Giuseppe Tipaldo

Applied Data Science Project and **Social Research Methodology**

Academic year23-24 - Politecnico di Torino

AGENDA

INTRO

- WHO IS A SOCIAL RESEARCHER
- WHAT THEY DO
- PURPOSE OF THE MODULE

PART 1: OVERVIEW

- HUMANISING TECHNOSCIENCE: A PARADIGM OF REFERENCE
- 2 COMPETING DEFINITIONS OF SCIENCE AND SCIENTIFIC RESEARCH
- POINTS OF CONTACT BETWEEN LFA AND SOCIAL RESEARCH
- THE DIRIGISTE APPROACH TO THE DESIGN: BENEFITS AND COSTS

PART 2: METHODOLOGICAL FOCUS

- CONTEXT+STAKEHOLDER ANALYSIS ENGAGEMENT AND SOCIAL RESEARCH: QUANTITATIVE VS. QUALITATIVE, ANALOGUE VS. DIGITAL, DOCUMENT ANALYSIS APPROACHES
- TAXONOMY OF SOCIAL RESEARCH DOCUMENTS

PART 3: QUANTITATIVE APPROACHES

- MODEL STRUCTURE OF QUANTITATIVE RESEARCH
- UNIT OF ANALYSIS
- FROM COMPLEX CONCEPTS TO VARIABLES AND INDICES
- VARIABLE TYPES
- INDEX TYPES
- VALIDITY AND RELIABILITY OF INDICATORS IN SOCIAL RESEARCH

PART 4: THE INVESTIGATION SURVEY

- DEFINITION
- ASSUMPTIONS: STIMULUS INVARIANCE AND THE OBJECTIVIST-UNIFORMIST APPROACH TO SOCIAL PHENOMENA
- LIMITS: RELIABILITY OF VERBAL BEHAVIOUR
- TYPES OF INFORMATION THAT CAN BE GATHERED WITH THE SURVEY
- MODES OF ADMINISTRATION AND APPLICATIONS TO THE LFA
- ALTERNATIVES: SECONDARY ANALYSIS AND META-ANALYSIS
- HINTS OF SAMPLE THEORY
- THE QUESTIONNAIRE AND THE SCALES TECHNIQUE

PART 5: QUALITATIVE APPROACHES

- BASIC ASSUMPTIONS AND DIFFERENCES WITH QUANTITATIVE RESEARCH
- THE INTERVIEW: I. SEMI-STRUCTURED, I. FREE
- THE FOCUS GROUP THE
- PARTICIPANT OBSERVATION

PART 6: DOCUMENT ANALYSIS

- DEFINITION
- TAXONOMY OF DOCUMENT ANALYSIS OBJECTS
- CONTENT ANALYSIS
- QUANTITATIVE SEMANTICS: MANUAL VS COMPUTER-ASSISTED
- THE FINAL REPORT

PART 7: COMMUNICATION

- STYLE, TONE AND REGISTER OF COMMUNICATION
- LATIN VS ANGLO-SAXON APPROACH
- THE STRATEGIC PLAN
- DATA-DRIVEN APPROACH

AIMS OF THE CLASS MODULE

1. ENHANCING THE SKILLS BASE OF FUTURE ENGINEERS WITH
NOTIONS OF CONTEXT ANALYSIS AND STAKEHOLDER ENGAGEMENT DERIVED FROM SOCIAL SCIENCES RESEARCH METHODOLOGY

2. FACILITATE THE REALISATION OF CERTAIN PROJECT PHASES THAT YOU ARE CALLED UPON TO REALISING

3. TO SHOW THE MANY POINTS OF CONTACT BETWEEN SOCIAL RESEARCH AND DESIGN IN TECHNOLOGY IN THE CONTEXT ANALYSIS AND STAKEHOLDER ENGAGEMENT PHASES

4. PROMOTING A HUMANIST VISION OF THE 'HARD' SCIENTIFIC DISCIPLINES AND THOSE WITH A STRONG TECHNOLOGICAL ORIENTATION

PART 1

OVERVIEW

TWO COMPETING DEFINITIONS OF SCIENCE

“science is the truth or, at the very least, its best approximation”

