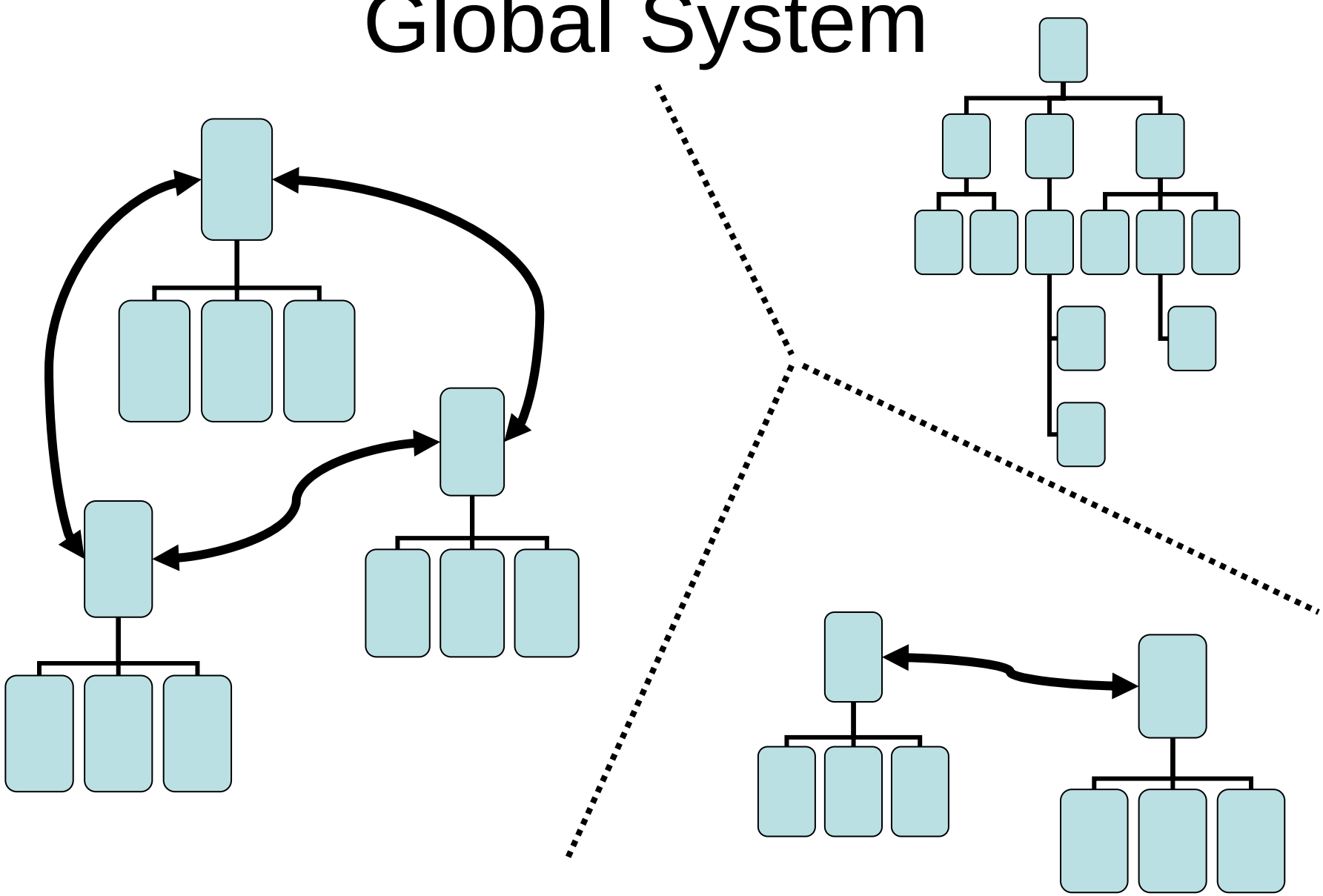
Akihiko Tanaka,

"*Sekai Sisutemu*: World System", University of Tokyo Press, 1989

State as Parallel Entity



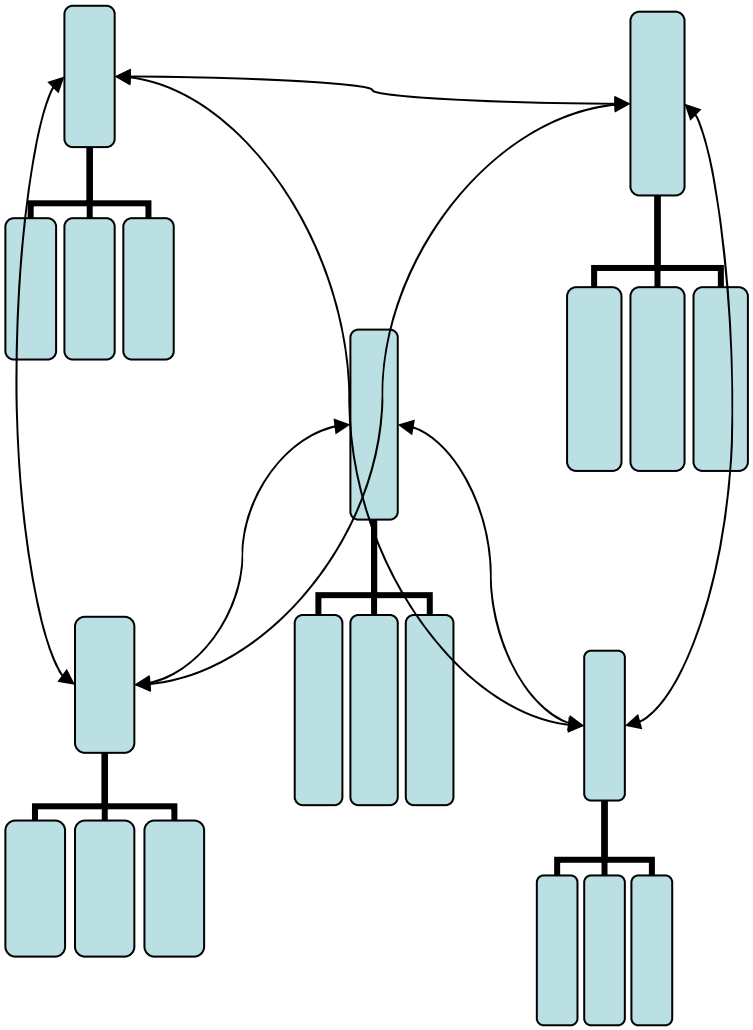
Global System

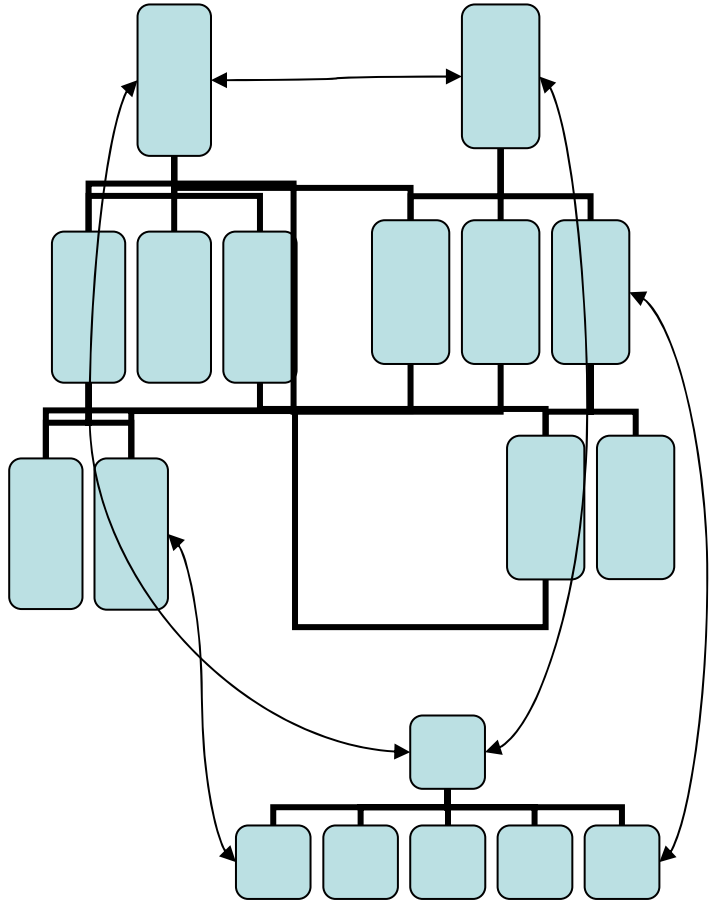


Types of Global Systems

- Global system as an entity
  - Global empire
  - Roman empire, Han dynasty, Tang dynasty, and Mongol empire
- Global system as a non-entity
  - Conifer tree group (parallel tree structure)
  - Tropical tree group (network structure)

Conifer Tree Group and Tropical Tree Group





Global system in the Middle Ages

Donnizone, Matilda of Tuscany,Vatican Library

source : wikipedia

http://upload.wikimedia.org/wikipedia/commons/0/03/Hugo-v-cluny_heinrich-iv_mathilde-v-tuszien_cod-vat-lat-4922_1115ad.jpg

Examples of global systems in the Middle Ages

- Various entities

  -> -> Roman Catholic Church (the Pope, bishops and knights)

  -> -> Great Roman Empire (the Pope and electors)

  -> -> King, marquis, knights and solders

  -> -> City alliance (Hanseatic League), cities and merchants

- Complicated relation

  -> -> Multi-layered, overlapping loyalty

- Universal ideology (Catholicism; Holy War)

The Modern Age

Thomas Hobbes, Leviathan, or The Matter, Forme and Power of a Common Wealth Ecclesiasticall and Civil

source: wikipedia

http://upload.wikimedia.org/wikipedia/commons/d/db/Leviathan_gr.jpg


Non est potestas Super Terram quae

What is a global system in the Modern Age?

