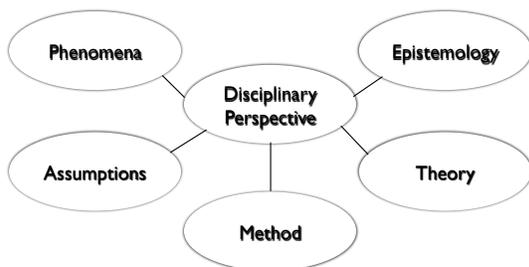


Defining the Elements of Disciplines

Interdisciplinary Research: Process and Theory
Allen F. Repko



Disciplinary perspective is not just limited to a discipline's general view of reality, but also includes constituent parts, or elements as well.



Phenomena

Phenomena are enduring aspects of human existence that are susceptible to description and explanation

Different disciplines may share, or be interested in the same phenomena



Phenomena Classified

Perspectival Approach - relying on each discipline's unique perspective on reality

Classification Approach - phenomena are linked to particular disciplines based on the disciplines general perspective and the phenomena it typically studies



"I'm on the verge of a major breakthrough, but I'm also at that point where Chemistry leaves off and Physics begins, so I'll have to drop the whole thing."

Disciplines and Their Phenomena

Category	Discipline	Phenomena
Natural Science	Physics	Subatomic particles, nature of matter and energy
Social Science	Political Science	nature and practice of systems of government and of individuals
Humanities	Philosophy	search for wisdom through contemplation and reason using abstract thought

Classification Approach

There are 11 categories of phenomena

- Genetic Predispositions
- Individual Differences
- Economy
- Art
- Politics
- Culture
- Social Structure
- Technology and Science
- Health
- Population
- Non-Human Environment

Categories of Phenomena

There are 3 levels of categorical distinction

First Level	Second Level	Third Level
Economy	Income Distribution Economic Ideology Economic Institutions	production trade labor relations
Culture	Languages Religion Expression of culture	dance/song cuisine attire
Politics	Political Institutions Political Ideology Nationalism	Decision-making systems rules organizations

Assumptions

An **Assumption** is something that is taken for granted, a supposition

Assumptions are the principles that underlie the discipline as a whole and its overall perspective on reality



Basic Assumptions of Science

1. Nature is orderly
2. We can know nature
3. All natural phenomena have natural causes
4. Nothing is self-evident
5. Knowledge is based on experience
6. Knowledge is superior to ignorance

The particular *combination* of assumptions is particular to each discipline, but disciplines can share assumptions

Hallmark Assumptions

1. Scientists/Researchers can transcend their cultural experience and make definitive measurements of phenomena
2. There are no supernatural properties of nature that cannot potentially be measured



Assumptions in Natural Science

<i>Biology</i>
Deductive reasoning based on falsification is superior to description and induction
<i>Chemistry</i>
The function of the whole is reducible to the properties of its constituent elements and compounds and their interactions
<i>Mathematics</i>
Assumptions form the starting point for logical proofs of its theorems If A then B

Assumptions in Social Science

<i>Anthropology</i>
Cultural Relativism - what is good is shaped by culture, systems of knowledge not comparable/transferable
<i>Economics</i>
Rational self-interest transcends national and cultural boundaries
<i>Psychology</i>
Data obtained through systematic empiricism allows for more confident conclusions than casual observation

Assumptions in the Humanities

<i>Art & Art History</i>
The intrinsic value of the object is primary, social context completes one's understanding
<i>History</i>
Objectivity in historical research is possible and preferred, there is an important under appreciated body of history
<i>Literature</i>
"Texts" are a lens for understanding life in a culture and an instrument to understand human experience

Assumptions

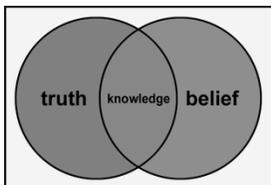
Assumptions often play an important role in the process of creating common ground among conflicting insights



Epistemology

Epistemology is the branch of philosophy that studies how one knows what is true and how one validates truth

Each discipline's epistemology is its way of knowing that part of reality that it considers within its research domain



Epistemological Positions

Positivists - concerned with establishing casual relationships between social phenomena through direct observation, attempting to develop explanatory, and even predictive, models

Interpretivists - believe that that world is socially constructed, social phenomena do not exist independently of our interpretation of them and that objective analysis is impossible

