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NÚMERO 46

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CASE STUDIES METHODOLOGY
IN SOCIAL SCIENCES:
ELEMENTAL BASES

Modern man likes to pretend that his thinking is wide-awake. But this wide-awake thinking has led us into the mazes of a nightmare in which the torture chambers are endlessly repeated in the mirrors of reason. When we emerge, perhaps we will realize that we have been dreaming with our and eyes open, and that the dreams of reason are intolerable. And then, perhaps, we will begin to dream once more with our eyes closed
Octavio Paz

Introduction

Case study methods have been stereotyped as a weak instruments among social sciences. Researchers that use case studies as a mechanism to approach reality are charged as having deviated from “strong” academic disciplines (like the ones that use quantitative methods basically).

However, case studies continue to be used in social sciences. And one important problem is that in social sciences like public administration, public policy, and organization theory, the research process has usually been defined with so much degrees of freedom that the validity and reliability of the studies are very low.

This method has often been used without basis, without facing the necessity of more systematic ways for designing a case study and defining clear research paths. Under this conditions, usually case studies become insulated “opinions”, without capacity of defending themselves against competing interpretations.

The search for plausible interpretations, which can be confirmed, at least through the explicit path given by the researcher, must be the most important goal of any “good” case study research.

In this document I propose to systematize case study method for research proposes in social sciences like public administration, policy analysis, and organization theory. A first step is to build a place for the method, to link it to its base: induction methods. The second step is to advocate the necessity for a research protocol, where we place in advance the validity and reliability criteria, and the specific bases for interpretation, before launching any project that seeks valid outcomes.

The basic assumption of the document is that case study methods have an important place in social sciences, with the condition that we understand its limits and its particular advantages. Case studies are part of the inductive logic, so we are not dealing with testing but with the search for plausible probability. In this sense, case studies cannot test hypothesis or intent to generalize outcomes. It is an instrument to develop hypothesis, to propose plausible solid interpretations, and to search for the “understanding” of complex phenomenon.

1.- The problem of induction

1.1. Some definitions

One of the most widespread misconceptions in the study of logic is the belief that the construction of deductive arguments goes from the general to the specific, and that the construction of inductive arguments goes from the specific to the general. Actually, an argument is deductively valid if and only if it is *impossible* that its conclusion is false while its premises are true. An argument is inductively strong if and only if it is *improbable* that its conclusion is false while its premises are true, and it is not deductively valid. The degree of inductive strength depends on how improbable it is that the conclusion is false while the premises are true (Skyrms, 1966, p.7-13). Inductive logic has severe problems to justify probability regarding an interpretation, because inductive arguments are not bad or good, simply are weak or strong.

The methodological discussion about case study analysis appears to be firmly attached to the more general discussion of the problem of induction. Hume (1964 [1886]) describes the problematic process where one observes that the event "A" is attended by event "B" on one occasion or several occasions, as a situation where it is impossible to logically follow from there that it will be attended by it on any other occasion.

Several forms of solution have been sought for this problem, although there is no consensus about unique scientific posture that would lead successfully any process of induction.

I will describe rapidly these several solutions and I will concentrate in two of them, those that I think that summarize (by taking extreme positions) the current debate on the issue (pragmatism and falsification).

- I) Induction is dispensable; it is not needed, and should be replaced, with its mission accomplished by a fundamentally variant process of inquiry which works simply by way of the elimination of untenable alternatives. *Falsification* (Popper)
- II) Induction (while needed) cannot be justified. *Skepticism* (Ancient Pyrrhonians)
- III) Induction need not be justified: it requires no justification, either (1) on the ground that induction is a perfectly natural process that does not rest on any discursive considerations at all, but on a purely instinctive or intuitive basis. *Intuitionism* (Hume, Academic Sceptics). Or (2) because all justifications must stop somewhere and induction is part of the rock bottom. *Analytic Rationalism* (Strawson, Ayer).

IV) Induction can and should be justified, and such justification is forthcoming through.

