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Water Politics

Summer School on Water and International Relations
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1. The Hydraulic Theory of Society

Early State Building and Formation of Society started in River Valleys

Yellow River (China)



Ganges, Indus (India, Pakistan)



Nile (Egypt)



Euphrates/ Tigris (Iraq)



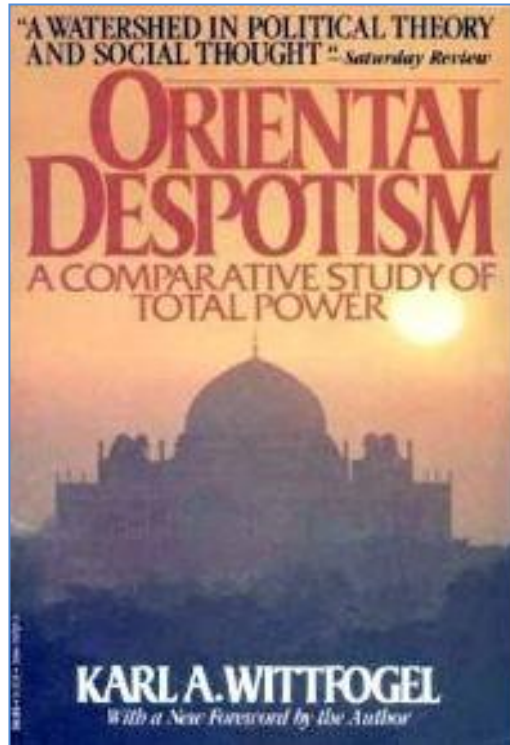
1. The Hydraulic Theory of Society



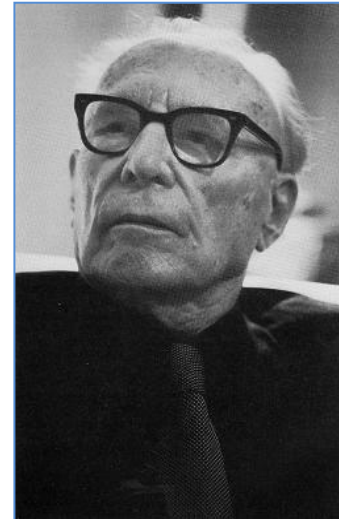
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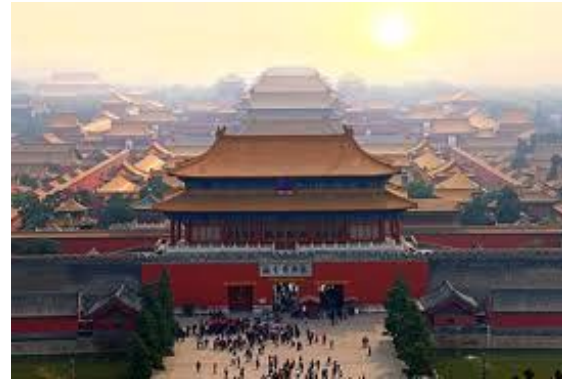


1981
(reprint of 1957)



Karl A. Wittfogel
(1896-1988)

1. The Hydraulic Theory of Society



1. The Hydraulic Theory of Society

The high fertility of the soil in River valleys is the basis for high population growth

Artificial irrigation is the basis of agriculture

The available amount of water has to be regulated and distributed in the course of seasons by dikes, dams, reservoirs, canals, ditches, ponds etc.

To manage these tasks a bureaucracy is necessary

1. The Hydraulic Theory of Society



Foto Menzel

Wasserteiler von Daqiangyen

1. The Hydraulic Theory of Society



Foto Menzel

Wasserteiler von Daqiangyuan



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1. The Hydraulic Theory of Society

The water management on the village level promotes collectivism (opening of the dike means, all fields are flooded on the same day, planting and harvesting has to be coordinated)

The surplus produced by agriculture based on artificial irrigation is used to feed the pillars of the oriental state based in the capital (bureaucracy, military) and to finance the luxury consumption of the princes, mandarins and clergy and their prestigious buildings (palasts, temples, tombs)

If agriculture is based on rainfall, the development of state and society is completely different

Feudalism and later Capitalism instead of a Bureaucratic Society is the result

2. What is Water Politics (Hydropolitics) today?

The term *Water politics (Hydropolitics, Water Governance)* means all forms of regulation to collect, produce, distribute, use, purify and reuse fresh water and waste water (sewage).

