Environmental and Social Forces in Multidisciplinary Research

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Abstract

Research plays an effective role in all disciplines, creativity, and innovations. Changes are made through proofs, where as research provides those proofs in not only maintaining the existing level, but for the further developments also. The environment and social forces have been taken as parameters, which are provoking effective suggestions, and providing possible conclusions which can be implemented in practical deviations. Parameters can be listed as population, geographical area, affluence, technology, culture, institutions, risk, stress, annoyance, experiences, education, urban-rural environments, behavioral procedures, environmental motivation, behavioral change, environmental psychology, and political changes so for. These are locating practical problems to the researcher, as a quantitative aspect helping in analysis, and enhancing to attain solutions. Hence the researchers are highly practical, and development oriented. In this research paper the researchers are taken as a population and these parameters are discussed. These forces contribution towards the practical/actionable research is analyzed.

Introduction

There are several types of inquiry that may be referred to as "interdisciplinary." Interdisciplinarity is often used interchangeably with such terms as multidisciplinarity, transdisciplinarity, and crossdisciplinarity. "Interdisciplinarity" in referring to an approach to organizing intellectual inquiry is an evolving field, and stable, consensus definitions are not yet established for some subordinate or closely related fields.

Multidisciplinarity

Multidisciplinarity is the act of joining together two or more disciplines without integration. Each discipline yields discipline specific results while any integration would be left to a third party observer. An example of multidisciplinarity would be a panel presentation on the many facets of the AIDS pandemic (medicine, politics, epidemiology) in which each section is given as a stand-alone presentation.

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Transdisciplinarity

Transdisciplinary, while the term is frequently used, may not yet have a stable, consensus meaning. Usage suggests that a transdisciplinary approach dissolves boundaries between disciplines. Most uses of the term suggest a deliberate and intentionally scandalous or transgressive violation of disciplinary rules, for the purpose of achieving new insight, or of expanding the discipline's resources.

A less polemic view of transdiciplinarity treats it as the act of taking ideas, theories, concepts, and methods which exist above the separation of disciplines and applying them to transcend disciplinary boundaries. This is based largely on the idea that "knowledge cannot be singularly claimed as belonging to or originating in any one discipline". An example of transdisciplinarity in this sense would be the application of Marxist philosophies to disciplines such as art history or literature, thus applying philosophies of sociology, economics, politics, et cetera to the study of these areas.

Crossdisciplinarity

Crossdisciplinarity is the act of crossing disciplinary boundaries to explain one subject in the terms of another, foreign subject or method. Common examples of crossdisciplinary approaches are studies of the physics of music or the politics of literature.

Ecological factors which affect dynamic change in a population or species in a given ecology or environment are usually divided into two groups: abiotic and biotic.

Abiotic factors are geological, geographical, hydrological and climatological parameters. A biotope is an environmentally uniform region characterized by a particular set of abiotic ecological factors. Specific abiotic factors include:

- Water, which is at the same time an essential element to life and a milieu
- Air, which provides oxygen, nitrogen, and carbon dioxide to living species and allows the dissemination of pollen and spores
- Soil, at the same time source of nutriment and physical support Soil pH, salinity, nitrogen and phosphorus content, ability to retain water, and density are all influential
- Temperature, which should not exceed certain extremes, even if tolerance to heat is significant for some species
- Light, which provides energy to the ecosystem through photosynthesis
- Natural disasters can also be considered abiotic

Natural environment

The natural environment, commonly referred to simply as the environment, is a term that comprises all living and non-living things that occur naturally on Earth or some part of it (e.g. the natural environment in a country).

The natural environment is contrasted with the built environment, which comprises the areas and components that are heavily influenced by man. A geographical area is regarded as a natural environment (with an indefinite article), if the human impact on it is kept under a certain limited level (similar to section 1 above). This level depends on the specific context, and changes in different areas and contexts. The term wilderness, on the other hand, refers to areas without any human intervention whatsoever (or almost so).

Population dynamics

Population dynamics is the study of marginal and long-term changes in the numbers, individual weights and age composition of individuals in one or several populations, and biological and environmental processes influencing those changes.

Population dynamics has traditionally been the dominant branch of mathematical biology, which has a history of more than 210 years, although more recently the scope of mathematical biology has greatly expanded.

In fisheries and wildlife management, population is affected by three dynamic rate functions. Density of individuals in a population affects all three rate functions.

- Natality or birth rate, often recruitment, which means reaching a certain size or reproductive stage. Usually refers to the age a fish can be caught and counted in nets
- Growth rate, which measures the growth of individuals in size and length. More important in fisheries, where population is often measured in biomass.
- Mortality, which includes harvest mortality and natural mortality. Natural mortality includes non-human predation, disease and old age. Immigration and emigration are present, but are usually not measured.

