Geophysical Research Abstracts
Vol. 19, EGU2017-11957, 2017
EGU General Assembly 2017

Understanding catchment dynamics through a Space-Society-Water trialectic

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Can healthy catchments be utilized to secure water for the benefit of society? This is a complex question as it requires an understanding of the connections and relations between biophysical, social, political, economic and governance dimensions over space and time in the catchment and must interrogate whether there is 'value' in investing in the catchment natural or ecological infrastructure (EI), how this should be done, where the most valuable EI is located, and whether an investment in EI will generate co-benefits socially, environmentally and economically.

Here, we adopt a social ecological relations rather than systems approach to explore these interactions through development of a space-society-water trialectic. Trialectic thinking is challenging as it requires new epistemologies and it challenges conventional modes of thought. It is not ordered or fixed, but rather is constantly evolving, revealing the dynamic relations between the elements under exploration. The construction of knowledge, through detailed scientific research and social learning, which contributes to the understanding and achievement of sustainable water supply, water related resilient economic growth, greater social equity and justice in relation to water and the reduction of environmental risk is illustrated through research in the uMngeni Catchment, South Africa.

Using four case studies as a basis, we construct the catchment level society-water-space trialectic as a way of connecting, assembling and comparing the understanding and knowledge that has been produced. The relations in the three elements of the trialectic are constructed through identifying, understanding and analysing the actors, discourses, knowledge, biophysical materialities, issues and spatial connections in the case studies. Together these relations, or multiple trajectories, are assembled to form the society-water-space trialectic, which illuminates the dominant relations in the catchment and hence reveal the leverage points that will have the greatest ability to affect positive change or maintain productive situations and thus, where to invest to meaningfully contribute to water security in the catchment.