Tvärvetenskaplig forskning

Sogndal 2014-03-06

Berth.Danermark@oru.se

Disability Research
THE SWEDISH INSTITUTE FOR

Aims

To present some dimensions of and presumptions for Interdisciplinary Research (IDR)

To illustrate IDR

To discuss how to improve writing successful applications

LINKÖPINGS UNIVERSITET

ÖREBRO UNIVERSITET

Interdisciplinary research

"Interdisciplinary research is any study or group of studies undertaken by scholars from two or more distinct scientific disciplines. The research is based upon a conceptual model that links or integrates theoretical frameworks from those disciplines, uses study design and methodology that is not limited to any one field, and requires the use of perspectives and skills of the involved disciplines throughout multiple phases of the research process."

(Aboelela et al,. 2007. Defining Interdisciplinary Research: Conlusions from a Critical Review of the Literatur. *Health Research and Educational Trust.* Page 341)

Disability Research
THE SWEDISH INSTITUTE FOR

Interdisciplinary research

Interdisciplinary research (IDR) is a mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or field of research practice (US-NAS, 2004, p. 26).

LINKÖPINGS UNIVERSITET

ÖREBRO UNIVERSITET

Interdisciplinary research

To study a complex phenomenon and how that phenomenon is manifested at *different levels of reality*

(Bhaskar & Danermark. 2006. Metatheory, Interdisciplinarity and Disability Research: A Critical Realist Perspective. *Scandinavian Journal of Disability Research* Vol. 8, No. 4, 278-297)

Disability Research
THE SWEDISH INSTITUTE FOR

Health and social science

Kessel, F., Rosenfield, P., & Anderson, N. (eds.) (2008), *Interdisciplinary research. Case studies from health and social science.* N.Y. Oxford University Press.

LINKÖPINGS UNIVERSITET

ÖREBRO UNIVERSITET

Disability Research
THE SWEDISH INSTITUTE FOR

Investigator-specific factors for successful IDR

1. Passion for the work, including a true openness to the approach, perspectives, and attitudes of scientists from other disciplines
2. Mutual respect of scientists in the team
3. Complementary skills and knowledge
4. Ability of scientists to develop a common language
5. Ability of scientists to meet together on a regular basis (Geographic dispersion of members of an interdisciplinary team is often a major inhibiting factor.)

