

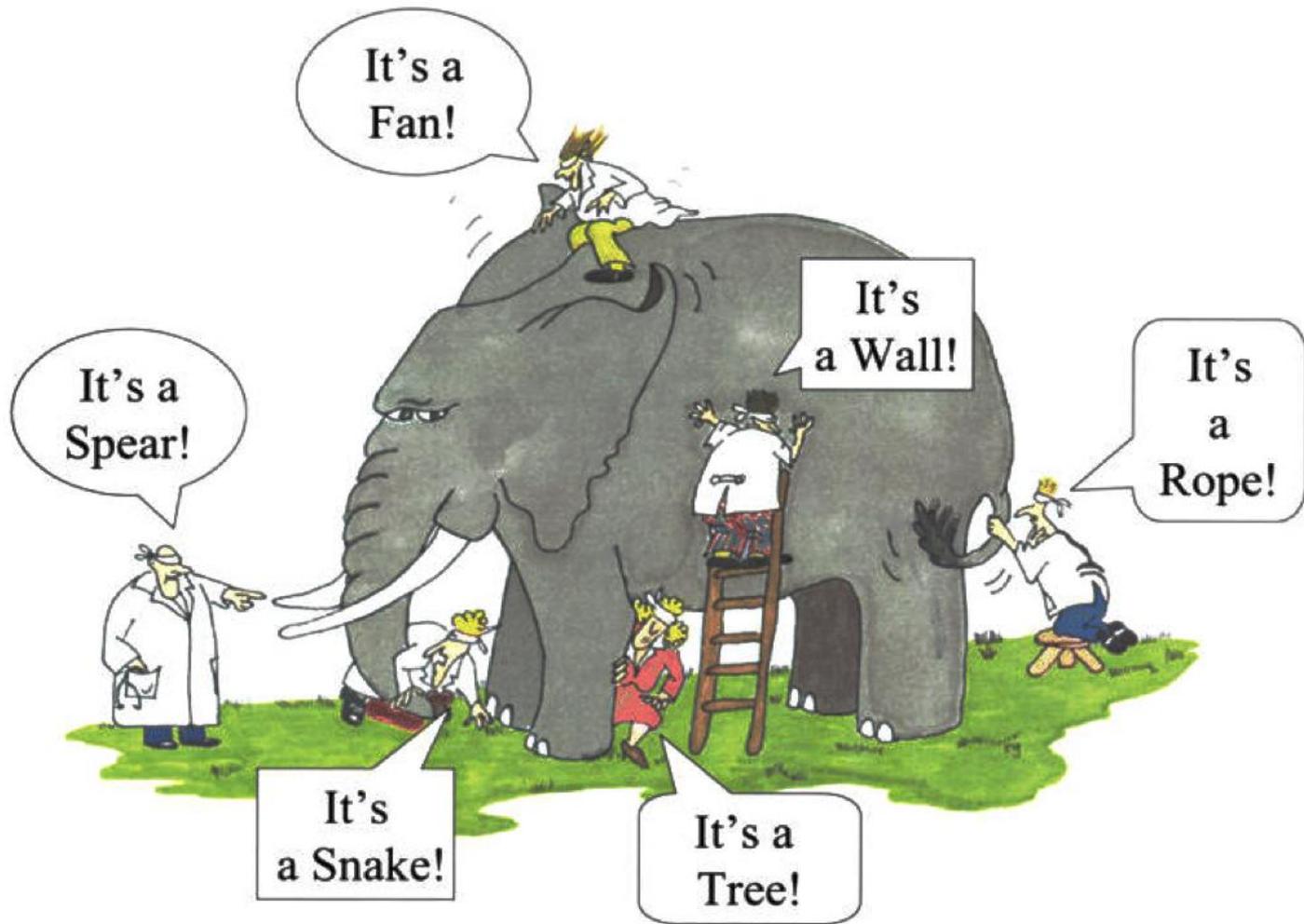
TRIANGULATION

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“Do not feel absolutely certain of anything”

Bertrand Russell, 1951



Triangulation – pronunciation

“traɪ, æŋgjʊˈleɪʃən”

Triangulation - meaning

Often used to indicate that more than two methods are used in a study with a view to double (or triple) checking results. This is also called "cross examination"

- The idea is that one can be more confident with a result if different methods lead to the same result
- If an investigator uses only one method, the temptation is strong to believe in the findings
- If an investigator uses two methods, the results may well clash

- By using three methods to get at the answer to one question, the hope is that two of the three will produce similar answers, or if three clashing answers are produced, the investigator knows that the question needs to be reframed, methods reconsidered, or both