REALIST, TECHNOCRATIC APPROACH

“Science is a particular way of producing knowledge about reality, based on the scientific method, culturally situated and not insensitive to forms and relations of power”

CRITICAL, REFLEXIVE APPROACH

SOCIOLOGICAL IMAGINATION

- creative gift of the intellect

- **Martian's look**: cognitive training
  - Observe micro- and macro-social phenomena without awe and wonder even if they are distant from us and seemingly disconnected
  - Not taking everyday life and what is 'normal' (i.e. institutionalised) and (apparently) related to us for granted

- Offer explanations of social phenomena that are **less biased** than common sense and empirically grounded

Charles Wright Mills

ETHICS AND EPISTEMICS

Max Weber

- **Avalutativity**
- 1. Extensive research:
  - The complexity of **operationalising** complex concepts
  - Stimulus invariance and **verbal behaviour**: the limits
- 2. Intensive research:
  - **Understanding** rather than generalising
  - The **power of narratives** to build a 'façade'
  - Gathering arguments as a passe-partout of attitudes and preferences that **give meaning to actions**
- In both cases the epistemic status of our data is that of **UNCERTAINED INFORMATION**

LIMITATIONS AND ADVANTAGES OF THE DIRIGISTE APPROACH

- ## REDUCTION OF DIVERSITY OF OPINION

  the dirigiste approach can lead to an over-centralisation of decision-making power, limiting the diversity of opinions and competing visions (or conflictual) that can emerge from an open and inclusive debate in democratic contexts

- ## RESISTANCE TO CHANGE

  technocratic-paternalistic culture can generate resistance to change, therefore, restrain innovative solutions to public concerns, as it is based on the idea that a small group of experts/ know what is best for society as a whole (or for stakeholder groups within it, which do not have adequate representation or listening). This can lead to rigidity in the system and hinder adaptation to new challenges, as well as posing ethical problems with respect to democratic values

- ## LACK OF EMPATHY, LISTENING AND UNDERSTANDING OF LOCAL NEEDS

  the technocratic perspective often overlooks the needs and concerns of local communities. Experts may not be able to fully understand the specific cultural, social and economic situation of different populations, their point of view, hesitant or critical attitudes can easily be branded as 'ignorant', "irrational', 'selfish', which can lead to ineffective or inappropriate solutions, even in terms of social justice

- ## ALIENATION AND DISILLUSIONMENT

  the technocratic-paternalistic culture can cause feelings of alienation and disillusionment among members of communities or stakeholder groups, as they may feel excluded from decision-making and unheard. This sooner or later leads to distrust in institutions and scientific and political elites, undermining the chances of coalescing consensus around future projects, even distant in time

- ## PROBLEM OF DEMOCRACY

  the dirigiste approach to planning can lead to a concentration of power in the hands of a few experts or technocrats, which can increase the risk of corruption, nepotism and abuse of power.
  Moreover, the dirigiste and technocratic approach can limit democratic participation, reducing the possibility for citizens to influence decisions that affect their daily lives and the future of their society.

- ## EFFICIENCY IN DECISION-MAKING

  a centralised, technocratic approach can lead to more efficient decision-making, as it is based on the knowledge and experience of qualified experts.

- ## ABILITY TO DEAL WITH COMPLEX PROBLEMS

  a centralised, technocratic approach can be particularly useful in the case of complex, interconnected problems.

- ## STANDARDISATION AND UNIFORMITY

  the dirigiste approach may favour standardisation and uniformity of policies and practices,
  especially in the area of security.

LOGICAL FRAME APPROACH (LFA) AND SOCIAL RESEARCH

1

LFA IS AN ANALYTICAL PROCESS

Just like the stages of Research Design underpinning Social Research Methodology

2

LFA AND STAKEHOLDER ENGAGEMENT

The logframe approach is the basis for planning and implementing stakeholder engagement. The toolbox to do this includes all the main quantitative and qualitative techniques used in research social

3

PREPARATORY ANALYSIS

The basis of this first phase is the documentary analysis of social research: source criticism (authenticity, authoritativeness, soundness, etc.) and is expressed through quantitative, qualitative or mixed content analysis techniques.