LINKÖPINGS UNIVERSITET

ÖREBRO UNIVERSITET

Disability Research
THE SWEDISH INSTITUTE FOR

Communal research projects

1. Data sources.
2. New integrative concepts.
3. Emergence of new technologies.

LINKÖPINGS UNIVERSITET

ÖREBRO UNIVERSITET

Disability Research
THE SWEDISH INSTITUTE FOR

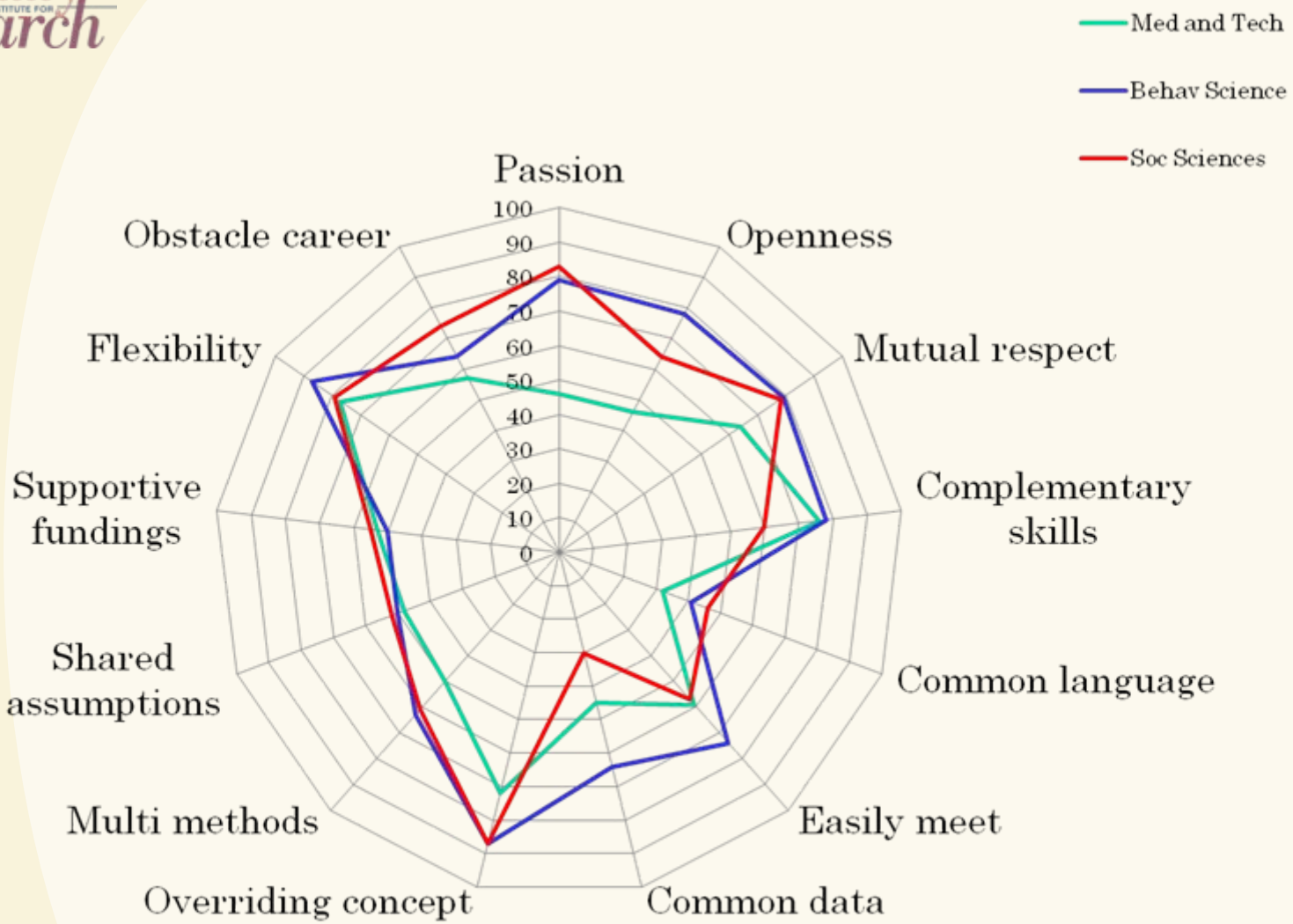
External factors

1. Funding.
2. Institutional flexibility and freedom.
3. Career advancement issues.
4. Attitudes toward interdisciplinary research.
5. Time.

