Introduction to Politics, Technology and Sustainability
POL40100

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Overview

This module contains two thematic areas; one focuses on big questions for politics in a world of rapidly changing technologies, globalization, migration, and challenges to democracy. The other looks at major policy problems (e.g, development, the Energiewende, Resource depletion, and sustainable development) and how they are being addressed by governments, industrial actors, and civil society.

The module is intended as an introduction to the questions and research being addressed in the main thematic areas of the master's program: big transformations and their environmental, technological, and social dimensions; sustainability and democracy in a digital age; and global governance, ethics and technology. The links between these areas and research areas found in the TUM, such as economics and policy, digital technologies, social responsibility and corporate governance, and urbanization, mobility, and energy will be explained.

Note that this document is intended as a cram-sheet summary of the course for last-minute reading. It is not comprehensive and generally leaves out case studies that we looked at during the course (development in Africa, Bees, Geothermal Energy, AI, etc), instead aiming to include some of the more general principles and theories that we've covered.

Attribution

These notes are based off of the readings and lecture slides from the course. I was unable to include links to the relevant readings or lecture slides, but if you look on Moodle they should be fairly easy to find.

Contribution

Pull requests are very welcome: `https://git.sr.ht/~todd/University/tree/master/POL40100/review-notes`

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1 Reflexive Modernization

There is a transition from the 'first modernity' to the 'reflexive modernity'. Society produces many (and new) side effects which can be called '**manufactured risks**'.

These are unintended and cause uncertainty, but can be assessed, which is '**reflexive introspection**'.

The old institutions cannot control these risks (they are uncontrollable; see Risk Society), so they deny the risks; this is '**organized irresponsibility**'. People are alienated from these institutions because of this, and trust erodes.

$$\text{Modernization} \xrightarrow{\text{Creates}} \text{New risks} \xrightarrow{\text{Causes}} \text{Introspection of risks}$$

Institutions losing out in the face of the reflexive modernity include:

- The state loses power, non-state actors gain (corporations, NGOs etc).
- The family is splitting apart and divorce rates rise, womens liberation and work flexibility erode it.
- Religion loses power to secular institutions.
- Traditional political action fades as people don't identify strongly with a single party/ideology.
- Individualism rises.

I assume that 'womens liberation' (which appears in the lecture notes), is referring to a womans' ability to leave a family that doesn't work for her, or raise a family outside of the traditional 'family construct'?

Example

1. Chernobyl blows up
2. Increased critique about modern nuclear practice
3. Widespread concern and distrust of industry, government and experts (established institutions)
4. Increased regulation (to increase trust and decrease likelihood of another disaster)
5. Slowed/abandoned expansion plans → modernity has altered course.
6. **Reflexive modernization**.

2 Risk Society

Modern society is increasingly structured around, and affected by new qualities of risk that have not previously existed. The term was coined by Ulrich Beck in 1986.

These risks are:

- Invisible and undetectable except using science
- Universal; everybody is affected by them (even the rich, and those who produce the risk)
- Irreversible; we can't undo them
- The unknowns of the new risks are more important than the knowns. How can institutions manage this?

Environmental risk becomes the main product of modern society, and the risks that we are exposed to are the product of the modernization process itself.

3 Planetary Boundaries and the Doughnut Economy

Rockström proposed a framework of 'planetary boundaries' which define a safe space for humanity to develop within. If humanity stays within these boundaries, then we are safe, but if we exceed any of the boundaries, then we will be at risk of 'irreversible and abrupt environmental change'.

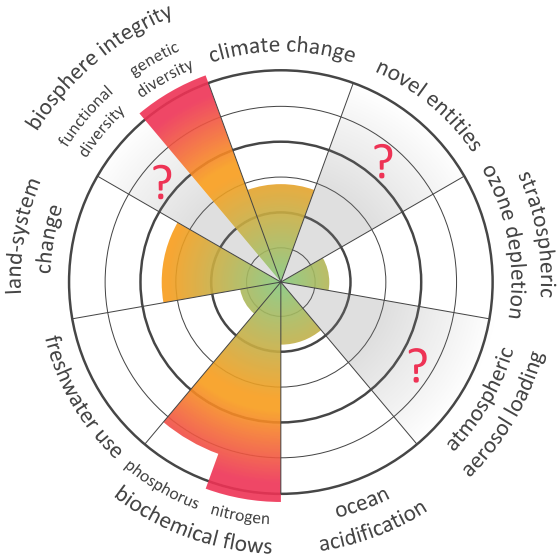

Figure 1: Planetary Boundaries

The Doughnut Economy is an economic model created by Kate Raworth which focuses on everyone's right to basic needs such as food, education, housing, etc, while not limiting opportunities for future generations by protecting our ecosystem. This focus on well-being is at the expense of economic growth.