Possible instruments are laws, ordinances, treaties, prices, subsidies, science and technology.

As far as a transboundary dimension is involved, international agreements and international trade are further instruments.

2. What is Water Politics (Hydropolitics) today?

Water politics can be part of

- development politics
- agricultural politics
- social politics
- economics
- environmental politics
- international politics

2. What is Water Politics (Hydropolitics) today?

Problems are different from country to country

- depending on the abundance or lack of water
- depending on artificial irrigation or irrigation by rainfall in agriculture
- depending on the factor, if agriculture, industry, households or tourism is the major consumer of water
- depending if the water available comes from internal resources or transboundary river basins or artifiers

3. Public Goods and Water

Public (or collective) goods are defined by Nonrivalry and Nonexclusion

		Rivalry	
		yes	no
Exclusion	yes	① private good	② club good
	no	③ common good	④ public good

3. Public Goods and Water

- ① Water as a *private good* is regulated by the market (cost and price of water and waste water)
collection, production, distribution, purification of water is organised by private actors
- ② Water as a *club good* is regulated by membership to a village, tribe etc.
collection etc. is organised by custom
- ③ Water as a *common good* is not regulated
everybody is free to collect etc. water
problem: tragedy of the commons! (Hardin, Garrett: *The Tragedy of the Commons*.
Science, 162 (1968), p. 1243-1248)
- ④ Water as a *public good* is regulated by law
collection etc. is organised by the state

Which alternative is given depends on the type of society, the level of development, the lack or abundance of water

4. Water as Classical Case for Distribution conflicts

Distribution conflicts with respect to water are the result of rivalry between users or exclusion of users

In case of nonrivalry or nonexclusion the probability of conflicts is less

Distribution conflicts *within societies* between

- farmers, villages, tribes
- large landowners vs. farmers
- agriculture, industry, households, tourism

Distribution conflicts *between states* in case of

- transboundary river systems
- of transboundary aquifers

4. Water as Classical Case for Distribution conflicts

The classical approach to overcome conflicts is redistribution of water

- a) by force
- b) by money
- c) by agreement

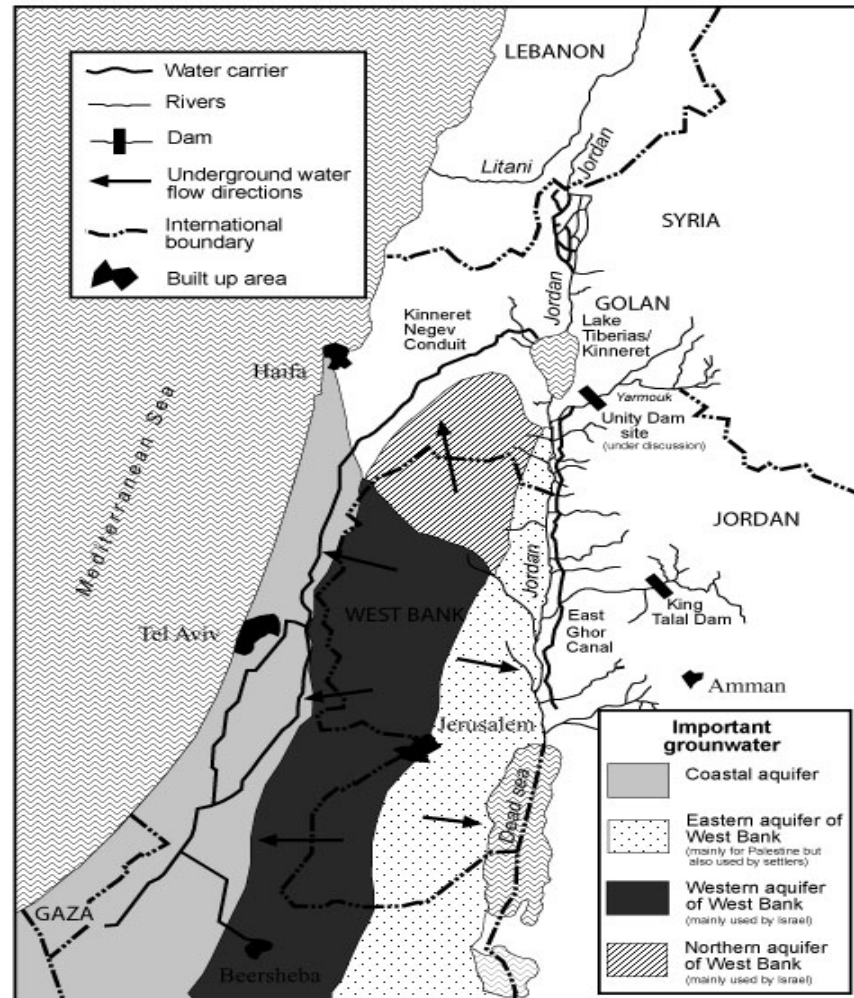
The use of force is a question of power

The use of money is a question of wealth

The use of agreement is a question of good will and sanctions
in case of violation of agreements

