

Mapping for inter-species democracy: a perspectivist map of ecological relations

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Abstract:

Theorists in cartography, such as John Pickles (2012), have pointed out that modern maps reduce geographic space to simple geometries that omit fundamental qualities of the experience and inner workings of space. Particularly in natural habitats, maps oversimplify environments, such as forests, by treating them as homogeneous units, thereby erasing the different relations and interactions between species in them that give rise to their existence in the first place. This limitation hinders map users' capacity to understand ecological contexts, which represents a critical gap, particularly in the present context, where understanding human impacts on the environment is key to sustainability initiatives. This gap is directly confronted by *Organismen Demokratie*, an NGO based in Berlin, Germany.¹ Their ongoing project is to maintain a thriving garden with more than 200 species living together in a roughly 1-square-kilometer space. Once per year, they bring human representatives of various organisms to a parliamentary session to decide how to manage the environment. They have created a conventional map showing the distribution of the species in the garden (Figure 1). Although useful for understanding the overall spatial context, the map can't provide the deep semantic insights parliament members need to understand the species' ecological role and needs. The present research project created a map suited to understanding complex ecological semantics and applied it to the aforementioned garden ecosystem.

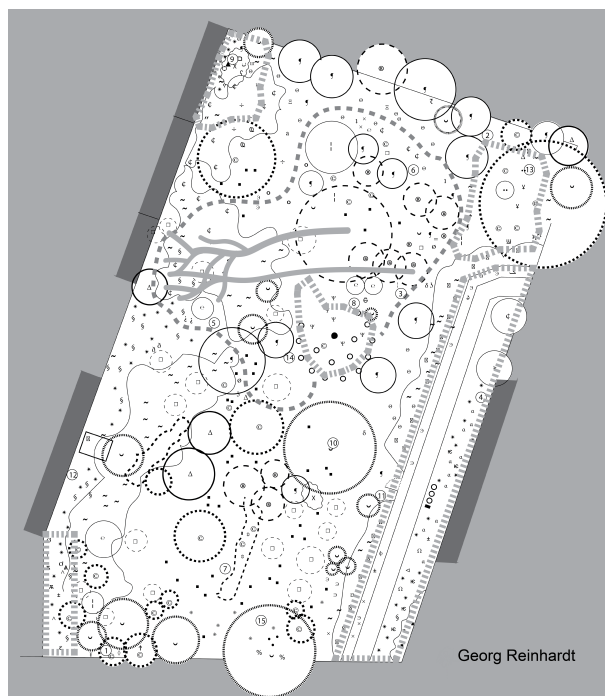


Figure 1. The map created by *Organismen Demokratie* to show the spatial distribution of the species. The locations of the organisms are shown with numbers and text symbols.

To design a new visualization of ecological relations between organisms, theories of more-than-human worlds were investigated to find conceptual grounds for understanding the roles and relationships among different species. In particular,

¹<https://organismendemokratie.org>

feminist epistemology (Haraway, 1988), phenomenology (Merleau-Ponty, 1962), and biosemiotics (Uexküll, 2013) conceptualize reality as emerging from subjective experience and constructed through direct interaction with the physical world, meaning that each species, with its biological capacities, has a particular perspective that shapes its role in the environment and its relations with others. These theories share a perspectivist understanding of reality, in which every species, from its own position, has a view of the world shaped by its particular experience. From these theoretical standpoints, a map was designed to represent different perspectives of the same environment, each arising from the particular viewpoints of different species. The objective of the map design is to aid members of parliament in understanding the roles and relationships between the species they represent and other participants, thereby providing them with better tools to exercise their political activity.

Through brainstorming and prototyping, a line-based visualization style was developed as a web map (Figure 2). The organisms on the map are represented as interactive markers that, when selected by users, draw lines to other species, highlighting their relationships. Different types of relations are encoded in stylistic design options for the lines, such as patterns and colors. Other types of animations and interactions expand the map's ability to express the particular qualities of each species, how they interact with one another, and the needs they must fulfill to survive. The interface also displays explanatory text that provides detailed information about the species; these elements are triggered by user interaction. The map will be used in the forthcoming 2026 parliament session, where a user study using qualitative methods will evaluate the potential benefits of mapping from a perspectivist standpoint. Perspectivist mapping could open new possibilities for cartography to support decision-making in contexts of complex spatial semantics, where multiple actors hold different perspectives on a single space.

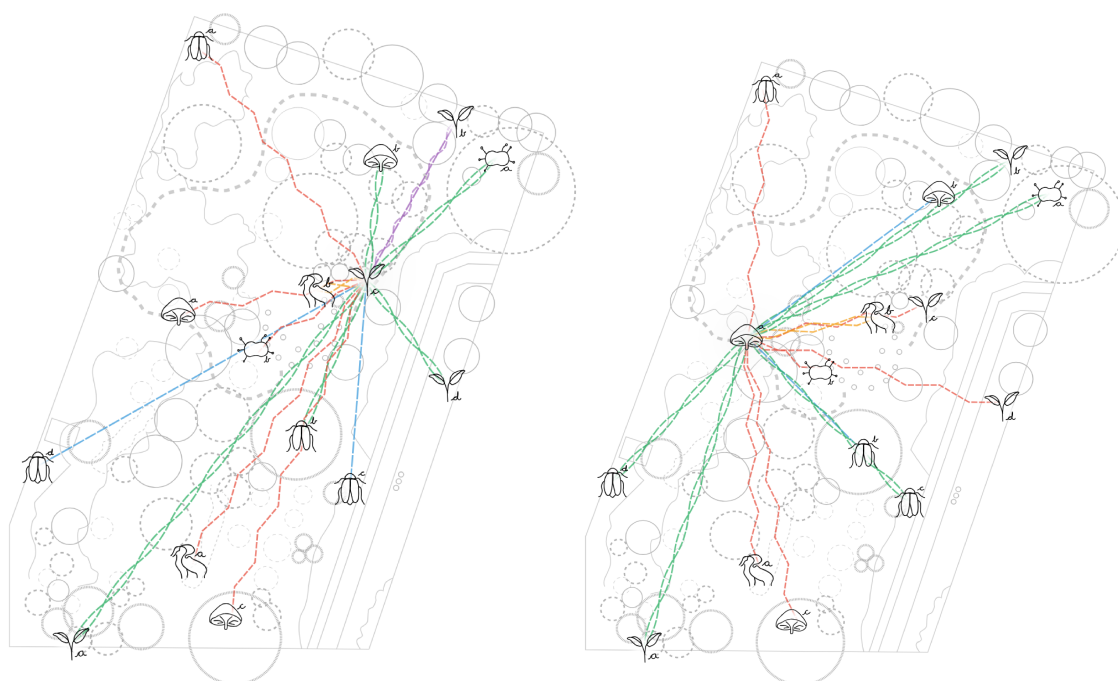


Figure 2. Two screenshots of the perspectivist map prototype (made from dummy data) showing the relations between a selected species and the others via lines, which encode information about the quality of the relation with different styles. The relations change depending on which species is chosen.

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