

# Summing up and moving forward

- Why is the knowledge of research paradigms necessary ?
- What are the key differences across the paradigms ?
- Were you able to look up a good research book with a discussion on research paradigms ?



# A quick recap...

## paradigms differ in terms of

- Assumptions about the nature of social reality and how it should be investigated
- Hypothesis / research questions
- Choice of data collection techniques
- Choice of techniques of analysis

*Gendering Water and Climate Science  
Research in South Asia*

# Flowing against the current: the socio-technical mediation of water insecurity in peri-urban Gurgaon

- Overall impressions about the paper
- What does this tell us about how qualitative/interpretive research is done ?



**Gendering Water and Climate Science  
Research in South Asia**



# Inter-disciplinary water resources research: an introduction

Vishal Narain

Gendering Water and Climate Science  
December 2023  
Research in South Asia

# For reflection

- What according to you is inter-disciplinary water research ?
- Why is it necessary ?



**Gendering Water and Climate Science  
Research in South Asia**

# Conceptual lenses for inter-disciplinary water resources research

- What is a conceptual lens
- Socio-technical lens
- Hydro-social lens
- Political ecology



Gendering Water and Climate Science  
Research in South Asia

# Some ideas

- An approach that looks at the relationship of institutions with technology
- Inter-disciplinary, across the social and natural sciences
- Encourages engineers to consider the institutional context of their technical knowledge, and vice versa
- Located in the SCOT literature (social construction of technology literature)

# The basic premise

- Technology is socially constructed
- Technology has social effects
- Technology has social requirements for use
- Kloezen and Mollinga (1992)

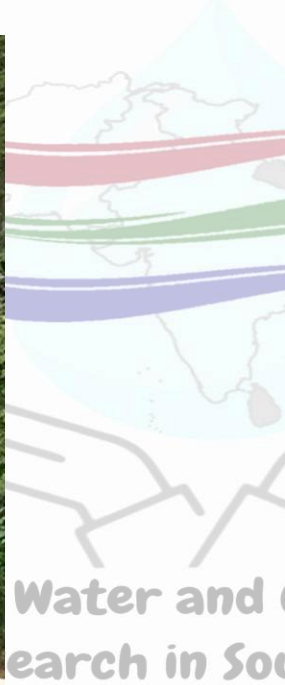


Gendering Water and Climate Science  
Research in South Asia

# Technology is socially constructed

- Technology is shaped by interactions among actors; it does not exist in a social vacuum
- Hand –pump without a handle
- The table in the board room and the table in the canteen
- It reflects certain knowledge and belief systems

# Pumping wastewater on the nallah



# Pump-sets with locked gates



# Technology has social requirements for use

- Different kinds of technology or design have different operational implications
- The design of an artifact is shaped by how it shall be used



**Gendering Water and Climate Science  
Research in South Asia**

# Technology has social effects

- E.g. mobiles
- The institutional effects of increased teledensity
- The effects of the green revolution technology
- The effects of facebook on social interaction
- The effects of technology on governance
- Different water technologies have different social effects

# The socio-technical mediation of water insecurity

- Water is accessed through technologies pump-sets (electric, diesel)
- Outlets, drains, pipes, culverts, hydraulic structures
- Water is accessed through institutions
  - Systems of water rights
  - Social relationships, social capital
  - Local norms of co-operation