LINKÖPINGS UNIVERSITET

ÖREBRO UNIVERSITET

Disability Research
THE SWEDISH INSTITUTE FOR



LINKÖPINGS UNIVERSITET

ÖREBRO UNIVERSITET

Table 1. Dimensions, Problems and Conditions related to IDR

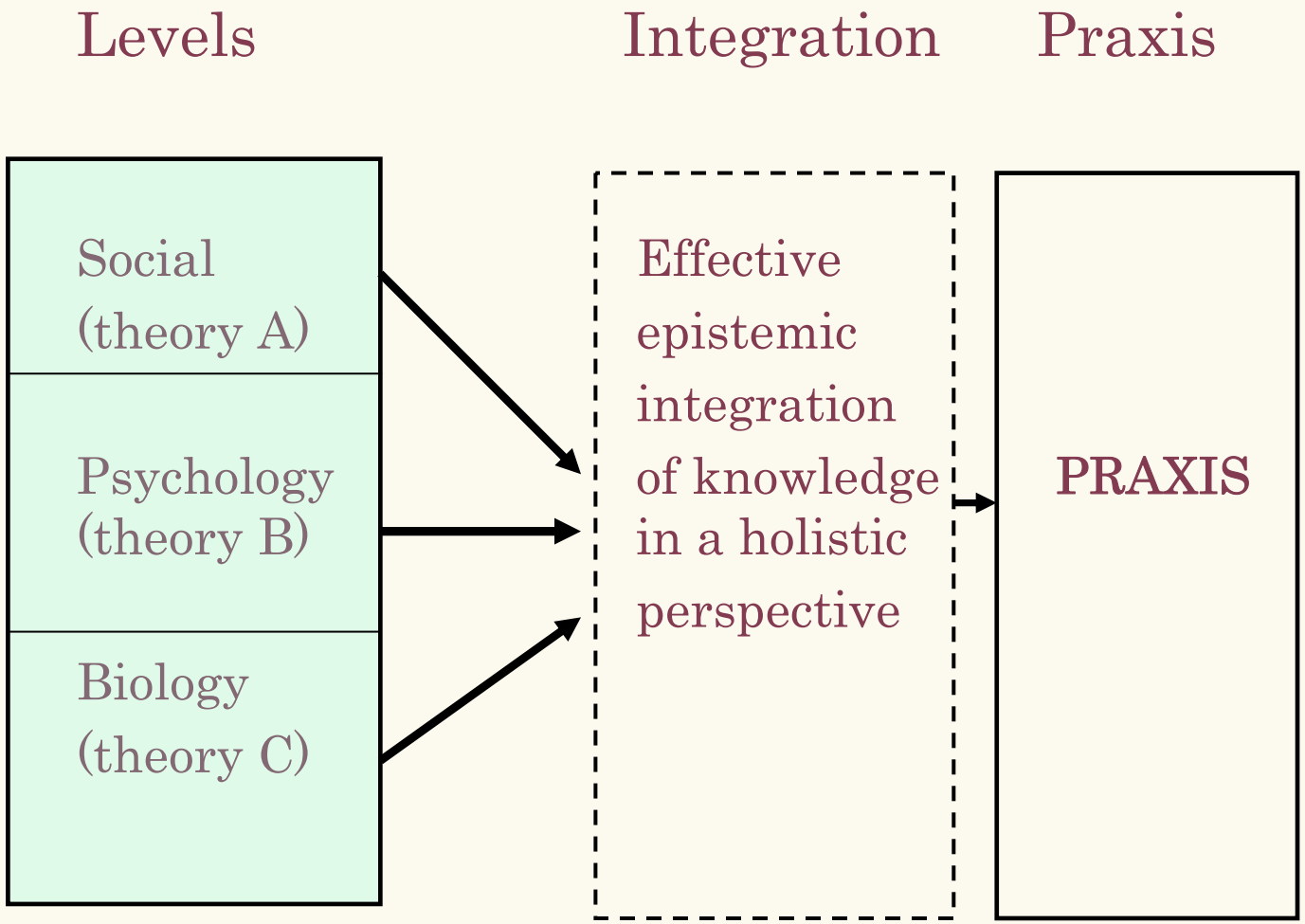
Dimensions	*Problems*	*Conditions*
Metatheoretical	No common team philosophy	Establishing a common metatheoretical approach
Theoretical	The idea of incommensurability. Reductionism	Integration of knowledge. Non reductionism
Methodological	Methodological imperialism	Applying methods designed for the level of the analysis (specificity in methods)
Individual	No communication between researchers. Lack of career incentives	Communication based on understanding of IDR and respect and knowledge. Improving education in IDR and clear career structures for IDR researchers
Administrative	The tendencies among universities to have a one-discipline organisation	A supporting administrative structure with no barriers hindering IDR
Funding	Funding bodies cannot cope with IDR proposals	Transparent mechanisms to review IDR proposals

IHV:s forskningsstrategi för framtiden: 10 år

Om att knyta ihop förklaringsnivåer – mekanismdriven kunskapsintegration (Mechanism-driven knowledge integration)

” IHV:s framtida strategi är att knyta ihop dessa nivåer med hjälp av förklarande mekanismer. Forskningen bör således i allt större utsträckning sträva efter att finna sådana mekanismer och inte avgränsas till beskrivningar på respektive nivå.”

Levels of reality-perspective



Necessarily laminated system.

(The term was introduced by Collier 1989.)