4

PROBLEM ANALYSIS I

The Problem Analysis phase is based on the construction of hypotheses (Cause>Effect relationships) according to a process typical of 'traditional' quantitative social research.

5

PROBLEM ANALYSIS II

The prioritisation of the issues to be addressed can be defined from 'classical' qualitative tools, such as the focus group, or through interactive methods, such as participatory design.

6

INDICATORS AND SOURCE OF VERIFICATION + IMPACT ASSESSMENT

The operational definition of indicators, their implementation and verification of impacts fully follows Lazarsfeld's scheme for moving from complex concepts to variables and indices.

PART 2

METHODOLOGICAL FOCUS

“it is important that those involved in the identification or formulation of projects are sufficiently aware of the policy, sector and institutional context within which they are undertaking their work”

SOCIAL RESEARCH STYLES

QUANTITATIVE VS QUALITATIVE

extensiveness vs intensiveness
detachment vs empathy
standardisation vs individualisation
numbers vs narratives

ANALOGIC VS DIGITAL

tradition vs innovation
tailor-made vs repurposing
small vs big data

DOCUMENT ANALYSIS

what are documents
document vs text
extracting content from text

MIXED METHODS

multiple case study

> “Any individuals, groups of people, institutions or firms that may have a significant interest in the success or failure of a project (either as implementers, facilitators, beneficiaries or adversaries) are defined as ‘stakeholders’
>
> ”

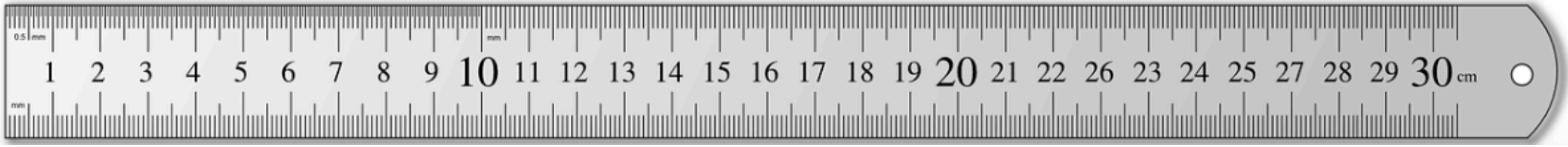
STAKEHOLDER ANALYSIS - MAIN STEPS

- IDENTIFY THE PROBLEM OR DEVELOPMENT OPPORTUNITY GENERAL PROBLEM OR OPPORTUNITY THAT IS BEING ADDRESSED/CONSIDERED
- IDENTIFY ALL GROUPS THAT HAVE A SIGNIFICANT INTEREST
SIGNIFICANT IN THE (POTENTIAL) PROJECT
- INVESTIGATE THEIR RESPECTIVE ROLES, DIFFERENT INTERESTS, RELATIVE
RELATIVE POWER AND CAPACITY FOR PARTICIPATION (STRENGTHS AND
STRENGTHS AND WEAKNESSES)
- IDENTIFY THE DEGREE OF COOPERATION OR CONFLICT IN THE RELATIONSHIPS BETWEEN THE STAKEHOLDERS
- INTERPRET THE RESULTS OF THE ANALYSIS AND INCORPORATE RELEVANT
RELEVANT INFORMATION INTO THE DESIGN TO ENSURE THAT

  - resources are adequately targeted to meet the distribution/equity objectives and the needs of priority groups
  - management and coordination arrangements are appropriate to promote the participation
  stakeholders
  - stakeholder conflicts of interest are recognised and explicitly addressed in the design.

OBJECTIVELY VERIFIABLE INDICATORS - MAIN STEPS

- TRANSFORMING OBJECTIVES INTO QQT (QUANTITY-QUALITY-TIME) INDICATORS
- SPECIFIC: MAXIMISE THE INDICATIVE PART OF THE INDICATOR AND MINIMISE
THE EXTRANEOUS ONE
- MEASURABLE: OPERATIONALISE THE INDICATOR APPROPRIATELY
- AVAILABLE: MAKE SURE THAT TOOLS AND DATA USEFUL FOR CONSTRUCTING
THE INDICATOR ARE ACCESSIBLE (AT REASONABLE COST/TIME)
- RELEVANT: INDICATORS MUST BE VALID, I.E. THEY MUST MEASURE EXACTLY
WHAT THEY ARE DESIGNED FOR
- TIME-BOUND: IT MUST BE CLEAR WHEN THE OBJECTIVES SET CAN BE ACHIEVED



WHAT IS SOCIAL RESEARCH?