4. Water as Classical Case for Distribution conflicts

The Jordan Basin and its tributaries, major aquifers, the risparians and water transfer system



Source: After Ohlsson 1997 & BGS 2002

5. Alternatives to the Classical Approach (Redistribution)

- 1) producing of additional water by technical or economic means
- 2) water saving
- 3) efficient use of water
- 4) trade of virtual water
- 5) reuse of waste water

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5. Alternatives to the Classical Approach (Redistribution)

1) producing of additional water by technical or economic means



- drilling of wells

- collecting of rain by cisterns



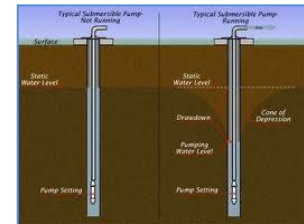
- storing of flood water (wadi)

- pumping of fossil water from aquifers

- desalination of water



- importation of fresh water via pipelines, tankers, tubes, bottles



- vaccination of clouds



5. Alternatives to the Classical Approach (Redistribution)

- 1) producing of additional water by technical or economic means
- 2) water saving

5. Alternatives to the Classical Approach (Redistribution)

2) water saving



- via prices
- repair of pipes etc.
- reducing evaporation
- etc.



5. Alternatives to the Classical Approach (Redistribution)

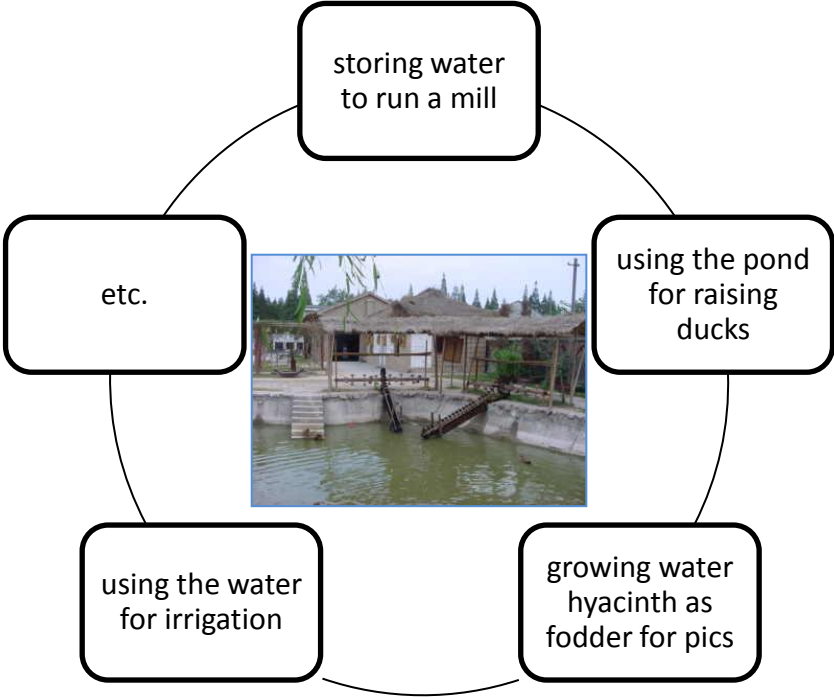
- 1) producing of additional water by technical or economic means
- 2) saving of water
- 3) efficient use of water

5. Alternatives to the Classical Approach (Redistribution)

3) efficient use of water



- trickle irrigation/ drip irrigation/ microirrigation
- Multiple use of water



5. Alternatives to the Classical Approach (Redistribution)

- 1) producing of additional water by technical or economic means
- 2) water saving
- 3) efficient use of water
- 4) trade of virtual water