(i) physical
(ii) biological, and more specifically physiological, medical or clinical
(iii) psychological,
(iv) psycho-social
(v) socio-economic
(vi) cultural and
(vii) normative kinds of mechanisms

Roy Bhaskar & Berth Danermark: Metatheory, Interdisciplinarity and Disability Research: A Critical Realist Perspective
Scandinavian Journal of Disability Research Vol. 8, No. 4, 278-297, 2006

Structures, mechanisms and events

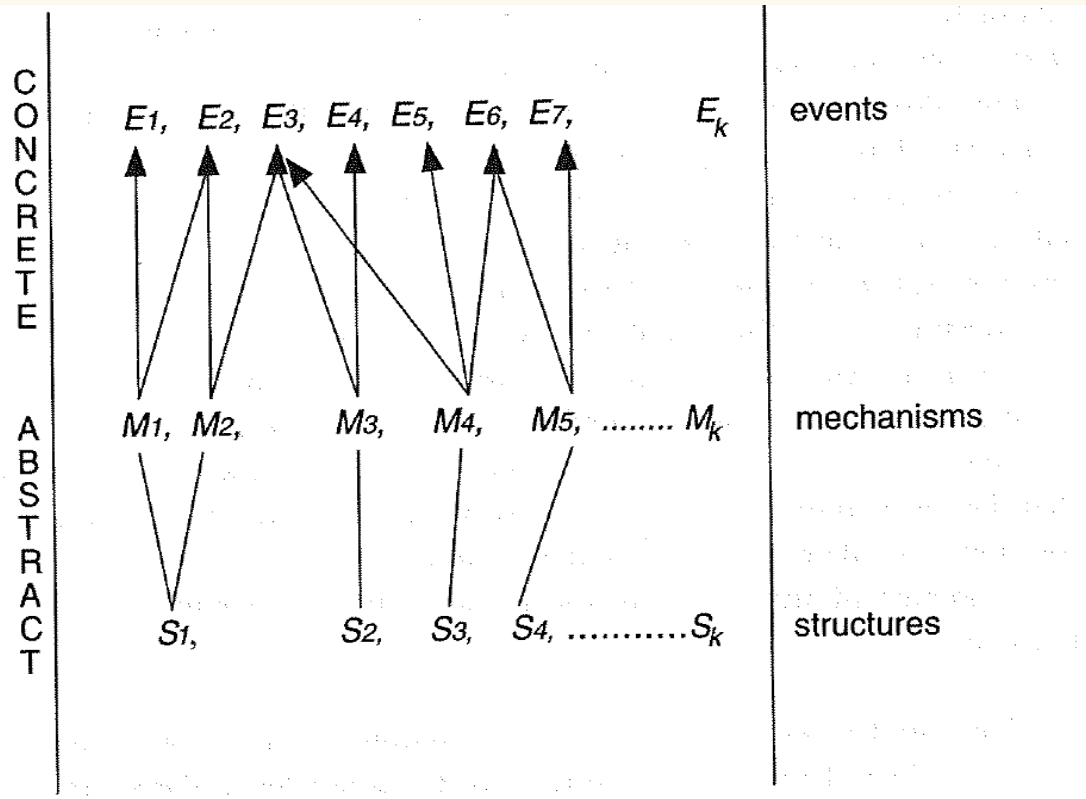


Figure 2 Structures, mechanisms and events

Source: Sayer 1992: 117

Disability Research
THE SWEDISH INSTITUTE FOR

Structures (S) creates mechanisms

Mechanisms (M) have to be understod as working in interaction with other mechanisms, Context (C), producing an Outcome (O)

$$S+M+C=O$$

LINKÖPINGS UNIVERSITET

ÖREBRO UNIVERSITET

Non-reductionism

-No single causal explanation

-Do not a priori reduce the explanation to one level (e.g. cultural, social, economical, biological)

Disability Research
THE SWEDISH INSTITUTE FOR

Specificity in methodology

-Use the methods that are developed for the level of reality

-Closed and open systems

-Social/human and physical objects

LINKÖPINGS UNIVERSITET

ÖREBRO UNIVERSITET

Disability Research
THE SWEDISH INSTITUTE FOR

Illustration: IDR and person with deaf blindness.

Background:

An extremely vulnerable group that we know very little of.

Group of researchers (genetics, medicine, psychology, cognition, psychological well-being, sociology, special education and health administration) doing research on deafblindness.

