

Modelling Sustainable Systems and Semantic Web

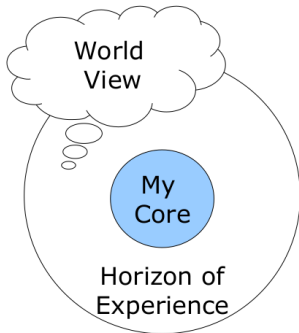
Digital Space of Action

Lecture in the Module 10-202-2309
for Master Computer Science

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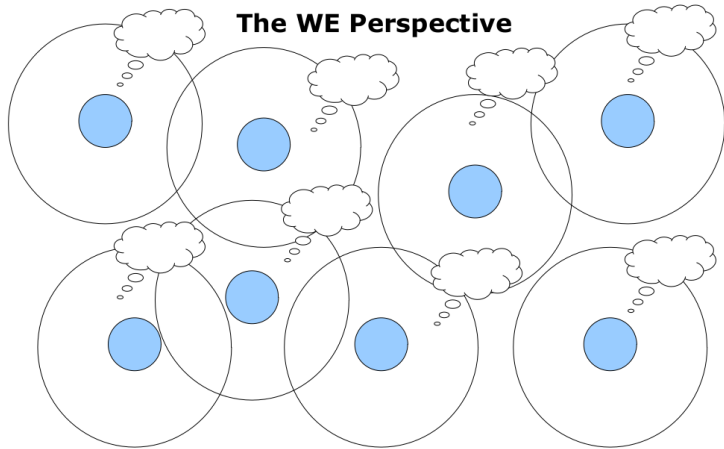
May 2021

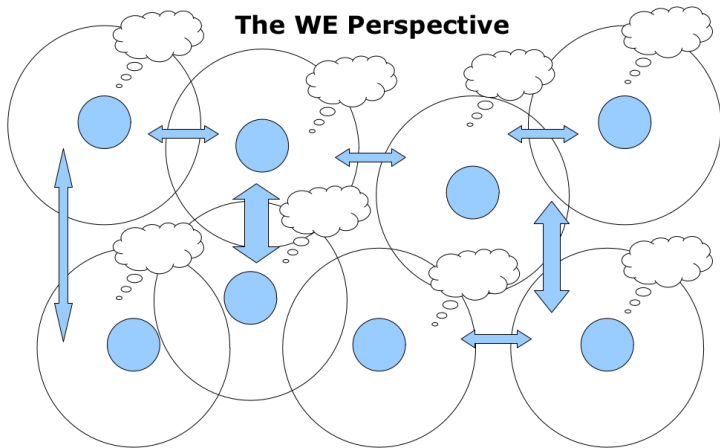
World and Reality



Private and Cooperative Action

- ▶ Art of living versus dealing with a structured world in a structured way
- ▶ Unpredictability versus predictability
- ▶ Constructability of "world"
- ▶ Me as a constructor
- ▶ (My) imagination and reality





World and Reality. Starting Point

- ▶ Forms of description (plural) and reality.
- ▶ Contradictoriness of the world (as reality perceived by us)
- ▶ Differences in the concept of *contradiction* in forms of description and forms of actions
- ▶ Descriptions and contextualisations
 - ▶ Creativity and conceptualisation
 - ▶ Concepts are a form of cooperative practices of people and thus themselves to be *contextualised in a concrete-historical way*.
- ▶ Term *World View* for the complex context of the model-like reference *in the model* to reality.

World and Reality

World is reality for us and thus reality in the process of conceptual comprehension.

What is Data?

- ▶ Data as a specific form of description.
- ▶ Capturing data always means choosing what *not* to capture.
- ▶ Data as a link between world and reality.
- ▶ But what then is *objective* data?
 - ▶ Specific reflex of a positivistic understanding of science.
 - ▶ Use and misuse: Such an understanding (of science) is an important cultural achievement of humankind, which, however, also has to be *contextualised in concrete-historical terms*.
- ▶ Thus data is also a form of cooperative practices of people.

Digital Transformation

Concept of the **Digital Universe** as a rather technically shaped inner-societal space of action through the processing of digital data, with a vague demarcation. Picking up a common buzz word.

- ▶ "By 2020, the digital universe will amount to 44 trillion gigabytes" (EMC Digital Universe with Research & Analysis by IDC. The Digital Universe of Opportunities: Rich Data and the Increasing Value of the Internet of Things. April 2014).
- ▶ Reference to the central thesis – a spatial metaphor is used to analyse the digital transformation from a specific dichotomy.

Central Thesis:

The digital transformation is characterised by a rapidly growing "world of digital data", through the analysis and processing of which influence is exerted on real-world processes.

On the Critique of this Approach

- ▶ In this version, we want to focus on questions of how current structuring processes in the digital universe and real-world processes interact and influence each other.
- ▶ The concept of juxtaposing "real-world" and "digital" reality is problematic overall, since actions in the digital universe are both motivated by real-world practices and have an influence on real-world practices.
- ▶ However, the concept emphasises that many real-world contexts of action interact with technical processes in this space and therefore such an abstraction seems reasonable.

The Digital Knowledge Revolution

Michael Schetsche: "The digital knowledge revolution" (2006, in German) identifies six social and cultural dimensions:

- ▶ a new order of knowledge,
- ▶ social control through technical norms,
- ▶ the automatic archive function of the net,
- ▶ the supplementation of the exchange economy by a gift economy,
- ▶ the abolition of the guiding difference between "public" and "private",
- ▶ the dialectic of possibility and obligation of permanent communication.

Digital Transformation

All in all, it makes sense and is necessary to speak of a *transformed social order* in which the *structurally decisive changes* emanate from the digital networks.

A more precise understanding of the change in particular in the order of knowledge is an essential part of an analysis of the digital transformation.