«The term 'social research' designates the scientific research conducted in the domain of the social sciences».

Cardano, M., 2003, "Tecniche di ricerca qualitativa", Roma, Carocci.

«Scientific research is a creative process of discovery that is developed according to a **predetermined itinerary** and according to **established procedures** that have been accepted within the scientific community».

Corbetta, P., 1999, "Metodologia e tecniche della ricerca sociale", Bologna, Il Mulino.

METHODS

TECHNIQUES

WHAT IS SOCIAL RESEARCH?

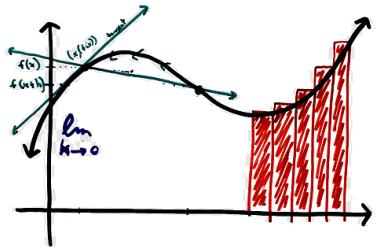
1/ research design

(hypothesis or research questions, definitions, strategy, etc.)

2/ set up of empirical documentation

(different sub phases depending on the research style: qualitative/ quantitative; survey/etnography/case study..., techniques, etc.)

WHAT IS SOCIAL RESEARCH?



3/ data analysis

(Qualitative-textual content analysis: full reading of transcriptions and corpora, manual or Computer-Assisted tagging, etc.; quantitative approach: statistics applied to survey, quantitative semantics, data reduction and other statistic measures)