LINKÖPINGS UNIVERSITET

ÖREBRO UNIVERSITET

Disability Research
THE SWEDISH INSTITUTE FOR

Deafblindness and USH I-III

- Usher syndrome (USH) is a genetic disorder with autosomal recessive inheritance that entails both visual and hearing impairments and is the most common cause of deafblindness before older ages.
- The overall prevalence of USH was observed to be 3.3/100000 in Sweden
- The syndrome is divided in three distinct clinical types, Usher Syndrome type I-III, which are distinguished by different genetic mutations.

LINKÖPINGS UNIVERSITET

ÖREBRO UNIVERSITET

Disability Research
THE SWEDISH INSTITUTE FOR

Teen ages

LINKÖPINGS UNIVERSITET

ÖREBRO UNIVERSITET

Disability Research
THE SWEDISH INSTITUTE FOR

20-40 age

LINKÖPINGS UNIVERSITET

ÖREBRO UNIVERSITET

Disability Research
THE SWEDISH INSTITUTE FOR

41-50 age

LINKÖPINGS UNIVERSITET

ÖREBRO UNIVERSITET

Example: genetic level (Mutations)

- 11 mutations are identified as causes to Usher Syndrome (Structures)
- The mechanisms are known (Mechanisms)
- The interaction of these mechanisms with other mechanisms is not known, boostering or counteracting mechanisms (Context)
- The outcome is difficult to predict, e.g. pace of the deterioration of vision (Outcome)

Example: cognitive level (Working memory)

Theories exist regarding the structure of cognitive processing and working memory.

Working memory is the system that actively holds multiple pieces of transitory information in the mind for execution of verbal and nonverbal tasks — such as reasoning and comprehension — and makes them available for further information-processing (mechanisms). The cognitive processes needed to achieve this include the executive and attention control of short-term memory, which permit interim integration, processing, disposal, and retrieval of information (outcome).

Example: psychological level (Ontological security)

Ontological security is a stable mental state derived from a sense of continuity in regard to the events in one's life. Giddens (1991) refers to ontological security as a **sense of order** and **continuity** in regard to an individual's experiences (structure).

He argues that this is reliant on people's ability to **give meaning** to their lives. Meaning is found in experiencing positive and stable emotions, and by avoiding chaos and anxiety. If an **event occurs** (mechanisms) that is not consistent with the meaning of an individual's life, this will. **threaten that individual's ontological security** (outcome).

Example: social level (Social Recognition)

Three different categories of mechanisms impact (outcome);

self-confidence (primary relationships, structures)

self-respect (legal structures)

self-esteem (communities of shared values, structures)

HONNETH, A. (1995) *The Struggle for Recognition: The Moral Grammar of Social Conflicts* (Cambridge: Polity Press).

Disability Research
THE SWEDISH INSTITUTE FOR

Social Recognition and deafblindness

”The deaf and blind bit is easy compared to people’s attitudes and the world. That’s the part that hurts … that really is the pits”.

Debbie in Schneider, J. (2006)

LINKÖPINGS UNIVERSITET

ÖREBRO UNIVERSITET

Example: socio-economic level (Distribution of resourses)

The Social Model (of understanding disability)

A marxist interpretation of the capitalist structure of the society and its mechanisms that produce an uneven (and unethical and unfair) distribution of resources which creates barriers (outcome) in the society for full participation for persons with disabilities.

Example: the normative level (Justice)

Nancy Frazer argues that justice is a complex concept which must be understood from the standpoint of three separate yet interrelated processes:

distribution (of resources) (S+M+C=O)

recognition (of the varying contributions of different groups) (S+M+C=O)

representation (linguistic) (S+M+C=O)