Background

- The concept, originating from ancient Greek mathematics, is applied in a wide range of spheres, including geometry and surveying
- In navigation, it is used to establish a ship's position: measuring a vessel's distance from more than one point on the shore gives a more accurate reading of its location

- Triangulation was first applied to research by Campbell and Fiske (1959) and developed by Webb (1966), who argued that researchers should employ more than one instrument to measure variables
- As this implies, triangulation was first associated with quantitative research but its relevance to qualitative methods was soon explored

- Denzin (1970, 1978) was a major proponent of the use of triangulation by researchers working within the interpretivist paradigm

Rationale

- Denzin asks the reader to think of two researchers studying a psychiatric hospital. Each chooses different methods: one opts for a survey while the other uses participant observation
- This leads to differences in the questions they ask and the observations they make. In addition, the findings are coloured by the researchers' different personalities, biographies and biases, all of which influence the nature of their interactions with the social world

- Each uncovers different aspects of what takes place in the hospital but neither can reveal all of it.
- Therefore, Denzin concludes, to get as full and as accurate a picture as possible, researchers must use more than one strategy

Situation

- Miles and Huberman (1984: 234) have a nice way of explaining it:
- *Detectives, car mechanics and general practitioners all engage successfully in establishing and corroborating findings with little elaborate instrumentation. They often use a modus operandi approach, which consists largely of triangulating independent indices. When the detective amasses fingerprints, hair samples, alibis, eyewitness accounts and the like, a case is being made that presumably fits one suspect far better than others. Diagnosis of engine failure or chest pain follows a similar pattern. All the signs presumably point to the same conclusion. Note the importance of having different kinds of measurement, which provide repeated verification.*

- Anyone who has experienced recurrent problems with a car the garage has been unable to fix, or read in the press about miscarriages of justice over recent years, may not share Miles and Huberman's (1984) confidence in the ability of car mechanics and detectives to reach the 'right' conclusion!

Purpose

- The main purpose of triangulation in educational and social science research is to increase the credibility and validity of the results

- Cohen and Manion (1986) define triangulation as an “attempt to map out, or explain more fully, the richness and complexity of human behavior by studying it from more than one standpoint”

- Altrichter et al. (1996) contend that triangulation “gives a more detailed and balanced picture of the situation |”

- According to O'Donoghue and Punch (2003), triangulation is a “method of cross-checking data from multiple sources to search for regularities in the research data”

Goal

- Patton (2002) cautions that it is a common misconception that the goal of triangulation is to arrive at consistency across data sources or approaches; in fact, such inconsistencies may be likely given the relative strengths of different approaches.
- In Patton's view, these inconsistencies should not be seen as weakening the evidence, but should be viewed as an opportunity to uncover deeper meaning in the data

Types

- Data triangulation
- Investigator triangulation
- Theory triangulation
- Methodological triangulation
- Environmental triangulation

Data Triangulation

- Involves using different sources of information in order to increase the validity of a study
- These sources are likely to be stakeholders in a program—participants, other researchers, program staff, other community members, and so on. In the case of an afterschool program, for example, the research process would start by identifying the stakeholder groups such as youth in the program, their parents, school teachers, and school administrators

- In-depth interviews could be conducted with each of these groups to gain insight into their perspectives on program outcomes
- During the analysis stage, feedback from the stakeholder groups would be compared to determine areas of agreement as well as areas of divergence

- This type of triangulation, where the researchers use different sources, is perhaps the most popular because it is the easiest to implement; data triangulation is particularly well suited for Extension given the different stakeholder groups that have vested interest in these programs

Investigator Triangulation

- Investigator triangulation involves using several different investigators in the analysis process
- Typically, this manifests as an evaluation team consisting of colleagues within a field of study wherein each investigator examines the program with the same qualitative method (interview, observation, case study, or focus groups)

- The findings from each evaluator would then be compared to develop a broader and deeper understanding of how the different investigators view the issue
- If the findings from the different evaluators arrive at the same conclusion, then our confidence in the findings would be heightened

- For example, suppose a researcher is conducting pre- and post-observations of youth in the public speaking program to assess changes in nonverbal communication and public speaking skills
- In order to triangulate the data, it would be necessary to line up different colleagues in the same field to serve as evaluators. They would be given the same observation check sheet for pre and post-observations, and after analysis, validity would be established for the practices and skills that were identified by each observer

