



**Changing lives of  
ordinary people  
through human and  
social sciences**

## **The underdevelopment of Social Studies of Science and Technology related issues in South Africa – an interactive forum.**

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## **Introduction**

- **Africa in its struggle for democracy.**
- **South Africa as welfare state and developmental democracy**
- **Impact of governance ideology on Higher Education.**
- **Factors for consideration: social and economic policy development (and their failures) are important factors determining how civil society will benefit from democracy**
- **Science communication and the case for Transdisciplinary**



## Africa in its struggle for democracy.

Ideological spectrum ranges from a “... *more or less pure Marxism-Leninism to populist ideas rather similar to the Russian narodiks or Gandhi in India, as well as nationalist ideology (Fanon, Cabral)*” (Hettne, 1995:85)

- The Afro-Marxist emphasized Marxist-Leninist ideas of economic development and political structure. Major examples were Kwame Nkrumah and Sekou Touré during the first half of the 1960's.
- The moderate socialists, including Jomo Kenyatta of Kenya and Kenneth Kaunda of Zambia, favoured a state-controlled 'socialist' economy but were at the same time anxious to attract foreign investment capital.
- The social democrats who were closely connected with European socialism and frequently followed a pro-Western outlook, for example Leopold Senghor of Senegal and Tom Mboya of Kenya.
- The agrarian-socialists (populists) who were associated with Julius Nyerere's Ujamaa-philosophy. Rather than looking for foreign models of socialism Nyerere looked for it in traditional African society

## **South Africa as welfare state and developmental democracy**

Thandika Mkandawire in: African voices on structural adjustment (2003).

South Africa is classified as a both a developmental state and a welfare state.

As a developmental state there are two components: one ideological and one structural. It is this ideology-structure nexus that distinguishes developmental states from other forms of state. In terms of ideology, a developmental state is essentially one whose ideological underpinning is 'developmentalist' in that it conceives its 'mission' as that of ensuring economic development, usually interpreted to mean high rates of accumulation and industrialisation.

Positioning the performance of the economy as measure of progress, economic success is equated to state success. The main force behind the developmentalist ideology has been nationalism, inducing nations to catch up' with developed countries and to secure a resource base for national defence, security, etc.

## Impact of ideology on Higher Education.

- It is generally accepted that a strong democracy requires social cohesion and functional social communication systems, processes and opportunities. Promoting social development and social cohesion is a political imperative in South Africa .
- South Africa failed to: focus on research context, failed to sufficiently fund education, did not invest in the development of infrastructure and failed to transfer the ownership of policy to African universities.
- SA HE adopted the ideology of a welfare state/developmental democracy with radical re-structural changes in HE

## Mode1 and Mode 2 of knowledge production

Michael Gibbons (1994): “Mode 1”, where knowledge is validated by the sanction of a clearly defined community of specialists and Mode 2” as transdisciplinary.

- Transdisciplinarity transcends the limitations of communication, and is capable of breaking down the barriers to knowledge communication by establishing a relationship of dialogue between the researcher and the community. This may lead to an endless re-configuration and re-application of research findings. It will also break down the stereotype of associating and restricting the production of knowledge to the domain of the university.
- Transdisciplinarity is a dynamic process. Establishing a closer interaction of knowledge production with a succession of ‘problem contexts’, the possibility of communication of shared interest of research adds new impetus and meaning to the research process as a whole. The key factor in the research method is based on facilitating communication.

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## Transdisciplinarity - a methodology of three axioms (pillars)

Barnabas Nicolescu (1996) introduced:

- The 'ontological axiom' that refers to what we encounter in nature and in our knowledge of nature: there exist different levels of reality and, correspondingly, different levels of perception.
- The 'logical axiom' refers to the passage from one level of reality to another, ensured by the logic of the included middle.
- The 'complexity axiom' forms the structure of the totality of levels of reality or perception and as complex structure: every level is what it is because all the levels exist at the same time.

(axioms are not theorems and cannot be demonstrated; they have their roots in experimental data and theoretical approaches and their validity is judged by the results of their application)

## Transdisciplinarity and hermeneutics

- Richard Bernstein (1983:38) refers to the earlier traditions of hermeneutics : “... *subtilitas intelligendi* (understanding), *subtilitas explicandi* (interpretation) and *subtilitas applicandi* (application)”.
- Hans-George Gadamer (1975) extended the application of hermeneutics, and foregrounds the significance of understanding, interpretation and application in the process of knowledge production.
- Richard Rorty (1980) proposes a hermeneutic approach to rationality and truth in the objective world. Hermeneutics relieves us of the need to justify scientific knowledge claims from a universal perspective. The hermeneutic principle of justification of our social principles is sufficient ground for our acceptance of the notion of truth in a pragmatic sense, characterized by contingency and pluralism.

# Complexity and complicated

Paul Cilliers (1998)

- Incorporates the complicated characteristics of technology with a complexity theory :  
“... the worlds of science and philosophy have never existed in isolation, but one could perhaps argue that the relationship between them is entering a new phase”.
- Complexity is best characterised as arising through large-scale, non-linear interaction.
- Since it is based on a system of relationships, the post-structural inquiry into the nature of language helps us to theorise about the dynamics of the interaction in complex systems. In other words, the dynamics that generates meaning in language can be used to describe the dynamics of complex systems in general.

# Contextualisation

Helga Nowotny (2001)

- Crucial to contextualisation of science is to ask: where is the place of people in our knowledge? ()  
Transgression of the disciplinary boundaries creates a 'fuzzing' of institutional barriers.
- The breakdown of disciplinary boundaries open up science to a reverse flow of information.
- When society has ways to communicate with science, science can not expect to stay the same.

## New challenges for PUS

Science and society in relation to Afrikology: Dani Nabudere (2011)

- “... the African traditional and cultural conception of the universe as a four-dimensional reality is transdisciplinary, not in the sense of its methodological correctness, but that this knowledge is nearer to a transdisciplinary vision of interconnectedness, which modern quantum physics was able to discover only through the recognition of the crisis of classical Greek physics”
- Knowledge production and application has always been a ‘complicated’ affair but is currently not only complicated but also complex and increasingly difficult to manage.
- Complexity requires new approaches to survey methodologies.



# Conclusion

- An African approach to transdisciplinarity requires investigations into the prospective cross-fertilisation continuum of Western, Eastern and African ecologies of knowledge
- Indigenous knowledge systems (IKS) serves as a substratum for further exploration - challenges power relations in speaking of 'knowledge.'



A close-up photograph of four hands of different skin tones (light, dark, and two shades of brown) clasped together in a supportive grip. The hands are arranged in a circle, with the fingers of each hand resting on the back of the others. The background is a blurred, light-colored surface. The image is framed by a blue curved graphic on the left and a greenish-yellow curved graphic on the right.

**Building the bridge between  
research, policy and action**

## What is transdisciplinarity?

- Recognising that outside of the university there are authentic and potential sites of knowledge. This indicates an acceptance that universities and colleges could fruitfully work with non-university institutes, research centres, government agencies, industrial laboratories, think-tanks, consultancies and individuals.
- Establishing communication links between the various sites of knowledge. Functioning networks of electronic, digital, organizational, social and even informal channels of communication feeds into the following point.
- Re-combining and re-figuring various fields and sub-fields of knowledge production to form the basis for new forms of knowledge. From this perspective knowledge production must move increasingly away from traditional disciplinary activity into new societal contexts.