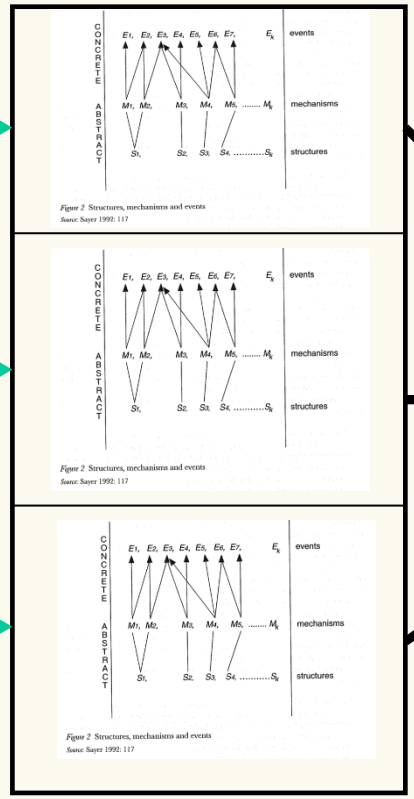
Nancy Frazer (1997) Toward an Integrated Conception of Justice. *The Tanner Lectures on Human Values*. Vol 18. Salt Lake City.

Epistemic emergence

Levels

Integration

Praxis



Effective epistemic integration of knowledge in a holistic perspective

PRAXIS

Summarize: integration of knowledge

Levels	Concepts (exemples)
Physical	Mutations
Biological	Hearing and vision deterioration
Psychological	Working memory, Ontological security
Psycho-social	Social recognition
Socio-economic	Distribution of resources
Cultural	Discourse and Social Representation
Normative	Justice

Integrating knowledge

" … a *synergetic integration* that *transcends* disciplinary boundaries."

" … *analytical frameworks* that are tools for *integrating knowledge* from different health and non-health disciplines."

" … an *integrated analytic tool* is, arguably, a prerequisite for IHR data analysis."

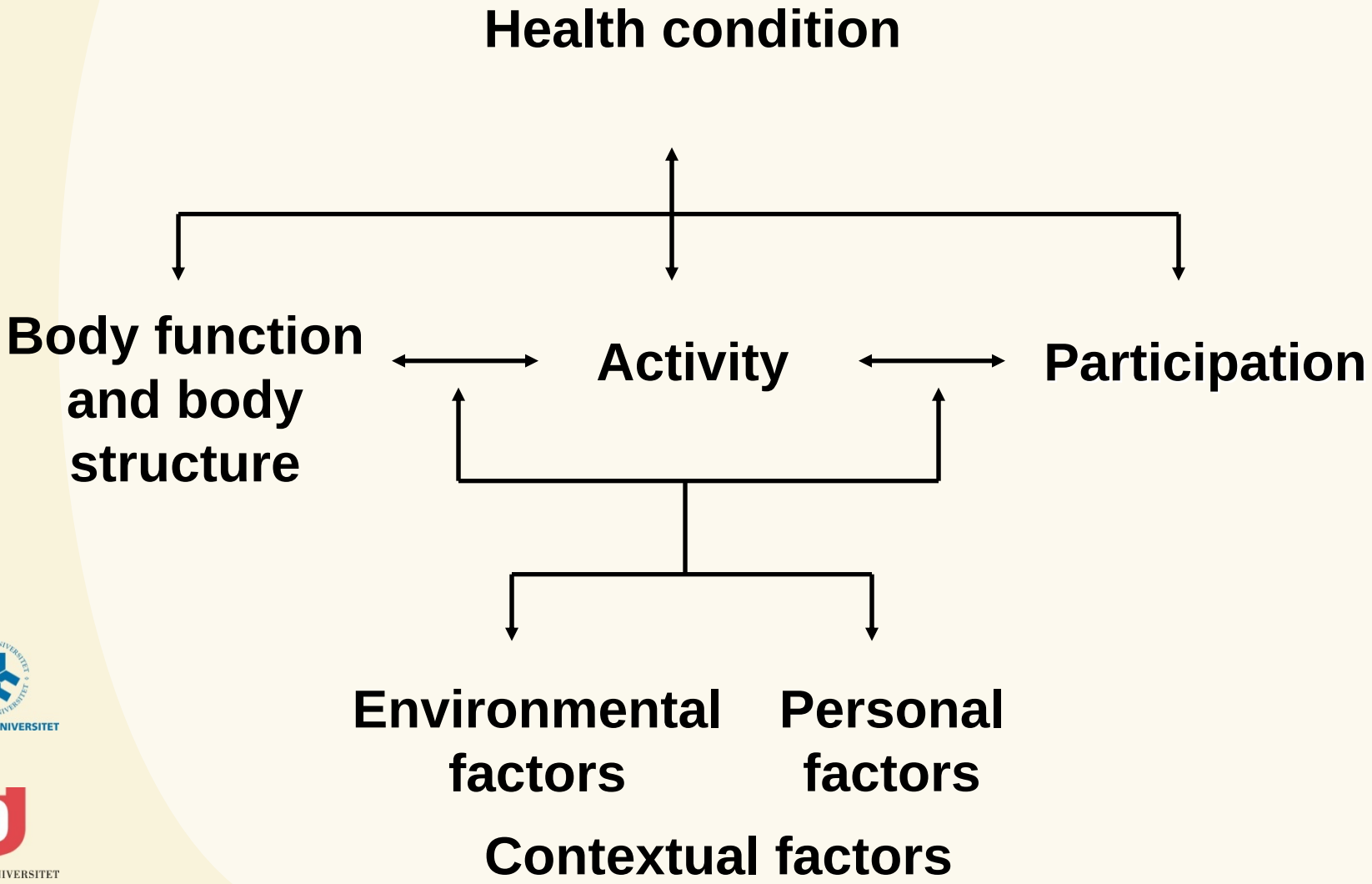
Examples: General System Theory (GST), Ecological System Theory (EST), Multi-level Analysis