A) grounds of *logic-conceptual* necessity by way of the:

- 1) considerations of strictly demonstrative necessity. *Necessitarian Apriorism* (Pierce).
- 2) considerations of hypothetically demonstrative necessity with regard to goal-attainment ("transcendental arguments," "this or-nothing argumentation"). *Conditional Apriorism* (Pierce-Late, Reinchenbach).
- 3) purely theoretical considerations regarding the *modus operandi* of probability as a quasi-demonstrative device. *Probabilism* (Laplace, Carnap).
 - a) empirical-inductive grounds. inductivism (Braithwaite, Blacke)
 - b) metaphysical grounds. uniformitaria deductivism (Mill, Russell)
 - c) methodological grounds. pragmatism (Rescher). (Rescher, 1980. p.187.)

In the next part we will begin the discussion with this last argument of pragmatism.

1.2. *Induction as cognitive systematization (Based on Rescher, 1980)*

The methodological problem of induction resides in those processes where questions arise and the information in hand is not sufficient or where the situation is a very complex and intricate one. The crucial thing about induction is its movement beyond the evidence in hand, from informatively lesser data to relatively larger conclusions. Induction is an instrument for question-resolution in the face of imperfect information. The goal is not the best possible answer but the best available answer, the best we can manage to secure in the existing conditions.

"The term 'induction' is derived from the Latin rendering of Aristotle's *epagoge* - the process for moving to a generalization from specific instances. Gradually extended over a wider and wider range, it has ultimately come to embrace all non-demonstrative argumentation in which the premises do (or purporting to) build up a case of good supportive reasons for the conclusion while yet falling short of yielding it with the demonstrative force of logical deduction (seeing that it always remains logically possible with inductive arguments to admit the premises and deny the conclusion)" (Rescher, 1980, p.10).

Induction is not so much a process of inference as one of estimation, its conclusion is not so much extracted from data as suggested by them, and the task is to accomplish this in the least risky, the minimally problematic way, as determined by

plausibilistic best-fit considerations. Induction leaps to its conclusion instead of literally deriving it from the given premises by drawing the conclusion from them through some extractive process. "Conclusions are not derived from the observed facts, but invented in order to account for them" (Hempel, 1966).

The necessity of induction arises when the body of explicitly given information does not suffice to determine any one of the possible answers to our question as correct. Induction, on the present approach, is seen as a family of methods (where we include the case method analysis) for arriving at our best estimate of the correct answer to questions whose resolution transcends the reach of the facts at hand.

The task is to provide an answer qualified to serve as our truth-surrogate in factual contexts. Induction must conform to the usual rules and requirements for estimates since in general:

1. Character requirement. Estimates must have exactly the same character as their estimanda.
2. Uniformity requirement (reliability). A process of estimation must be consistent in the sense of uniformity, it must yield similar results in informational similar circumstances.
3. Coordination requirement (data sensitivity). Our estimates must correlate positively with the structure of their data-base.
4. Correctness-in-the-limit requirement (consistency).
5. Accuracy requirement (validity). An estimation process should in general yield estimates that are close to the true, insofar as this is verifiable.

Pragmatist idea is that systematic analysis leads to optimality and plausibility. Induction seeks to present the best available answer to our questions. The "best available" is in relation to reduction of implausibilities, and this is achieved by systematization. The best estimate of the truth is equal to the optimal systematization that is possible at the given circumstances. Systematicity becomes the test of truth, the guiding standard of truth-estimation. The operative transition is not from "systematic" to "correct" but rather from "systematic" to "rationally claimed to be correct".(Rescher, 1980, p. 37)

"Induction is certainly not a sure-fire device for getting correct answers. (as Hume has shown, this is an impossibility in the very nature of the case.) Instead, the best we can hope to show is that induction is a means for doing the job of truth-estimation as well as it is possible to do in the epistemic circumstances in which we live and work" (op.cit., p.55)

Two justifications: *faute de mieux* providing by noting that it may succeed, that no more promising alternative lies to hand and that its use is relatively risk-free. The second: experiential retrojustification. How can we be certain that the local and apparent regularities that these scanning efforts detect in our observational neigh-

borhood are actually authentic, are global and real regularities? The answer is simple, we can be neither certain of this nor indeed even establish it with high probability. The Humean consideration that we cannot demonstrate that induction yields reliable results is related to the fact that we cannot either demonstrate that memory or sensation does so. The justification of induction is a posteriori. Induction does not stand in need of any justification designed to show that it somehow answers to the demands of rationality, because it forms part of the standard of rationality. Any attempt to justify induction is futile because the inductive style of argumentation serves to define what rational argumentation in inductive contexts is all about: the rationality of induction is implicit in the very conception of "rationality" as such.