Human geography

Human geography, is a branch of geography that focuses on the study of patterns and processes that shape human interaction with the environment, with particular reference to the causes and consequences of the spatial distribution of human activity on the Earth's surface.

Scope

It encompasses human, political, cultural, social, and economic aspects of the social sciences. While the major focus of human geography is not the physical landscape of the Earth (see physical geography) it is not possible to discuss human geography without going into the physical landscape on which human activities are being played out, and environmental geography is emerging as an important link between the two. Human geography is methodologically diverse using both qualitative methods and quantitative methods, including case studies, survey research, statistical analysis, and model building among others.

Fields of human geography

The main fields of study in human geography focus around the core of:

- Cultural geography

  Subfields include: Language geography & Religion geography

- Development geography
- Economic geography

  Subfields include Marketing geography

- Historical geography

  Subfields include Time geography

- Political geography

  Subfields include Geopolitics, Strategic geography & Military geography

- Population geography
- Social geography

  Subfields include Electoral geography, Tourism geography, Animal Geographies & Children's geographies

- Urban geography

  Subfields include Transportation geography

Within each of the subfields various philosophical approach can be used in research therefore an urban geographer could be a Marxist urban geographer or a Feminist Urban geographer etc. Such approaches are:

- Behavioral geography
- Critical geography
- Feminist geography
- Marxist geography

Human factor

"Human Factors" (HF) is a catch-all term that covers;

- The science of understanding the properties of human capability (Human Factors Science).
- The application of this understanding to the design and development of systems and services (Human Factors Engineering)
- The art of ensuring successful application of Human Factors Engineering to a programme (sometimes referred to as Human Factors Integration (HFI))

The term "human factors" is to a large extent synonymous with the term "Ergonomics" having separate origins either side of the Atlantic but covering the same technical areas: however nowadays the terms are used more or less interchangeably.

Simply put, human factors involves the study of all aspects of the way humans relate to the world around them, with the aim of improving operational performance, safety, through life costs and/or adoption through improvement in the experience of the end user.

Other terms used to describe the discipline and their related professions are;

- Human Factors > Human Factors Practitioner
- Ergonomics > Ergonomist
- Human Factors Engineering > Human Factors Engineer

Sub-disciplines or specialisations within this field include:

- Cognitive Ergonomics > Cognitive Engineer
- Usability > Usability Engineer - Usability Professional
- Human Computer / Human Machine Interaction > HCI Engineer
- User Experience > User Experience Engineer

Human factors practitioners can come from a variety of backgrounds; though predominantly they are Psychologists (Cognitive, Perceptual, and Experimental) and physiologists. Designers (Industrial, Interaction, and Graphic), Anthropologists, Technical communication Scholars and Computer Scientists also contribute. Though some practitioners enter the field of Human Factors from other disciplines, both M.S. and Ph.D. degrees

in Human Factors Engineering are available from several universities worldwide.

Culture (from the Latin cultura stemming from colere, meaning "to cultivate,") generally refers to patterns of human activity and the symbolic structures that give such activity significant importance. Different definitions of "culture" reflect different theoretical bases for understanding, or criteria for evaluating, human activity.

Culture is manifested in music, literature, painting and sculpture, theater and film. Although some people identify culture in terms of consumption and consumer goods (as in high culture, low culture, folk culture, or popular culture), anthropologists understand "culture" to refer not only to consumption goods, but to the general processes which produce such goods and give them meaning, and to the social relationships and practices in which such objects and processes become embedded. For them, culture thus includes technology, art, science, as well as moral systems.

Affluence

Wealth from the old English word "weal", which means "well-being" or "welfare". The term was originally an adjective to describe the possession of such qualities.

"Wealth" has come to mean an abundance of items of economic value, or the state of controlling or possessing such items, and encompasses money, real estate and personal property. In many countries wealth is also measured by reference to access to essential services

such as health care, or the possession of crops and livestock. An individual who is wealthy, affluent, or rich is

someone who has accumulated substantial wealth relative to others in their society or reference group. In economics, wealth refers to the value of assets owned minus the value of liabilities owed at a point in time.

Poverty is being without things, having little money, not many material possessions and in need of essential goods.

Risk is a concept that denotes a potential negative impact to an asset or some characteristic of value that may arise from some present process or future event. In everyday usage, risk is often used synonymously with the probability of a known loss. Paradoxically, a probable loss can be uncertain and relative in an individual event while having a certainty in the aggregate of multiple events (see risk vs. uncertainty below).

Risk is the possibility of an event occurring that will have an impact on the achievement of objectives. Risk is measured in terms of impact and likelihood.

Risk communication and risk perception are essential factors for all human decision making.

Decision making is the cognitive process leading to the selection of a course of action among variations. Every decision making process produces a final choice. It can be an action or an opinion. It begins when we need to do something but know not what. Therefore, decision making is a reasoning process which can be rational or irrational, can be based on explicit assumptions or tacit assumptions.