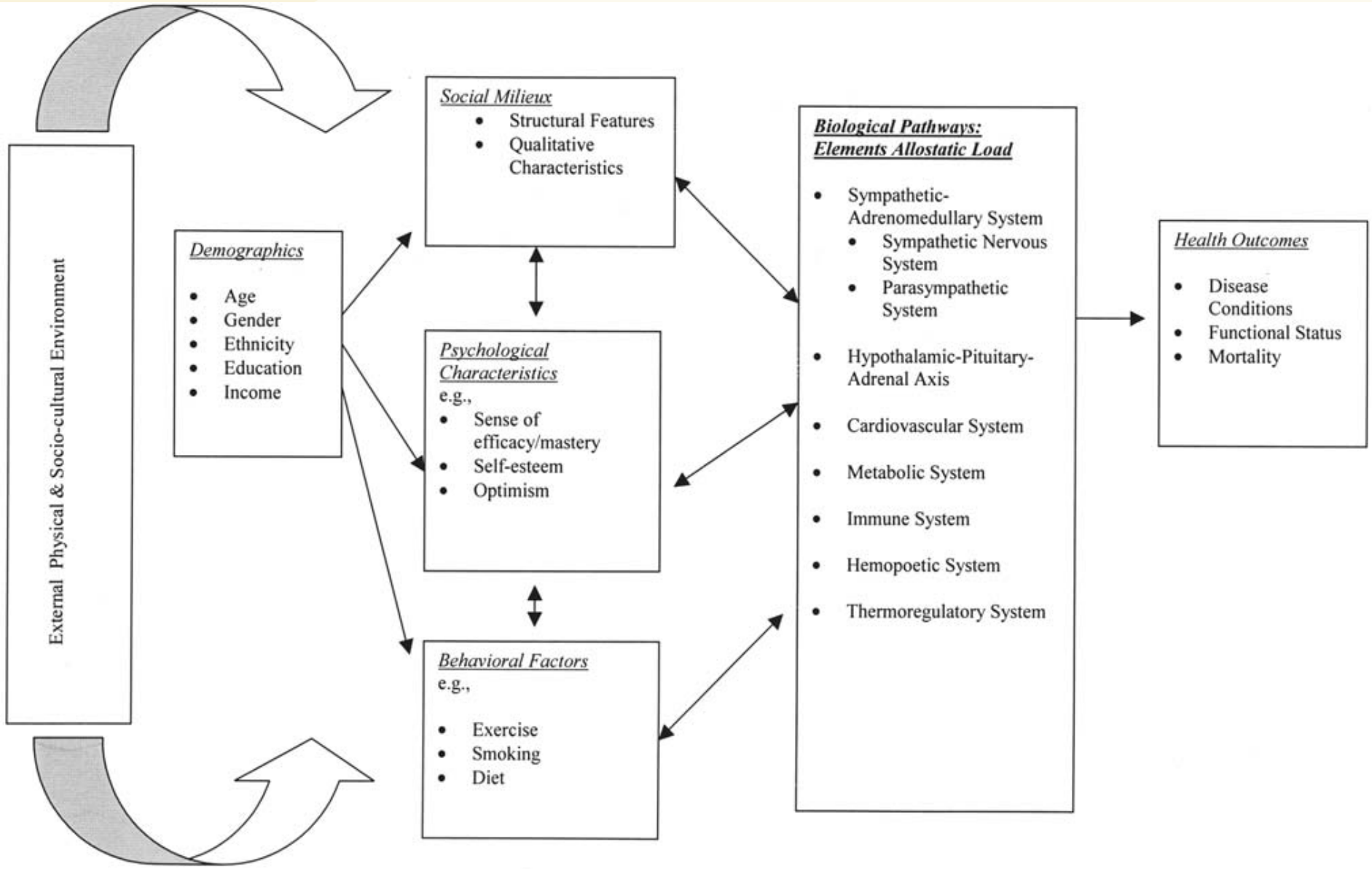
"As an integrative analytical tool, ICF would guide strategies of data modelling, data reduction and analysis."