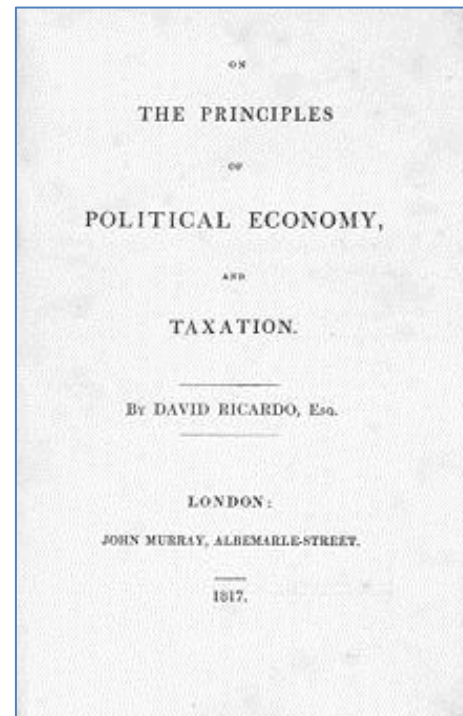
5. Alternatives to the Classical Approach (Redistribution)

4) trade of virtual water

The Modell of Comparative Advantages by David Ricardo



David Ricardo (1772-1823)



1817

5. Alternatives to the Classical Approach (Redistribution)

Comparative advantage (absolute)

amount of necessary labour (hours) **before** specialisation

	Portugal	England	sum
wine	80	120	200
cloth	100	90	190
sum	180	210	390

5. Alternatives to the Classical Approach (Redistribution)

Comparative advantage (absolute)

amount of necessary labour (hours) **after** specialisation

	Portugal	England	sum
wine	(80) 160	(120) 0	(200) 160
cloth	(100) 0	(90) 180	(190) 180
sum	(180) 160	(210) 180	(390) 340

values in brackets = division of labour **before** specialisation

5. Alternatives to the Classical Approach (Redistribution)

Comparative advantage (relative)
amount of necessary labour (hours) **before** specialisation

	Portugal	England	sum
wine	80	120	200
cloth	90	100	190
sum	170	220	390

5. Alternatives to the Classical Approach (Redistribution)

Comparative advantage (relative)
amount of necessary labour (hours) **after** specialisation

	Portugal	England	sum
wine	(80) 160	(120) 0	(200) 160
cloth	(90) 0	(100) 200	(190) 200
sum	(170) 160	(220) 200	(390) 360