1.3.- Falsification (Popper)

The "Hume's problem", showing that there is no way in which assumptions of the regularity of reality can be secured, has proved that empiricism is not sufficient basis for science. Bertrand Russell wrote that induction is an independent logical principle, incapable of being inferred either from experience or from other logical principles, and that without this principle science is impossible (Russell, 1945). That the whole of science should rest on foundations whose validity it is impossible to demonstrate has been found embarrassing and problematic.

Some make the argument (Magge, 1973) that Popper's basic achievement has been to offer an acceptable solution to the problem of induction. Popper's solution begins by pointing to a logical asymmetry between verification and falsification. Empirical generalizations, though not verifiable, are falsifiable. They can be tested by systematic attempts to refute them.

We cannot prove that our arguments are true, but we can justify our preference for one theory over another. The popular notion that the sciences are bodies of established facts is entirely mistaken. Nothing in science is permanently established, nothing unalterable.

Popper's notion of "the truth" leads to the concern in the pursuit of knowledge to get closer and closer to the truth, although we can never be sure if we have reached our goal. Every theory is still replaceable by a better theory.

The induction process is a problematic one for Popper. First, how I arrived at the theory as no bearing on its scientific or logical status. Second, the observations and experiments in question are partially derived by the theory itself, and are designed to test it. Third, at no point does induction come into the matter. So induction, Popper says, is a dispensable concept, a myth. It does not exist, there is no such a thing (Popper, 1968), and when someone has said that by induction we can arrive to suggestions of theories, this the is a psychological process, not a logical one. The creation of theories has no logical process. There is no "clean" process of observation, observation cannot be prior to theory as such, since some theory is presupposed

by any observation. Observation is always selective. It needs a chosen object, a definite task, an interest, a point of view, a problem. This means that observations, and even more so observation statements and statements of experimental results, are always interpretations of the facts observed, that they are interpretations in the light of theories (Popper, op.cit. p.107)

According to the traditional inductivist view, what scientists are looking for are statements about the world which have the maximum degree of probability, given the evidence. Popper denies this. Highly informative content of the statements yields also lower probability of occurrence. However, those statements with high level of information are the important ones, since they are highly testable and falsifiable (Popper, 1957, p.57). Our ignorance grows with our knowledge, so we should have more questions than answers.

Falsification in whole or in part is the anticipated fate of all hypotheses, and we should even rejoice in the falsification of a hypothesis. Falsification is the criterion of demarcation between science and nonscience. Verification, in the way positivists handle it, is impossible. Moreover, verification as the criterion observes metaphysics as meaningless, when those metaphysics can be meaningful. "We can sometimes of two competing theories A and B, that in the light of the state of the critical discussion at the time t, and the empirical evidence (test statements) available at the discussion, the theory A is preferable to, or better corroborated than, the theory B" (Popper, 1972, p.18-19.)

Other important concept on Popper's argument is verisimilitude. The verisimilitude of a statement is defined as its truth content minus its falsity content (O'Hear, 1980, p.29.) This definition enables to make comparisons of verisimilitude among different theories.

It is necessary to stress that neither corroboration nor verisimilitude are intended to have inductive overtones. Reliability is not a possibility for Popper, since nothing in logic can assure future performance from past performance (Popper, op.cit. p.18.)