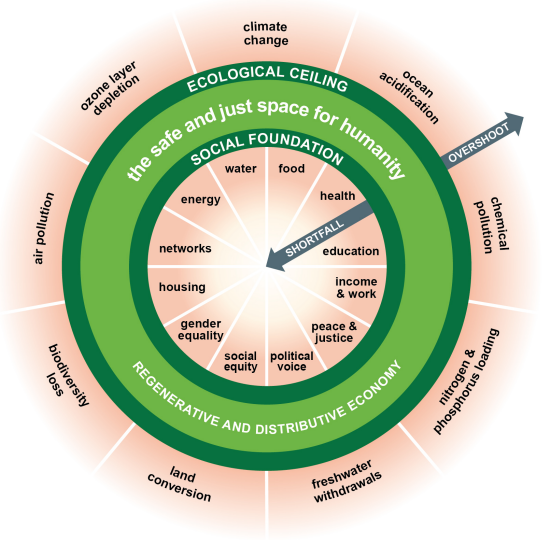

Figure 2: The Doughnut Economic Model

4 Planning the Electricity Grid in Germany

Why does Germany need to expand the grid?

- There's lots more renewable energy generation which is volatile.
- The distance between energy production and consumption is increasing.
- Security of supply needs to continue (as the supply becomes more volatile and geographically distributed).
- Germany is a transit country for energy within the EU energy market.
- Grid expansion is cost effective for securing supply and competitive pricing; maximize utilization and ensure energy can always get to where it is needed. Transmission is currently a bottleneck for renewable expansion.
- Uncertainty of grid suitability for renewables makes renewable investment unattractive, which can jeopardize climate goals.

How has the federal government responded?

- Created 5 laws/amendments to try to speed up grid procurement.
- Simplified the planning and approvals phases:
  - Brought the whole process under the control of one federal ministry for streamlining.
  - This ministry can see the bigger picture and is not as swayed by local concerns.
  - Federal authorities apply the process with more consistency.
  - Federal authorities have one set of rules, regulations and requirements.
  - This process is now more transparent.
- Increased incentives for expansion and optimization.
- Added regulations for financial compensation for landowners.
- Restricted the rights of federal states to oppose new grids, and put time limits on court challenges.
- Made less ugly underground cables the default over power lines, even though they're more expensive.
- Large energy consumers must have smart meters installed (even though the industry doesn't offer flexible tariffs yet, and it could be a cyber security risk).

5 Nuclear Waste Siting

Technical Rationality is a mind that puts faith in empirical evidence and the scientific method. If emphasizes logical consistency and universal impact.

Cultural Rationality gives weight to personal or familiar experiences instead of depersonalized technical calculations, focusing on the opinions of traditional and cultural norms, looking at unanticipated consequences, and trusting process over outcome.

Risk Assessment emerged out of citizens not being able to intelligently make decisions around technology and the environment. It (broadly) doesn't work because the risks were assessed using technical rationality, but they were interpreted through the lens of cultural rationality.

People form a abstract knowledge structure called a '**schema**' which they use to guide their perceptions and expectations. The schema of a topic for a normal citizen is less refined than for

an expert, so when making decisions, citizens will fill the gaps with analogies and experiences from their own lives.

Citizens often look closely at case-specific factors of an issue, and examine the experts themselves. The latter point is important, since often two experts can say different things based off of the same data, forcing the citizens to choose who to trust. In situations where deception is possible, or where there are high-stakes interests at play, citizen scrutiny is highest because of this, which is rational.

The solution of Lasswell is that public debates should feature experts who should interpret and present complex issues to the public to facilitate citizen learning and empowerment, not just supply information.

6 Political Parties

Political parties are central actors in democratic politics, and also in many autocratic and totalitarian regimes. A 'political party' has no single definition, but generally means a group of people organizing to win elections and control government.

Political parties

- Coordinate between public officials, citizens with common (ideological or political) preferences and between citizens and officials.
- Define the agenda of elections.
- Select candidates to run in elections.
- Recruit for elections and for appointed office.
- Serve to represent the ideological positions and social groupings of citizens.
- Stabilize democracy by integrating new citizens (e.g. young people or immigrants) into the political system.