- Simplification of entities

  -> -> Superiority of sovereign state

- Simplification of relations

  -> -> Hierarchic relations between sovereign states

  -> -> Horizontal relations between sovereign states

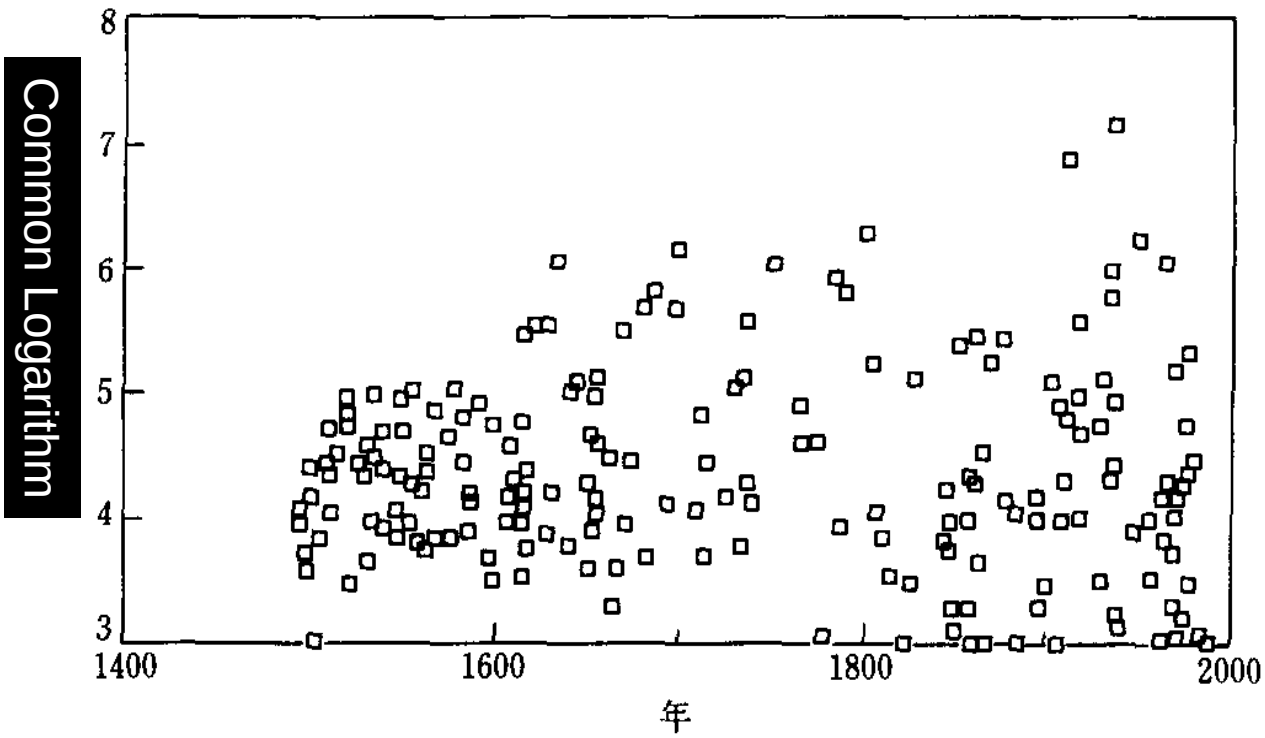
- Competing ideologies

  -> -> religious conflicts, disputes over authenticity, liberalism and Marxism and Leninism, holy war and indiscriminate use of force

Topics in International Political Studies

- Characteristics of international relations in the modern global systems
  - War and peace
  - Diplomatic relations
  - Codes (International Law)
  - Superpower (distribution of power)
- Relationships between global economy and international relations
- Dynamics (and changes) of the modern global systems

Point Diagram of War Casualties



Shiro Harada "*Kindai Sekai System ni okeru Sensou to sono Toukeiteki Kijyutsu:* Wars -statistical description of modern global systems";
Akihiko Tanaka and Yoshinobu Yamamoto (eds.) *Sensou to Kokusai System:* War and International System, University of Tokyo Press, 1992