values in brackets = division of labour **before** specialisation

Portugal – wine industry

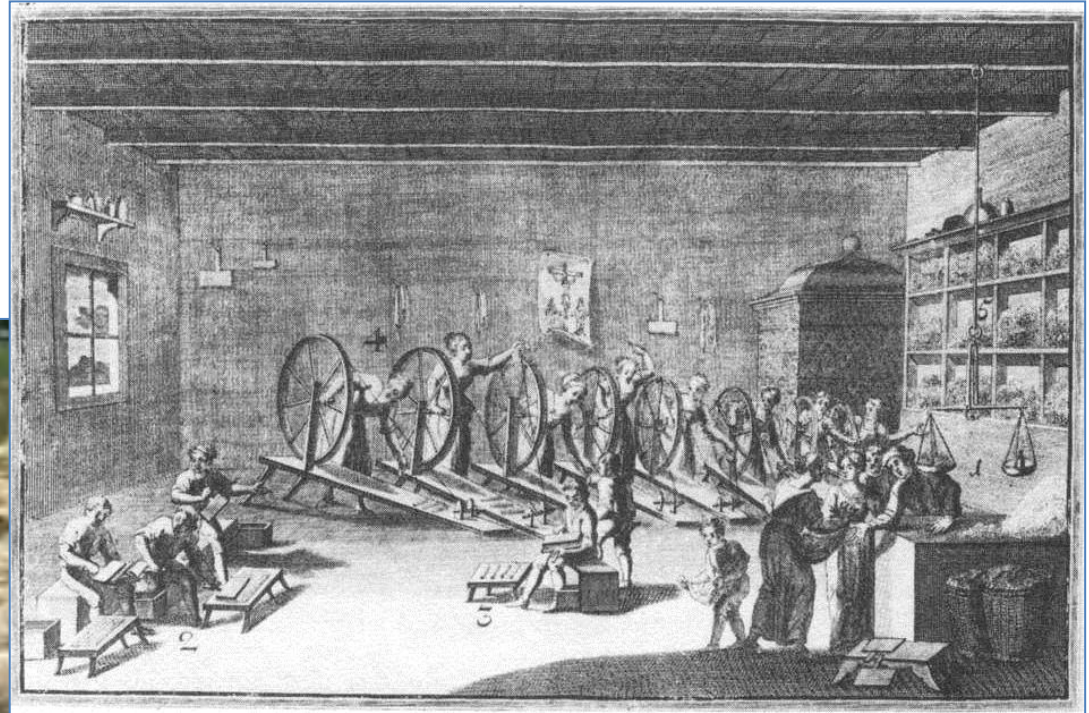
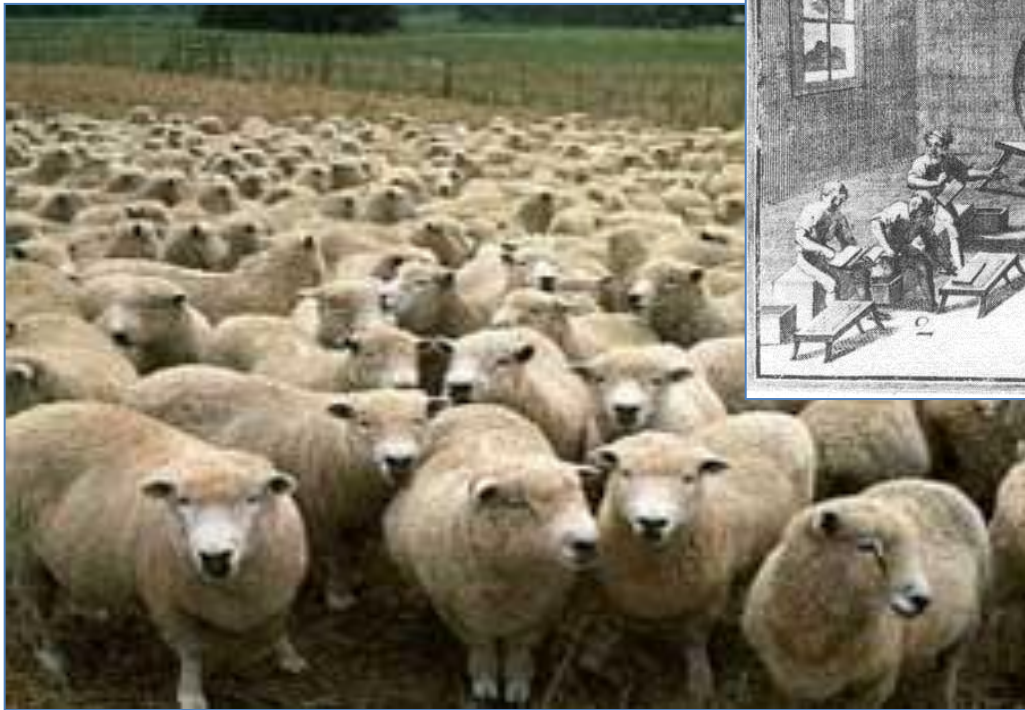


View of Oporto
and

Transport of wine on the Douro around 1780



England – woolen industry



Woolen mill around 1750

5. Alternatives to the Classical Approach (Redistribution)

4) trade of virtual water

- England is a rainy country

good conditions for pasture and raising sheeps
specialisation in woolen goods (cloth)

- Portugal is a sunny country

good conditions for growing rapes (deep roots)
specialisation in wine (Portwine)

5. Alternatives to the Classical Approach (Redistribution)

5) reuse of waste water

Waste water and reclaimed waste water as a public good

- big sewage treatment plant

Advantage: good quality of water
good for the environment

Disadvantage: high price for water and waste water
ambitious technical and management knowledge
is necessary (→ Hydraulic Society)



5. Alternatives to the Classical Approach (Redistribution)

5) reuse of waste water

Waste water and reclaimed waste water as a private or club good

- Small sewage treatment plants

Advantage: low costs
easy to handle, no sophisticated technical knowledge necessary
low managerial effort



Disadvantage: quality of reclaimed water is poor (no drinking water)
use of reclaimed waste water is limited to irrigation, toilet flush, cooling in industry, irrigation of green spaces, sport grounds etc.
low acceptance by consumers by reasons of quality

5. Alternatives to the Classical Approach (Redistribution)

Alternatives to the redistribution of water can offer contributions to

- development in arid zones
- conflict resolution in case of redistribution conflicts
- solve environmental problems