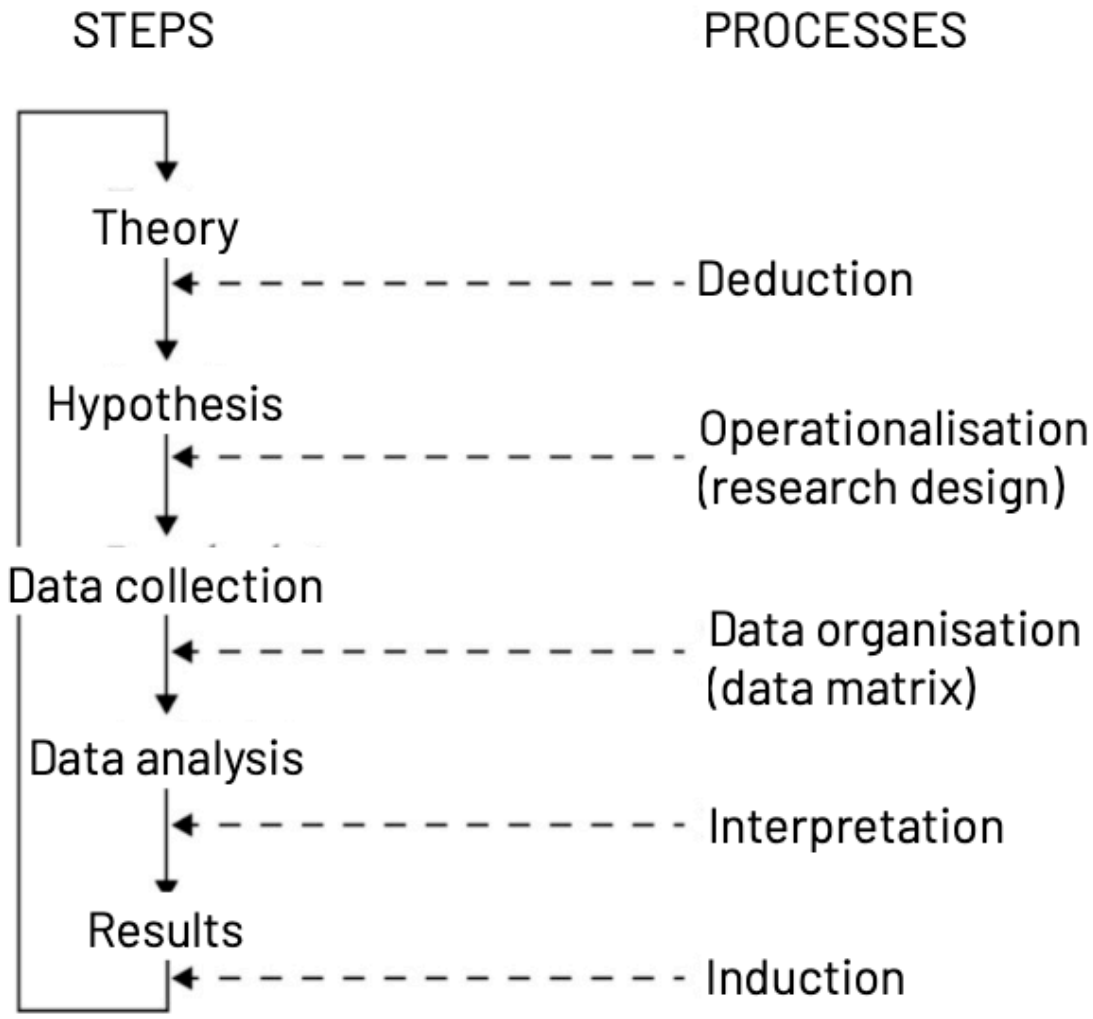
4/ writing and publication

(goals, relevance and data interpretation; results connected to the research questions; no under/overinterpretation; full and transparent methodological report)