Problems parties face:

- Increasing complexity, especially the pace of change and globalization.
- Increasing expectations of citizens towards individual politicians.
- Strike a balance between employing technocrats and experts to make decisions, and taking only a management role not a decision making or leadership role.

Also, how does society deal with successful anti-democratic parties? Do they become integrated or socialized or do they undermine democracy?

7 Party Systems

A party system is a set of parties that compete with the aim to control government. The term only applies to democracies.

Political 'cleavages' originate from socio-economic and cultural divides. E.g. centralized areas vs regional areas, or secular institutions vs religious institutions, or agrian parties vs pro industrialization parties. Now we see a new environmental cleavage.

The rules of the electoral system are important for forming the morphology (structure) of the party system. Party system types include dominant party (one with many smaller parties), two party (e.g. the UK), multi party (e.g. Germany) and bipolar (two large coalitions which alternate).

'Centripetal party systems' concentrate power around the centre (e.g. two party systems), and 'centrifugal party systems' move power towards the extremes. Plurality systems often produce two party systems along the main cleavage (e.g. the UK) and proportional representation systems often produce multiparty systems with many interests (e.g. Germany).

In the 'electoral market', the supply (parties) satisfy the demand (voters) by positioning themselves as close to the political preferences of as many voters as possible. They search for the sweet spot where their support is largest. This is why parties move towards the center in two-party systems; voters are least rigidly ideologized there, and that's where the most votes are (most people are moderates).

8 China's Governmental Structure

- In the past, lax enforcement of environmental legislation in China was blamed on local government. In a system of political competition, they would prioritize the main goal of economic growth over the sub-goal of environmental protection.
- Chinese leaders have been (re-)concentrating power back in the center, which could lead to improved environmental results.
- The behaviour of local officials has changed with increased attention and more financial resources.
- The strengthening of vertical linkage between the local government and the Ministry of Environment made falsifying information harder for local government, and thus harder to shirk policy implementation.
- There are still questions about the central government's commitment to better environmental governance, and even if it is fully motivated, it still needs good local information (which is improving, but as the Coronavirus outbreak shown, communication is not always smooth).
- There is no silver bullet, and recentralization certainly won't be one. Attention should be paid at all levels of the government hierarchy.

9 Principle Agent Theory

The principle-agent problem occurs when one entity (the agent) is able to make decisions on behalf of another entity (the principle). A dilemma occurs when agents are motivated to act in their own interest, which is not aligned with that of the principle.

The special characteristics of the principle-agent relationship are:

1. The relationship is asymmetric (the principle cannot know what the agent knows, or what the agent actually does).
2. The principle depends on the agent.
3. The principle must come up with strategies to remind the agent of its duties.

Shirking is when the agent minimizes the effort it exerts on behalf of the principle. **Slipping** is when the agent shifts policy away from the principles towards outcome and towards its own preferences.

10 International Organizations

An **International Organization** is a formal organization with a permanent secretariat and at least three member states.

There have been many different 'bigger picture' views on the purpose of IOs over time.

Functionalism says that IOs serve a functional purpose, which is to minimize nationalism and territorial attachment in order to decrease conflict. The ultimate aim was to reduce the power of states and bring governments together through facilitating cooperation.

Neofunctionalism was functionalism, with the additional goal that cooperation between states might spill over from one area to another, and cooperation would become increased, maybe eventually merging the states.

Hegemony Stability Theory says that strong states (hegemons) were required to create regimes and IOs to facilitate their leadership. Hegemons create a 'supply' of IOs and other states fulfill the demand. IOs serve to make the rule of the hegemons more efficient.

Another view is that strong states would create IOs to voluntarily bind themselves and signal 'strategic restraint' to reduce fear in smaller states. Either way, in HST, IOs serve the goals of hegemons.

Regime Theory is where regimes (ran by IOs) are intervening variables between state preferences and outcomes. Regimes weren't really designed by states, but rather emerged as rules, norms, principles, etc that could shape state behaviour.

Keohane's Neoliberal Institutionalism looks at the demand for IOs, and says that states create IOs when they have common interests in cooperation and the opportunity for mutual gains that they otherwise could not achieve.

Domestic benefits can be derived through the joining of IOs, since it can signal to voters that a state is credible in its commitment to solving domestic problems that concern the IOs, and states benefit from the delegation of certain tasks to the IOs (e.g. monitoring and compliance verification).