Theory Triangulation

- If methodological triangulation is the most satisfying, then 'pitting alternative theories against the same body of data', as Denzin describes theoretical triangulation, is the most difficult
- Denzin admits that few studies achieve it
- He argues that triangulating theory will avoid the risk of researchers reaching a theoretical conclusions, selecting only those data which suit their pet views or developing small scale theory which has little relevance beyond the immediate situation

- To triangulate theory, the researcher should:
- Draw up a list of all propositions which might explain, or have relevance to, the research problem to be investigated
- Identify the different ways each proposition might be interpreted
- Carry out the research to see which propositions hold water

- Discard those which proved untenable
- Carry out further research to identify the most likely interpretations of those propositions still in the ring
- Review the propositions which passed and failed the empirical test, along with their parent theories
- Arrive at a new theoretical understanding of the problem
- Depending on the outcome of empirical work, this might include insights from a number of apparently conflicting theories

Methodological Triangulation

- Methodological triangulation involves the use of multiple qualitative and/or quantitative methods to study the program
- For example, results from surveys, focus groups, and interviews could be compared to see if similar results are being found
- If the conclusions from each of the methods are the same, then validity is established

- For example, suppose a researcher is conducting a case study of a Welfare-to-Work participant to document changes in her life as a result of participating in the program over a one-year period
- A researcher would use interviewing, observation, document analysis, or any other feasible method to assess the changes

- A researcher could also survey the participant, her family members, and case workers as a quantitative strategy
- If the findings from all of the methods draw the same or similar conclusions, then validity has been established

- While this method is popular, it generally requires more resources
- Likewise, it requires more time to analyze the information yielded by the different methods

Environmental Triangulation

- This type of triangulation involves the use of different locations, settings, and other key factors related to the environment in which the study took place, such as the time, day, or season
- The key is identifying which environmental factors, if any, might influence the information that is received during the study

- These environmental factors are changed to see if the findings are the same across settings
- If the findings remain the same under varying environmental conditions, then validity has been established

- For example, suppose a researcher wants to evaluate the effectiveness of a money management program in order to determine if the program helps participants develop budgets to increase savings
- If the evaluation occurs during the holiday season, there may be different results because spending is greatly increased during that time of year

- In order to triangulate the data, a researcher would need to evaluate the budgeting, spending, and saving habits of participants throughout the year in order to gather true and certain information on their behavior changes
- Unlike the other types of triangulation, environmental triangulation cannot be used in every case as it is only used when it is likely that the findings may be influenced by environmental factors

- The benefits of triangulation include “increasing confidence in research data, creating innovative ways of understanding a phenomenon, revealing unique findings, challenging or integrating theories, and providing a clearer understanding of the problem” (Thurmond, 2001)
- These benefits largely result from the diversity and quantity of data that can be used for analysis

- Example,
- *Burr (1998) used multiple triangulations to obtain a more comprehensive view of family needs in critical care. Through the use of questionnaires and selective participant interviews, this researcher found that family members who were interviewed found the sessions therapeutic, but those who were not interviewed could only communicate their frustrations on questionnaires (Thurmond, 2001)*
- Thus, using interviews as well as questionnaires added a depth to the results that would not have been possible using a single-strategy study, thereby increasing the validity and utility of the findings

- One of the primary disadvantages of triangulation is that it can be time consuming
- Collecting more data requires greater planning and organization—resources that are not always available to lead researchers (Thurmond, 2001)

- Other disadvantages include the “possible disharmony based on investigator biases, conflicts because of theoretical frameworks, and lack of understanding about why triangulation strategies were used” (Thurmond, 2001)

Conclusion

- The concept and practice of triangulation has been current in social and educational research for decades and has a specific meaning, aims and procedures
- Over the years, however, the term has been used widely and loosely: many studies claiming to use triangulation bear little resemblance to these principles and strategies. Sandelowski (2003: 328) commented that *'having too much meaning, the word triangulation has no meaning at all.'*

- It has also been proposed that the term ‘triangulation’ be replaced by ‘crystallization’ on the grounds that (at least in the field of postmodernist ethnography) the crystal is a more apt metaphor than the triangle (Richardson and St Pierre (2005). The latter is a ‘rigid, fixed, two dimensional object’ whereas crystals are:
- *‘prisms that reflect externalities and refract within themselves, creating different colors, patterns, and arrays casting of in different directions. What we see depends on our angle of repose – not triangulation but crystallization.’ (p. 963).*

- Therefore if you intend to use triangulation, it is important to be clear about which form you are using, why and how you will do it - and to write that up clearly in your research report or dissertation

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Good Luck!

Thank you for lending your eyes

Questions or Concerns

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