PART 3

QUANTITATIVE APPROACHES

QUANTITATIVE RESEARCH OUTLINE



UNIT OF ANALYSIS

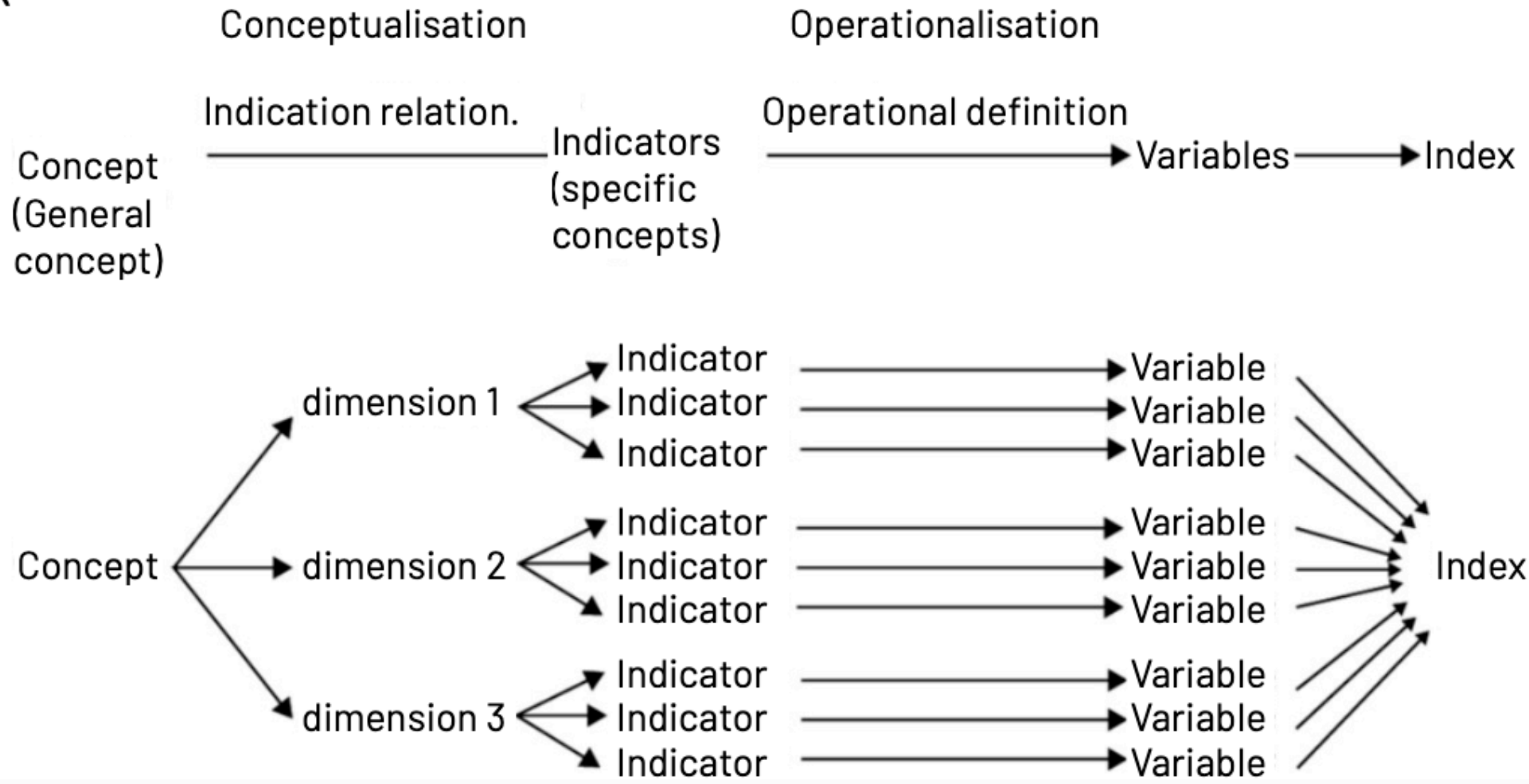
INDIVIDUAL/AGGREGATE OF INDIVIDUALS

ORGANISATION/INSTITUTION

EVENT

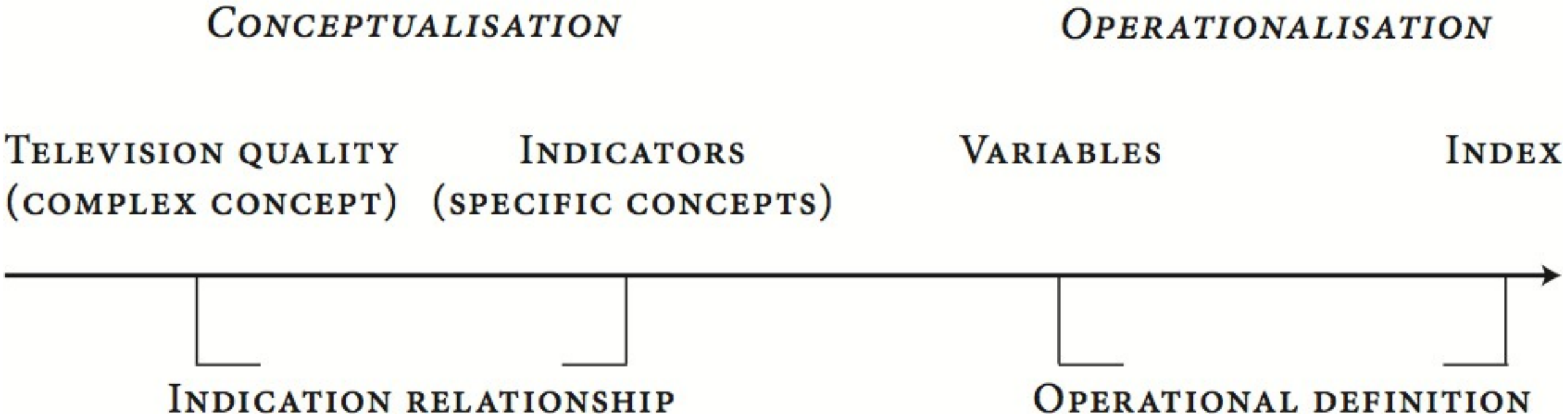
CULTURAL PRODUCT

THE LAZARSFELD SCHEME (CONCEPTS>VARIABLES>INDICES)

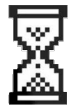


THE LAZARSFELD SCHEME (CONCEPTS>VARIABLES>INDICES)