Other IO fun facts that might come in handy:

Rational Design theory says that IOs are designed by states intentionally to solve problems.

Delegation Theory uses Principle Agent theory to suggest that states are the principle and the IO is the agent. In theory, this reduces transaction costs and the IO is more efficient since it's specialized. In practice, the agent can shirk from its responsibilities.

IO Lifecycle If the world changes, then the IO must be 'recontracted', replaced or disbanded.

Preference Heterogeneity is the extent to which individual tastes and preferences vary across actors. If the preference heterogeneity is high, then it means member states in an IO will find it harder to reach a consensus. It could then be harder to reform or recontract and IO.

Regionalism notes that many IOs are regional and that a shared culture and aim helps create strong IOs.

- Shared external threats can create strong and 'intrusive' IOs that closely coordinate states.
- Weak leaders who are worried about their own regime's survival aren't likely to secede sovereignty to an IO and thus give rise to less intrusive IOs.

Legitimacy is important for IOs since it makes them more able to sanction punitive action. Legitimacy can be derived in different ways, e.g. the UN Security Council is made up of 15 members representing the heterogeneity of the international community.

Forum Shopping is when actors look around for a 'forum' to best achieve their goal in. For example, an actor could take its case to multiple criminal courts at once. This can cause IOs to have to compete, especially if they have overlapping concerns.

Emanations are IOs created by other IOs. Often created by enterprising bureaucrats from the inside to make an entity not aligned with the views of the member states that make up the parent IO.

High Politics refers to all matters relating to the very survival of a state (e.g. international security concerns).

Non-Governmental Organizations often try to influence Key Opinion Formers in IOs and member states to change the status quo.

Bretton Woods Institutions are the World Bank and the International Monetary Fund, which were founded in 1944 in Bretton Woods, US. Their aim was to re-build the shattered post WW2 world-economy.

Rising Powers are nations (or groups of nations) with an increasing primary influence in global affairs.

Multilateralism is when an alliance of multiple countries pursue a common goal.

IOs are actors in the sense that they have their own secretariat and staff, which have their own opinions. Though the IO is made up of and influenced by its members, its members itself are not able to fully influence the organisation.

Trust erosion in IOs happens in three ways:

- Lack of transparency; events are unverifiable and happen behind closed doors.
- Exclusivity; affected citizens are not involved in decision making.
- Selectivity; problems are only tackled if they interest powerful actors.

IOs must therefore find ways to legitimize their decisions, respond to questions by civil society or states, and actively push against their own politicization to preserve their legitimacy.

11 The EU

The EU is complex, and made up of multiple parts; the European Commission, the European Parliament, The European Court of Justice, The European Council and The European Central Bank. The EU also has a hierarchy of competence that it has control over, examples include:

High/exclusive competence - Customs union, monetary policy and competition law.

Shared competence - Environmental policy, consumer protection and research.

Supporting competence - Civil protection (e.g. police), education, culture.

The EU is able to be an actor in world politics due to:

Presence which is the ability of the EU to exert influence beyond its borders.

Opportunity which is the external environment of ideas and events which constrain or enable 'actorness'.

Capability is the internal context or view of the EU's external action; what does the EU think it is able to do?

Authority is the legal competence of the EU in a given area.

Recognition by other global actors, split into:

De jura recognition which is diplomatic recognition in international law and formal membership in international organizations.

De factor recognition which is recognition of an actor when third parties negotiate, who implicitly recognize it as an international actor.

Internal cohesion is the ability to formulate internally, and then represent an externally coherent position with a single voice, even if the agreed position is not the preferred position of each member state... and for individual member states to *not* go behind the back of the EU in future negotiations.

12 Brexit

Brexit is the climax of UK skepticism of the EU. Citizens did not want an 'ever closer union', and recognized that the European Integration process cannot be easily reversed. The challenge with the EU was to speak with one voice during the negotiations, maintain internal cohesiveness, and act effectively as an individual actor.

At the conception of the EU, the idea was that with the joint policy projects in agriculture, the Euro, business, etc, beneficiaries would be pro-integration as their lives intertwined with the EU. The EU was originally promoted as a cognitive judgment and not linked to emotional interests or nationalism. This is particularly relevant for the UK and Denmark, who joined the EU on a mostly utilitarian and transactional basis, which wasn't easily translated into a persuasive narrative around cultural integration.

