

Analysis of Decentered Clusters and Transversal Supply: Large Scale Settlement Clusters, Infrastructure Access and Housholds

The "Swiss Spatial Concept" (Raumkonzept Schweiz) represents a common strategy for sustainable spatial development with the most prominent spatial lines of interaction and networking. The CH-wide cluster analysis of CA B.1.3. BFH-AHB has revealed an interesting addition. The most efficient mobility connection clusters between

households and infrastructure create new "decentralized" clusters with a transversal character in regard to the main lines and networks of the Swiss spatial concept. At the example of the Cantone of Berne, such an interpretation was made visible through a data simulation concerning infrastructure such as education, food and health.

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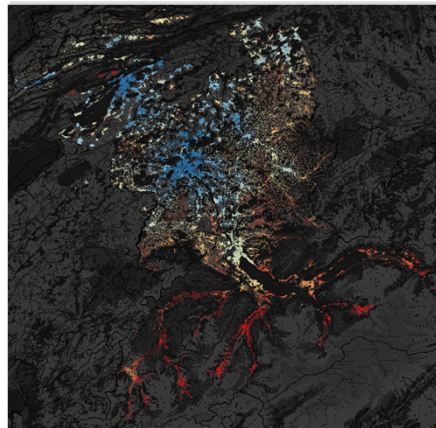
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Thesis: Transversal Spatial Concept

Between 2014-2020 the research coal evolved from the large scale interaction of settlement typology and mobility towards settlement household and infrastructure. The analysis was done on city level (Berne), regional level (pre-alps) and cantone of Berne. Despite the (global) trend towards centralization we observed a local trend of transversal micro-decentralization. "Micro" in this context does not mean "near". As situated in the periurban or rural realm micro is much more defined as a "weak" (Gianni Vattimo, Pensiero Debole) decentralization, but with strong identification and stability. Transversality, metaphorically borrowed from topology (J.Huber, Urban Topology) and philosophy (W. Welsch, Reason).
Thesis: Decentralized, transversal networks contribute to stable rural and periurban settlement access.

pict 1: Cantone of Berne-Education



datamodell «education»: mobility access from household; M.Abegglen BFH 2020

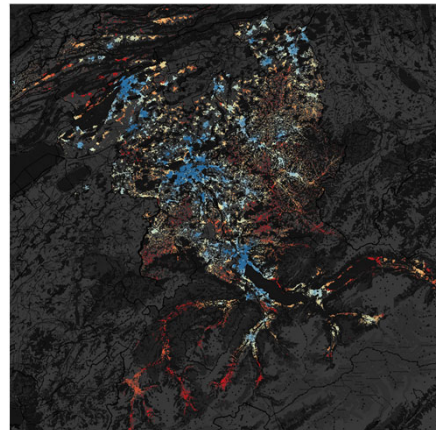
Between-De-Centralization

The observed connections in the cantone of Berne could be described in terms of graphs theory complex networks. Centrality can occur decentral in such networks. Specific Properties are distributed/floating between the nodes: betweenness centrality, closeness centrality etc. [4]. From a spatial planning point of view, this is of interest as - in analogy - it focuses on small-scale, shortest paths interactions in large numbers, as we see in the case of household-infrastructure interactions (pict 2). Food supply results in a local network outside of the classic hubs (pict 2). Education/Universities results in longer journeys through valleys and is much more centralized (pict 1). It is politically centralized distributed. This will be the starting point for further research.

Transversality

In principle, the transversality theory of topology examines, whether two functions, which intersect, do so "correctly", i.e. are real "cross sections". Topologically speaking, transversal cross-section and connections are guarantors of non-Euclidian spatial stability, as an antipole to rigid urban centrality. [1] ("The concept of transversality") expresses a central desideratum of contemporary thought: To be able to think heterogeneity and interdependence, plurality and transition together"[2]. This as a reaction to the dominance of urban centrality. The interactions between household and infrastructure are "transverse", i.e. transversal to the mainstream periphery-center connection. And yet they have an urban effect and a function.

pict 2: Cantone of Berne-Food Supply



datamodell «basic food supply»: mobility access from household; M.Abegglen BFH 2020

Rethinking e-Infrastructure

This form of mapping is also done with health care and could be extended to all form of GIS infrastructure point of interests. "The eurocentric, borderless city has political, economic and cultural conditions to find alternatives in the supposedly "outside", a supposed urban outside, which is again covered by the borderless city." [5] Interesting is the combination of network decentrality and transversality as a benchmark for transitional areas of future rural and periurban mobility. Which means, that the regional distribution of e-mobility charging stations could be reconsidered. As well the settlement cluster in relation to CO₂ footprints could be redrawn.

References

- [1] vgl. Joachim Huber, Urbane Topologie. Architektur der randlosen Stadt, Weimar 2000. p.133
- [2] Wolfgang Welsch, Vernunft. Die zeitgenössische Vernunftkritik und das Konzept der transversalen Vernunft. Frankfurt a.M.1996. p.761/762
- [3] vgl. Joachim Huber, Urbane Topologie. Architektur der randlosen Stadt, Weimar 2000. p.330/331
- [4] vgl. Füllsack, Manfred (Hrsg.): *Networking Networks. Origins, Applications, Experiments. Proceedings of the multi-disciplinary network for the Simulation of Complex Systems*, Wien/Berlin 2014
- [5] Joachim Huber, Urbane Topologie. Architektur der randlosen Stadt, Weimar 2000. p.30