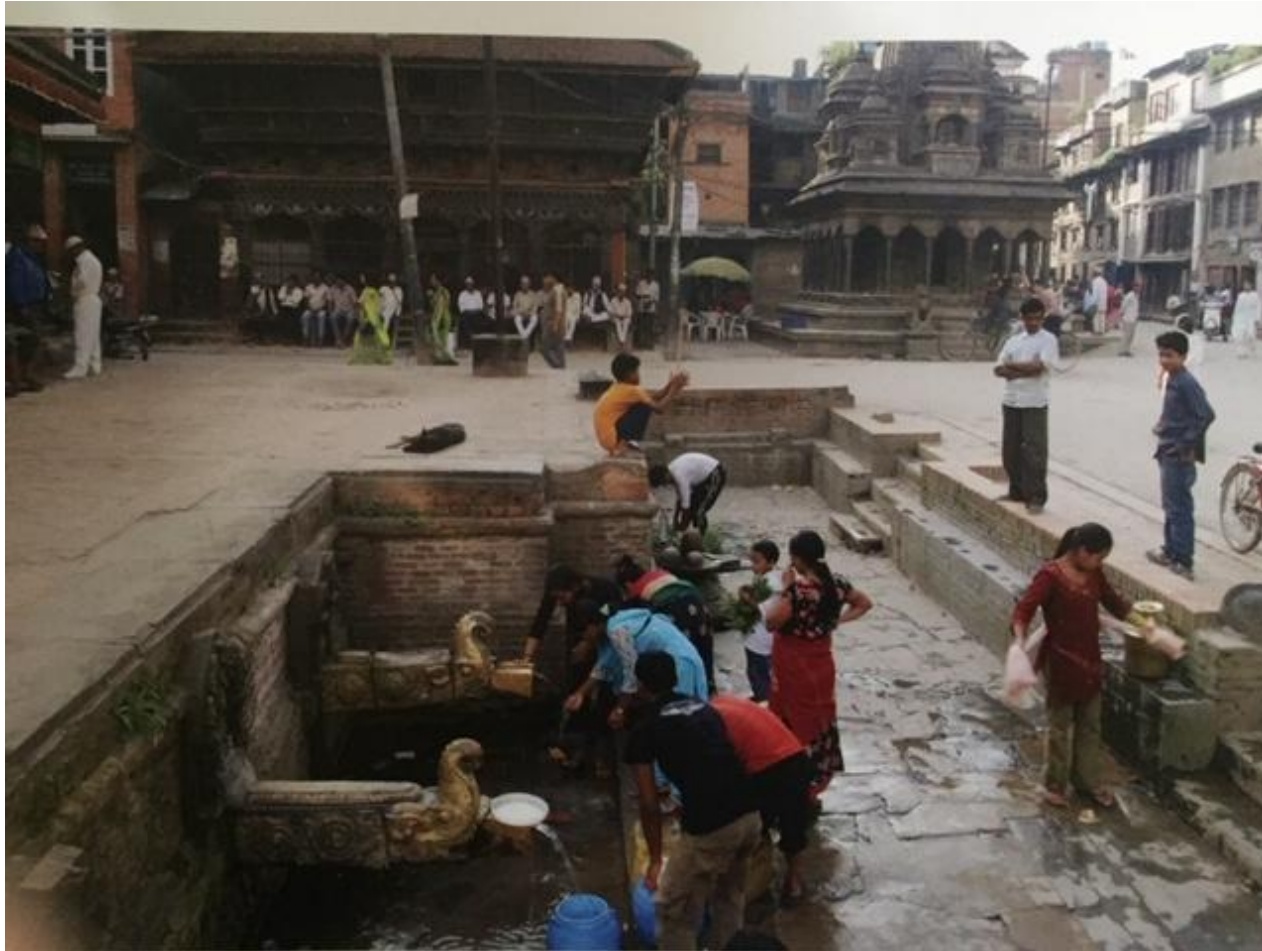
# Blessing or curse ? A farmer managed irrigation system in Rawta

- What kind of research is this ?
- How does a socio-technical lens help us understand the dynamics around a farmer managed irrigation system ?
- What factors shape the vulnerability of farmers to the effects of climate change?

Which of the three dimensions of the socio-technical approach is reflected in this picture ?

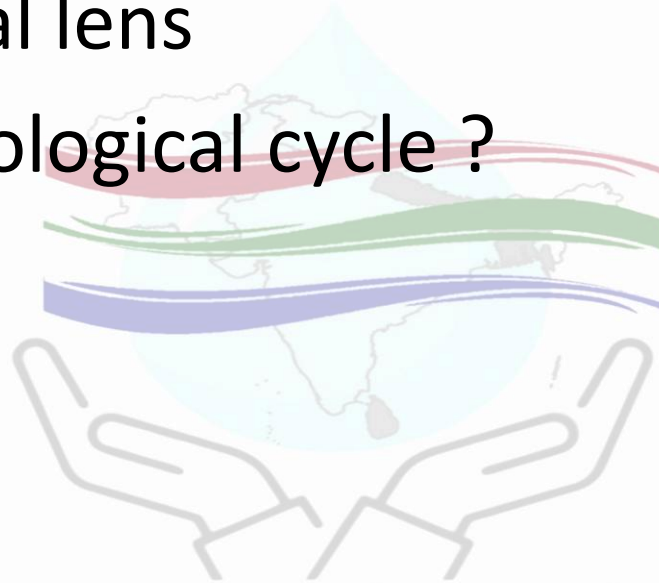


Can you build a socio-technical story around this picture ? (Source: Ashraf 2016)