Problem: For the new phenomena, we (initially) only have the old terms.

I will not elaborate on that here and refer to (Schetsche 2006).

**How and where are you acting
in the digital universe?**

**What opportunities for your own
and collective action in the digital universe
do you frequently use?**

**Which preconditions
must be fulfilled for this?**

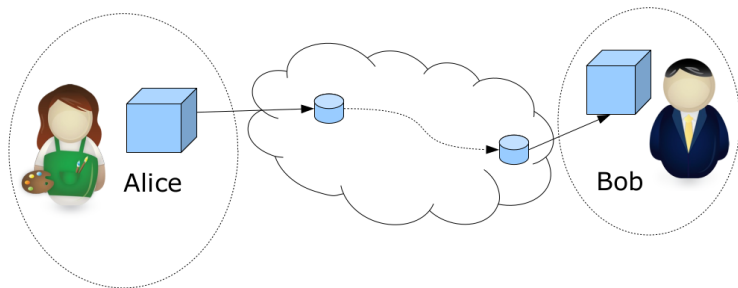
From earlier Discussions

- ▶ The digital universe breaks down into different universes - the Instagram universe, the Facebook universe, etc.
- ▶ Account as access to one of these universes
- ▶ What to do there?
 - ▶ Upload pictures and data
 - ▶ Like and be liked.
- ▶ Diversity of accounts = diversity of digital identities
 - ▶ Identity in the singular or in the plural?
 - ▶ My Core – world and reality, meaningful terms?
 - ▶ Diversity of identities or of real-world facets
- ▶ *Identity* as an important concept in the civil legal system, which is also legally attached in order to be able to assign consequences of actions.

Using Digital Spaces of Action

- ▶ Questions of private digital spaces of action can only be meaningfully discussed if the user is "logged in" to a computer via an **account**. This also applies to mobile devices, although the technical connection to an account (via SIM card and own security settings) is less visible there.
- ▶ Such an account is associated with a **digital identity** to which actions on the internet are assigned, via which the usual legal-social constructs of the *legal attributability of actions* are transferred to the digital sphere.
 - ▶ The private attribution of consequences of action is a *pillar of the civil legal order*.
 - ▶ The technical possibilities in the digital universe can *improve* or *complicate* the attributability of legal responsibility.
 - ▶ Possibility of *anonymous action*. But: traces of actions are fundamentally accessible to forensic analysis. This also applies to actions on the internet.

Real-world and Digital Identities



For actions in the digital universe, real-world identities must be tied to digital identities.

Real-world and Digital Identities

- ▶ The assignment of a digital identity to a real person takes place via **authentication**, which appears to be a *private* act (albeit technically preconditioned).
 - ▶ However, it presupposes an **authenticator** as the technical counterpart and thus a higher-level legal context. This assignment process is nevertheless postulated as private in the public.
- ▶ Private digital spaces of action can only be shaped through the binding to a digital identity.
 - ▶ The rebinding of a digital identity to a civic legal subject is itself a socio-technically institutionalised process.
 - ▶ This rebinding is particularly simple if the signature of a technical artefact from the digital universe can be easily assigned to the civil legal subject.

Acting on the Internet

- ▶ Spaces of action are socially determined. Digital spaces of action can be and are constituted and assigned through **authorisation**.
- ▶ In shaping spaces of action on the internet, subjects are highly dependent on technical services and thus on external institutions whose *trustworthiness* they must assess appropriately.
- ▶ Regulatory provisions for action on the internet exist only in rudimentary form, so that *appropriate practical action* and *cooperative arrangements* on a *contractual basis* are the main forms of shaping a concept of "privacy on the internet".
- ▶ An *appropriate* understanding of the technical conditions, possibilities and restrictions of the internet is essential for the qualified shaping of personal actions on the internet.
- ▶ Social action constitutes the intersubjective relations of a subject.

On the Concept of Action Space

Thesis:

The concept of action space as it is understood today is a cultural achievement of bourgeois society.

- ▶ Spaces of action as a "space within space" contextualise possibilities of cooperative arrangements in an "external space".
- ▶ *My* spaces of action are identity-constituting, and the actions in these spaces form the basis for my personality as a civic legal subject.
- ▶ Only on this basis can delimitations of other concepts such as *environment*, *acting in an environment*, *cooperative action* and thus ultimately concepts such as *subject*, *privacy* and *identity* be meaningfully grasped.
- ▶ Collaborative spaces of action can be condensed into "cooperative subjects" in the sense of the civil legal order.

Private Action and (Digital) Identity

Private action presupposes a concept of self, of personal identity.

- ▶ Digital identity, multiple digital identity and roles
Is identity divisible?
- ▶ Abstract identity, textual representation
Assignment mechanisms, e.g. website and login
- ▶ Authentication
Password, other forms of authentication
- ▶ Authorisation
Me as subject and as object of authorisation.
- ▶ Potential and real assignment. Notion of session.

Digital Identities

- ▶ Digital identity, abstract identity, textual representation
- ▶ Website, login, mobile devices
- ▶ Concept of session (not only on websites)
- ▶ Authentication and authorisation

Digital Identity

In the following, we will understand *digital identity* as a **real-world civic subject** *authenticated* under a textual representation `<name@rechnername>` and *authorised* in the context of a session, who performs actions in the digital universe for a limited period of time.

The Concept of Roles in Computer Science

- ▶ In computer science, a role is a bundle of necessary *experience, knowledge and skills* that an employee must have in order to perform a certain *activity*.
- ▶ Roles are defined by *role descriptions* within a *role model*.
- ▶ A role is associated with *activities* and *responsibilities*.
- ▶ *Qualification characteristics* are required to perform a role.
- ▶ A person can have several roles. Several persons can have the same role.