Accordingly, many of those now waiting European disintegration are disadvantaged; there is a correlation between leave voters and economic underdevelopment in the UK. Joining the EU in the first place was the least-worst option for the British, never wanted a shared European identity, didn't need the benefits of social rehabilitation and reconstruction, and for who repeated exceptionalism (with respect to EU legislation) became part of the political consciousness.

The paradox of the UK leaving the EU is that the UK heavily shaped the EU, and Margret Thatcher (and the EU Commissioner from the UK at the time) pushed heavily for the single market, common foreign and security policy, and the integration of more Eastern European states.

Perhaps the EU needed more focus on its narrative from a sociological standpoint at its inception, when it instead received lots of political science and international relations analysis.

13 Technology Assessment

The motivation for TA is that technology produces solutions, but also can cause unforeseen problems. The example is CRISPR which holds the promise of treatments for disease that permeates many cells such as cancer, aids or cystic fibrosis by editing DNA in live cells. The concern is that CRISPR could have unexpected impacts once these modified genes enter the gene pool.

We need TA because:

- New technology creates problems in economic, political, technical, etc areas.
- *Technology innovation expands but also restricts the capacity for action.*
- Open discussion between equals is a precondition for a constrictive debate on technology in society.
- History says that technology has risks, and expertocratic arrogance creates mistrust (see the Nuclear Waste Siting section).
- Decision making shouldn't be disconnected from those affected by the decisions.

Technology Assessment is "A discipline of public administration that seeks to build bridges between research and innovation, society at large, and political decision process makers.". This allows an integration between the different kinds of knowledge and different sets of values held by various social actors.

Technology Evaluation is the neutral and value-free scientific recording of the consequences and side effects of technology.

Technology Impact Assessment is a formal, evidence based process that assesses the economic, social and environmental effects of public policy and incorporates it into policy making. It is not value-free, examining the impacts, the possible unintended consequences and how the negative consequences could be mitigated.

The Collingridge Dilemma says that effects of a technology cannot be easily predicted until the technology is sufficiently developed and widely used, however, the more technology is widely rooted in society, the harder it becomes to change it.

The Precautionary Principle says that even if there is an incomplete knowledge of a topic or there is an absence of certainty, we should attempt to avoid or minimize the potential for damage as far as possible.

There are three 'stages' that a technology can exist in; it starts as '*niche*' technology, then moves into a '*transition*' stage, before coming the '*new system*'. Society needs a broad range of technology in all stages: the niche stage creates space for experimentation, the transition stage develops legal certainty and promotes structural change, and the new system stage creates stability.

Constructive Technology Assessment is based on the idea that the future is predicated on the present, and the aim is to identify emerging irreversabilities. "**Enactors**" try to realize new technology and emphasize the positives, while "**Comparative Selectors**" develop ways to compare the enactors' options with alternatives. Citizens and consumers can serve as amateur comparative selectors.

TA is now embedded in lots of governmental structures, such as the EU, the UK and the US.

The challenges around TA are mostly around it not being deeply embedded in technology development, or not yet scaled up fully. There needs to be more focus on societal well-being over economic growth, more public and democratic discourse on science and technology policy, more researchers and ethics committees that are connected to decision markers, and more strategic, long term thinking.

Research cultures are the practices, norms and values that characterize and guide knowledge production in a specific research field. Science and technology policy needs a better understanding of research cultures in order to direct research to create good and societally beneficial research.

14 Assorted definitions

14.1 The Rebound Effect

The rebound effect (similar to the Jevons Paradox) is the reduction in expected gains from an improvement efficiency on account of the behavioral responses of actors using the technology that was improved. Sometimes, the amount of a resource used can increase after the improvement, which would be a 'backfire' and is Jevons Paradox.

14.2 Wicked Problem

A Wicked Problem is a problem that is difficult or impossible to solve because of incomplete, contradictory or changing requirements that are often difficult to recognize.

14.3 Policy Window

A Policy Window is an unpredictable opening in the policy making process which creates the possibility for an actor to influence the direction and/or outcome of the process. Examples could be a cabinet reshuffle, or a global event such as a pandemic.

14.4 Constellation Analysis

Constellation Analysis is a bridging concept for interdisciplinary and transcisciplinary cooperation in various fields. It assumes that many different factors (technical, social, natural) need to be considered and related to each other.

The aim is to integrate different perspectives and approaches into one model, analyze both general dynamics and specific situations and to facilitate mutual understanding between different actors.

An **interdisciplinary approach** is solving problems using areas of expertise from different disciplines.

A **transcisciplinary approach** is solving problems collaboratively with both scientists and people from industry.