# Inter-disciplinary approaches to water studies

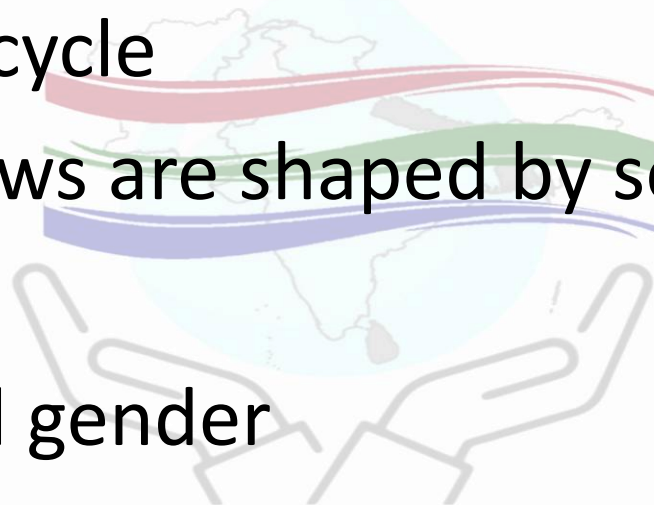
- A hydro-social lens
- What is hydrological cycle ?



**Gendering Water and Climate Science  
Research in South Asia**

# A hydro-social lens

- Water does not flow only according to the hydrological cycle
- But water flows are shaped by social relations
- Eg. Caste and gender
- social relations shape the flows of water
- Water access, control and governance are socially embedded

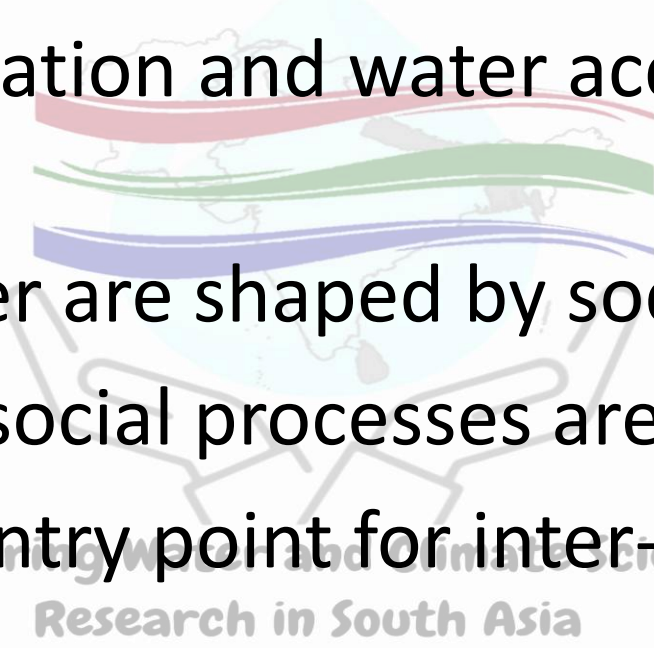


Center for Water and Climate Science  
Research in South Asia

# Some examples

- When a system of D.I. pipes was replaced by concrete pipes, the new pipeline was first established in the Rajput (upper caste) settlement (Narain et al., 2020)
- Cleaning the water stand-post by an upper caste woman after being used by a lower caste woman (Ranjan and Narain 2012)
- Lower caste women face the greatest struggles in accessing water (Joshi 2014)
- Conflicts inside a water users association were a reflection of social rivalries (Narain 2003)

# Relevance of a hydro-social lens

- Draws attention to the relationship between social organization and water access and control
  - Flows of water are shaped by social relations
  - Physical and social processes are related
  - Conceptual entry point for inter-disciplinary water studies
- 
- Research in South Asia

# What is political ecology ?

- A conceptual lens that draws attention to the relationship between access to natural resources and social, economic and political power
  - (Eric Swyngedouw, Bryant and Bailey)
- Political ecology perspective in water:
  - Different actors, individuals and groups can cause water to flow in different directions
  - Water flows not just by the force of gravity, but by the force of power
  - Water is where power is

# Why is a political ecology perspective relevant in the context of water?

- It helps us understand the uneven access to water
- The water crisis in India is an institutional one, rather than a physical one (Shah and Narain 2019)
- Water is scarce for a few, but not for all
- Helps us understand the growing water insecurity in peri-urban contexts, as modern cities grow by usurping water (and land) resources from the periphery (Narain 2014; Narain and Roth 2022)

# Summing up

- Three perspectives
  - Socio-technical
  - Hydro-social
  - Political ecology
- Provide us a conceptual lens to study the relationship between the technical, physical and institutional dimensions of water
- Can be used to structure our approach to inter-disciplinary studies in water
- in the real world, there are close connections between these dimensions of water, that our disciplinary orientation may blind us to

Gendering Water and Climate Science  
Research in South Asia

# Assignment

- Read up any one paper that studies water access and distribution using a hydro-social or political ecology perspective and come to class with a 200 word summary



**Gendering Water and Climate Science  
Research in South Asia**