Interdisciplinary Health Research and the ICF

Berth Danermark and Jerome Bickenbach (forthcoming)

The integrative model of functioning and disability, ICF – WHO



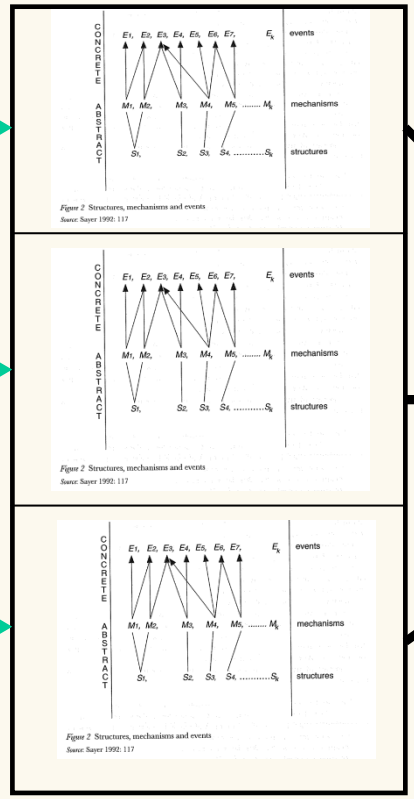

External Physical & Socio-cultural Environment
Social Milieux
Structural Features
Qualitative Characteristics
Demographics
Age
Gender
Ethnicity
Education
Income
Psychological Characteristics
e.g.,
Sense of efficacy/mastery
Self-esteem
Optimism
Behavioral Factors
e.g.,
Exercise
Smoking
Diet
Biological Pathways: Elements Allostatic Load
Sympathetic-Adrenomedullary System
Sympathetic Nervous System
Parasympathetic System
Hypothalamic-Pituitary-Adrenal Axis
Cardiovascular System
Metabolic System
Immune System
Hemopoetic System
Thermoregulatory System
Health Outcomes
Disease Conditions
Functional Status
Mortality

Disability Research
THE SWEDISH INSTITUTE FOR

Levels

Integration

Praxis



Effective epistemic integration of knowledge in a holistic perspective

PRAXIS

LINKÖPINGS UNIVERSITET

ÖREBRO UNIVERSITET

Disability Research
THE SWEDISH INSTITUTE FOR

Praxis

Change the structure
Abolish boostering mechanisms
Create counteracting mechanisms

Doing this presupposes knowledge based on S+M+C=O

LINKÖPINGS UNIVERSITET

ÖREBRO UNIVERSITET

Conclusions

Doing IDR is a challenging task and it requires

- A common metatheoretical approach (e.g. levels, non-reductionism, specificty in methodology, S+M+C+O): team level
- Basic understanding in and respect for other researchers' approaches: individual level
- Supportive administrative and career structures: administrative level

Disability Research
THE SWEDISH INSTITUTE FOR

Tack för uppmärksamheten!

LINKÖPINGS UNIVERSITET

ÖREBRO UNIVERSITET