Common examples include shopping, deciding what to eat, when to sleep, and deciding whom or what.

Sociology

Sociology (from Latin: socitus, "companion"; and the suffix -ology, "the study of", from Greek λόγος, lógos, "knowledge") is an academic and applied discipline that studies society and human social interaction. Sociological research ranges from the analysis of short contacts between anonymous individuals on the street to the study of global social processes. Numerous fields within the discipline focus on how and why people are organized in society, either as individuals or as members of associations, groups, and institutions. As an academic discipline, sociology is typically considered as a branch of social science.

Sociology is the new discipline which study social structure and patterns, relations and interactions, agencies and institutions, etc. of the society. "Sociology is the study of meaningful social actions" Sociology is a cluster of disciplines which seek to explain the dimensions of society and the dynamics that societies operate upon. Some of these disciplines which reflect current fields of Sociology are demography, which studies changes in a

population size or type; criminology, which studies criminal behavior and deviance; social stratification, which studies inequality and class structure; political sociology which studies government and laws; sociology of race and sociology of gender which examine the social construction of race and gender as well as race and gender inequality. New sociological fields and sub-fields—such as network analysis and environmental sociology—continue to evolve; many of them are very cross-disciplinary in nature.

Sociological research provides educators, planners, lawmakers, administrators, developers, business leaders, and people interested in resolving social problems and formulating public policy with rationales for the actions that they take.

Scope and topics of sociology

Selected general topics: Discrimination, Deviance and social control, Migration, Social action, Social change, Social class, Social justice/ injustice, Social order, Social status, Social stratification, Socialization, Society, Sociological imagination, Structure and agency, Subfields of sociology

Sociological research

The basic goal of sociological research is to understand the social world in its many forms. Quantitative methods and qualitative methods are two main types of sociological research methods. Sociologists often use quantitative methods — such as social statistics or network analysis - to investigate the structure of a social process or describe patterns in social relationships. Sociologists also often use qualitative methods - such as focused interviews, group discussions and ethnographic methods - to investigate social processes. Sociologists also use applied research methods such as evaluation research and assessment.

Methods of sociological inquiry

Sociologists use many types of social research methods, including:

- **Archival research** - Facts or factual evidences from a variety of records are compiled.
- **Content Analysis** - The contents of books and mass media are analyzed to study how people communicate and the messages people talk or write about.
- **Historical Method** - This involves a continuous and systematic search for the information and knowledge about past events related to the life of a person, a group, society, or the world.
- **Experimental Research** - The researcher isolates a single social process or social phenonena and uses the data to either confirm or construct social theory. The experiment is the best method for testing theory due to its extremely high internal validity. Participants, or subjects, are randomly assigned to various conditions or 'treatments', and then analyses are

made between groups. Randomization allows the researcher to be sure that the treatment is having the effect on group differences and not some other extraneous factor.

- **Survey Research** - The researcher obtains data from interviews, questionnaires, or similar feedback from a set of persons chosen (including random selection) to represent a particular population of interest. Survey items may be open-ended or closed-ended.
- **Life History** - This is the study of the personal life trajectories. Through a series of interviews, the researcher can probe into the decisive moments in their life or the various influences on their life.
- **Longitudinal study** - This is an extensive examination of a specific group over a long period of time.
- **Observation** - Using data from the senses, one records information about social phenomenon or behavior. Qualitative research relies heavily on observation, although it is in a highly disciplined form.
- **Participant Observation** - As the name implies, the researcher goes to the field (usually a community), lives with the people for some time, and participates in their activities in order to know and feel their culture.

The choice of a method in part often depends on the researcher's epistemological approach to research. For example, those researchers who are concerned with statistical generalizability to a population will most likely administer structured interviews with a survey questionnaire to a carefully selected probability sample. By contrast, those sociologists, especially ethnographers, who are more interested in having a full contextual understanding of group members lives will choose participant observation, observation, and open-ended interviews. Many studies combine several of these methodologies.

The relative merits of these research methodologies is a topic of much professional debate among practicing sociologists.

Conclusion

In practice, some sociologists combine different research methods and approaches, since different methods produce different types of findings that correspond to different aspects of societies. For example, the quantitative methods may help describe social patterns, while qualitative approaches could help to understand how individuals understand those patterns.

An example of using multiple types of research methods is in the study of the Internet. The Internet is of interest for sociologists in various ways: as a tool for research, for example, in using online questionnaires instead of paper ones, as a

discussion platform, and as a research topic. Sociology of the Internet in the last sense includes analysis of online communities (e.g. as found in newsgroups), virtual communities and virtual worlds, organisational change catalysed through new media like the Internet, and social change at-large in the transformation from industrial to informational society (or to information society). Online communities can be studied statistically through network analysis and at the same time interpreted qualitatively, such as though virtual ethnography. Social change can be studied through statistical demographics or through the interpretation of changing messages and symbols in online media studies.

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