Changing Distribution of Power in the Modern Ages

- 16th Century Bipolar (France and Spain)-> Monopolar (Spain)
- 17th Century Multipolar-> (Thirty Years' War)-> Monopolar (France)
- 18th Century Monopolar (France)-> Multipolar-> Monopolar (France)
- 19th CenturyMonopolar (France)-> Multipolar
- 20th Century Multipolar-> Bipolar (US and Soviet)

Distribution of Logistic Capability

- 16th Century Monopolar (Portugal)-> Bipolar (Portugal and Spain)-> Multipolar
- 17th Century Multipolar-> Monopolar (Netherlands)-> Bipolar (Netherlands and Britain)
- 18th Century Monopolar (Britain)-> Bipolar (Britain and France)
- 19th Century -> Monopolar (Britain)-> Bipolar (Britain and Germany)
- 20th Century Bipolar (Britain and US)-> Monopolar (US)

What is a Global System in the 21st Century?

- Think according to the changing power distribution.
  - What happened at the end of Cold War (bipolar conflict)?
  - Based on existing global systems in the modern age
- Think according to the distribution of ideas and concepts.
  - ”The End of History…" (Francis Fukuyama)
  - ”The Clash of Civilization…" (Samuel Phillips Huntington)
  - Different approaches from existing international policy studies

“New Medievalism”

- Emergence of various entities
  -> -> Various states (superpowers and small nations)
  -> -> Various companies (large corporations and ventures)
  -> -> Various NGOs (good and bad NGOs?)
  -> -> Various international organizations (UN, WTO, IMF, G7/8 summit meetings)
  -> -> Various regions (cities and regional alliances)

“New Medievalism”

- Complex relation
  -> -> State - Corporation - NGO - International organization
  -> -> Multi-layered, overlapping identity
- Liberalism as universal ideology
  -> -> Market economy as an economic system
  -> -> Liberal democracy as a political system
  -> -> International trend of outlawing wars and promoting universal human rights

Akihiko Tanaka [tr. Jean Connell Hoff]
The New Middle Ages: The World System in the 21st Century,
House of Japan, 2002

Different international political spaces exist in parallel.

- R.Kagan
- -> Kantian paradise and Hobbesian jungle
- F.Fukuyama
- -> Post-historic world and historic world
- R.Keohane/J.Nye
- -> Complex interdependence and realism
- K.W.Deutch
- -> Security community and the others

Trichotomy of International Political Space

- Robert Cooper's contribution
  - Pre-Modern World
  - Modern World
  - Post-Modern World

Robert Cooper, *The Breaking of Nations,*
New York: Atlantic Monthly Press, 2003

Culture of International Relations (Wendt)

- Hobbesian
  - Relations between enemies in a state of war
- Lockian
  - Relations between rivals in the balance of power
- Kantian
  - Relations between friends in the security community

Alexander Wendt, *Social Theory of International Politics*
(Cambridge: Cambridge University Press 1999)

Three Spheres

- 1st Sphere --”New Medieval Sphere"
  - Modernization has almost been completed. Matured democracy and market economy.
  - Western Europe, North America, Japan, and Oceania
- 2nd Sphere --”Modern Sphere"
  - The modernization and formation of states have been underway. Unstable market.
  - China, India, Russia, East Asia, etc.
- 3rd Sphere --”Chaotic Sphere"
  - Actual decomposition of states.
  - Sub Sahara and Central Asia

Politics in the 1st Sphere

Point of issue: Economic issues (efficient distribution), and symbolic issues (life that people can value)

Game management: Efficient domestic control, and increasing governance in the international sphere

Entity: Variety (democratic government and entities in civil society), and ambiguous distinction between internality and externality.

Means: Economic means and symbolic manipulation (convincing). Rare international wars (establishment of security community).

Threat: Transnational social issues (crime, ethnicity, etc). Economic fluctuation, and environmental issues.

Politics in the 2nd Sphere

Point of issue: Military issues (territorial security), and economic issues (development)

Game management: Internal control with minimum international control.

Entity: Sovereign state (democratic and authoritative countries). Internal and external distinction.

Means: Military and economic means. Mobilization of nationalism. International wars are possible. (Stability based on balancing, bandwagon and strategic alliance.)

Threat: Military threat (invasion and threatening), separatism and tyranny.

Politics in the 3rd Sphere

Point of issue: Military issues

Game management: Games are unrestrained in any case. (Hobbesian competition?)

Entity: Ethnic group, military, religious organization, terrorist group, and international NGO

Means: Military, tribalism, religion and civil war (conflict and chaos for national unification)

Threat: War, hunger, massacre, epidemic disease, and poverty