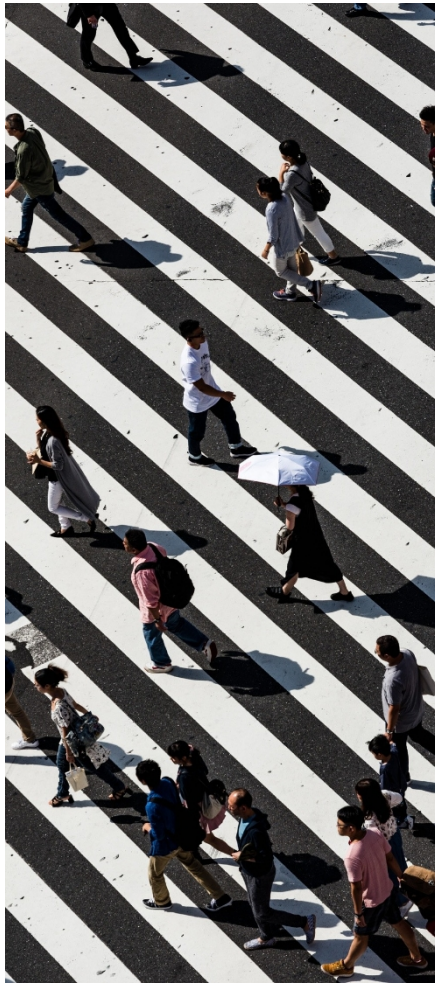
Figure 3.1 The empirical translation process of the complex concept of television quality



LET'S WORK A BIT ON TRANSFORMING CONCEPTS INTO VARIABLES



FROM THEORY TO HYPOTHESIS



1

THE RATE OF SELFISH SUICIDES (Y) IN COMPANY/GROUP X IS DIRECTLY RELATED TO THE LEVEL OF INDIVIDUALISM IN THAT GROUP/SOCIETY (X). THIS IS AN ILLUSTRATION OF DURKHEIM'S SUICIDE THEORY.

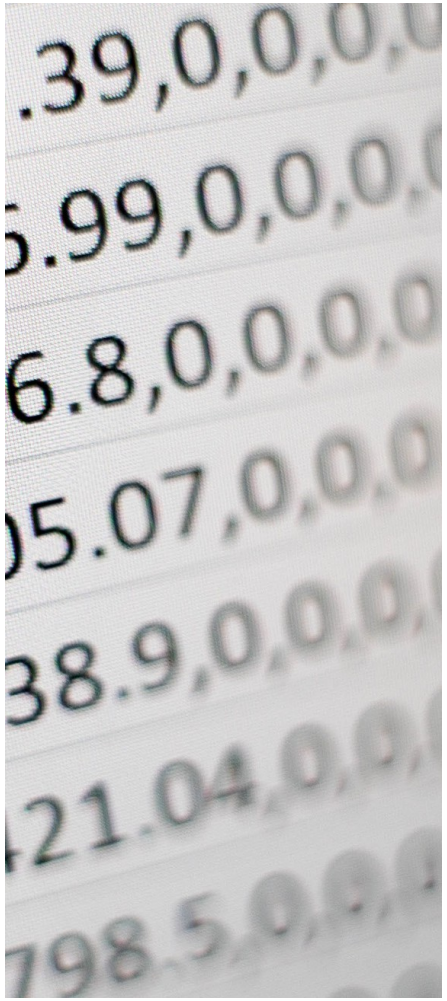
2

THEORY OF D. ALLOWS FOR PREDICTIONS ON IRELAND, EVEN THOUGH D. HAS NEVER STUDIED IT, SINCE WE KNOW X REFERRED TO IRELAND

3

TO APPLY THIS THEORY IRELAND NEEDS TO MOVE FROM THEORY TO HYPOTHESIS, WHICH HAVE THE CHARACTERISTIC TRAIT OF BEING **EMPIRICALLY CONTROLLABLE**.

FROM CONCEPTS TO VARIABLES



1. DEF OF CONCEPT (MENTAL IMAGES, SEMANTIC CONTENT, BRICKS THEORY)

2. HOW A (GENERAL AND OFTEN ABSTRACT) CONCEPT IS TRANSFORMED INTO AN OPERATIONAL TOOL FOR THE SOCIAL RESEARCH? I.E. HOW D O E S EMPIRICAL TRANSLATION TAKE PLACE?