The **epistemic norms of a discipline** are agreements about how researchers should select evidence or data, evaluate experiments and judge theories

Epistemological Approaches

Modernist - belief in objective, empirically based, rationally analyzed truth that is knowable

Postmodernist - operate under the assumption that there is no such thing as objective truth



Theories About How the World Works

Modernism	A real world exists independent of our knowledge of it
Positivism	External reality is discoverable through empirical observation
Interpretivism	The world can be interpreted on an individual basis, but it can never really be known
Postmodernism	The world is discursively constructed

Epistemologies of Natural Science

<i>Biology</i>
Stresses value of classification and experiment control
<i>Earth Science</i>
Theory of uniformitarianism is used. Since history of Earth is not directly observable, accept natural laws remain constant
<i>Physics</i>
Empirical, rational, and experimental. Seeks to discover truths and laws through objective and measurable information

Epistemologies of Social Science

<i>Anthropology</i>
Epistemological pluralism consisting of empiricism, rationalism and constructivism
<i>Psychology</i>
Psychological constructs and their interrelationships can be inferred through discussion and observation and applied clinically or experimentally
<i>Sociology</i>
Modernism and the critical social theory cluster (all assume that knowledge is socially constructed)

Epistemologies of the Humanities

<i>Art & Art History</i>
Modernists determine the value of works of art by comparing them with standards of aesthetics and expertise
<i>Philosophy</i>
Majorly concerned with ascertaining whether the means of obtaining knowledge are trustworthy (memory, judgement)
<i>Religious Studies</i>
Concerned with the assumptions and preconceptions that influence analysis and interpretation of data

Limitations of Epistemologies

Modernism	Postmodernism
Observations are judgmental, conceptual, or theory-laden	Embraces extreme relativism
Possible alternate explanations	Destructive
Infallible theories not possible	Insistence of higher merit
Excludes qualitative judgements	Fractured and disjunct group
	No universals or meta-system

Theory

Theory refers to a generalized scholarly explanation about some aspect of the natural or human world, how it works, and why specific facts are related, that is supported by data and research



Two Kinds of Theory

Grand Theories - are general analyses that attempt to explore and explain interrelationships between phenomena that extend beyond the borders of two or more disciplines

Narrow-Range Theories - are often specific to a discipline and have limited applicability.

Concepts and Theory

Concepts are the most elementary “building blocks” of any theory

Some concepts only found in single theory but most are found in a wide range of theories

Disciplines have specialized concepts that constitute its jargon

Definitions and meanings of concepts may differ across disciplines

Method

Method concerns how one conducts research, analyzes data or evidence, tests theories, and creates new knowledge

The methods of a discipline corresponds to the theories it embraces



Methodological Approaches

Quantitative Approach - evidence can be expressed numerically over a specified time frame

Qualitative Approach - focuses on evidence that cannot easily be quantified, such as cultural mannerisms and personal impressions of a musical composition

<i>Grand Theory</i>	<i>Approach</i>	<i>Method Typologies</i>
Positivism	Quantitative	Experiments Surveys Statistical Analysis
Interpretivism	Qualitative	Interviews Case Studies Experience
Postmodernism		Discourse Analysis

Research Methods of Natural Science

<i>Biology</i>
Laboratory experiments and field explanatory observation and data analysis
<i>Earth Science</i>
Variety of quantitative methods including statistics, computer modeling, X-Ray analysis, and field work
<i>Mathematics</i>
Uses proven theorems about the properties of the abstract realities they create

Research Methods of Social Science

<i>Anthropology</i>
Experiments, sampling, cultural immersion, interviewing, analysis of human interaction, language, and archaeology
<i>Psychology</i>
Uses the scientific method in naturalistic observation, case study research, correlational research, differential research, and experimental research
<i>Sociology</i>
Divided into quantitative and qualitative specialties

Research Methods of the Humanities

<i>History</i>
Identification of primary source material from the past in the form of documents, records, letters, archaeology
<i>Literature</i>
Emphasize the centrality of texts and include auto/biographical, oral history, critical discourse analysis
<i>Philosophy</i>
The making and the questioning of distinctions (a difference displayed)



How can assumptions play an important role in the process of creating common ground among conflicting insights?

What is the importance of Grand Theories to interdisciplinary work?

Why should interdisciplinary researchers and students be interested in the epistemologies of disciplines?