3. **CONCEPTUALISATION:** CONCEPT > ATTRIBUTE = CONCEPT > PROPERTIES OF THINGS, OBJECTS, I.E. UNIT OF ANALYSIS > STATES OF A PROPERTY

4. **OPERATIONAL DEFINITION OF** THE CONCEPT-PROPERTY (ALGORITHM, SET OF RULES FOR TRANSLATING AN ABSTRACT CONCEPT INTO AN OBSERVABLE/MEASURABLE OBJECT)

5. **OPERATIONALISATION**: FROM PROPERTY OBSERVED ON A SERIES OF VARIABLE ANALYSIS (CLASSIFICATION, SORTING, MEASURING, COUNTING)

Concept	Dimensions	Indicators
Political participation	*Invisible YarJecipation.-*	
	Interest aPa politics	Discussing politics
	Emotional involvement	Getting angry about politics
	Political information	Exposure to political information (newspapers, television, etc.). a Degree of knowledge of political facts
	Participation rlsi'bi'le	
	Electoral	Vote
	Partitica	Party membership Dedication of time to party Payment of money to party
	Associative	Participation in associations Signing referendums, petitions Participating in assemblies,
	Sporadic actions	marches Participating in rallies, debates Writing letters to newspapers, complaints to public authorities Addressing politicians

TYPES OF VARIABLES

1 CATEGORIAL

2 ORDINAL

3 CARDINAL

States of property	Operationalisation procedure	Type of variable	Characteristics of values	Operations on values
discrete non-orderable	classification	Nominal	Names	$= \neq$
discrete orderable	sorting	Ordinal	Numbers with only ordinal properties	$= \neq > <$
discrete enumerable continuous	Count Measuring	Cardinal	Numbers with cardinal properties	$= \neq > < + - \times :$

TYPES OF INDICES

1

ONE-DIMENSIONAL

It measures only one dimension, usually in the form of a rate, for longitudinal comparisons (the size of the phenomenon over time within the same context) or transversal (the size of the phenomenon in different contexts with the same moment).

2

ADDITIVE

Multidimensional Poverty Index (MPI) measures poverty from a perspective that takes 10 indicators, including income, education, health and housing quality, and combines them into a single summary index.

3

TYPOLOGY

For example, the Inglehart typological index: this is an index that focuses on measuring people's values on two dimensions
main dimensions: the materialist/post-materialist dimension and the right/left dimension.

PART 4

SAMPLE SURVEY

SURVEY

Definition of sample survey: by sample survey we mean a way of surveying
information: a) by interviewing, b) the individuals themselves, c) from a representative sample, d) by means of a procedure
standardised interrogation, e) in order to study the relationships between variables

Stimulus invariance: the dilemma of standardisation S>R - Objectivism vs. constructivism - Uniformism vs. individualism: for uniformity we exist if not of laws at least of the empirical recurrences/regularities that explain reality social. This makes individuals classifiable at least in trends and general categories. For individualism this is impractical: the uniqueness of the individual is irreducible, scientifically can only be observed if the researcher establishes a relationship deep and empathic (= qualitative research). - In essence: the objectivist-uniformist approach responds to the methodological dilemmas of social research by tending towards the
neutrality of the observer-observer relationship and the standardisation of the S>R consecutio so as to arrive at generalisable results that, at the micro level, intend one case to be equivalent to another if both share the same states on the observed

SURVEY

Reliability of verbal behaviour:

- Social desirability

- Lack of opinion

- Intensity and entrenchment: it is impossible to distinguish strong, entrenched opinions from weak, fickle ones

- How to formulate questions so as not to generate misunderstandings

- story of the two monks or the Vietnam War question
- Simple language
- Not too long questions

- Do not overdo it with answer alternatives

SURVEY

Reliability of verbal behaviour:

- Define terms in order to leave no ambiguity (e.g. "what for you is a quality website?"). - define what is meant by 'quality')

- Avoid terms with extremely negative and judgmental meanings ('criminal' > breaking the law)

- No double negations and other baroque devices

- Avoid YEASAYNG (i.e. assertiveness): a question that does not discriminate is useless and produces a systematic error

- RESPONSE SET: in case of batteries of answers think of Reverse polarities to avoid rows of answers in the same column

- No tendentiousness (piloted questions): 'There are people who, despite the obvious climate emergency, insist on daily to use their private fossil fuel vehicle. How are you doing at work?"