The scientific method for Popper is:

1. Problem (usually rejection to existing theory or expectation)
2. Proposed solution, or new theory
3. Deduction of testable propositions from the new theory
4. Tests, attempted refutations, observation and experiments.
5. Preference established between competing theories.

$$P1 \rightarrow TS \rightarrow EE \rightarrow P2$$

Where P1 is the initial problem, TS the trial solution proposed, EE the process of error elimination applied to the trial solution and P2 the resulting situation

(Magee, 1973, p.61). It is essentially a feedback process. It is not cyclic, for P2 is always different from P1: even complete failure to solve the problem teaches us something new about where the difficulties lie, and what the minimum conditions are which any solution for it must meet the problem situation.

2.- *Case study method: a proposal for systematization*

2.1.- *The specificity of case study method*

These two general solutions to the problem of induction (systematization and falsification) appear as relevant attempts to give a methodological option to empirical research in social sciences. Perhaps the dichotomization of the problem between “quantitativists” and “qualitativists” have made too much emphasis in the problem of objectivity rather than the methodological capacity that should be launched specifically for each different research circumstance.

Each research project has different settings, environments, intentions and circumstances. Not all research is searching for (or can deal with) proves and hypothesis testing. Understanding, argumenting and discussing are also fundamental part of the scientific enterprise, and often they need different approaches and definitions. Causality is a very difficult reality to grasp, and the stochastic method is only one strategy to seize it.

Making inductions through case studies should be justified by the research objectives, intentions, and limits, although is not a simple task. In following parts, I will try to face these challenges, posing some criteria that might be useful for people thinking to use case studies methods for research proposes.

2.2.- *Why a case study?*

Choosing case study methodology requires to understand the particular characteristics of the method. It can be said that case study method is the best alternative when three correlated reasons exist:

- a) the researcher has no control over the actual behavior and situation, involving a difficult process of identification of restricted variables and control of variation (Yin, 1984; Smelser, 1976);
- b) Thus, the process of induction involves a high sensitivity to complexity and historical specificity, with the task to have a holistic vision of the situation (Ragin, 1987);
- c) Thus, the objective cannot be generalization or hypothesis testing (although, some generalization and hypothesis testing can be intended, but not as the research objective), basically is a way of understanding (with the best available answer) and to generate new hypothesis and theoretical possibilities (Yin, 1984; Lofland, 1971).

For any phenomenon that a social scientist might wish to explain, the number of causal conditions that affect the situation can be very big. The researcher faces the necessity to reduce the number of conditions, to insulate one condition from another, and to precise the role of each condition, in other words, to control the variation (Smelser, 1976, p.152-153).

Case study is a method that uses the control of variation, not to prove and test causalities, but to understand relationships and possible networks of causalities. Due the complexity of the phenomenon, the researcher might think that a random control (or any other quantitative method of control) of the variation is impossible or difficult at the present. *More importantly, the researcher might think that the phenomenon should be studied in its complexity, avoiding the reduction of the interpretation yielded by a causation analysis.*

Thus, the task of the case study method is to obtain a holistic vision of a phenomenon in a significantly interpretative way so the identification and proposition of relationships could be identified and further studied. While the method still implies the necessity to control variation, follow a pattern of validity and reliability, the task is not testing and proving causation.

Case-oriented studies, by their nature, are sensitive to complexity and historical specificity. Thus, they are well suited for addressing empirically defined historical outcomes, and they are often used to generate new conceptual schemes, as well. (Ragin, 1987, p.ix)

2.3.- *The problem of validity and reliability*

Case-oriented researchers are always open to the charge that their findings are specific to the few cases they examine, and when they do make broad comparison and attempt to generalize, they often are accused of letting their favorite cases shape or at least color their generalizations.

Quantitative methods emphasizing probability statistics and prediction based on falsifiability criteria have created two basic dilemmas for the case study researchers. First, it is important to consider the problem of bias or lack of objectivity stemming from the study of few cases out of a subjective selection of sample (non-random). In this sense, there is no assurance of either reliability or internal validity. Second case study does not allow us to generalize our findings.

Since these are special problems of all inductive techniques of analysis, the problem can be seen as the intelligence to use methods according to the research situation and the intention pursued by the research itself. The research situation implies questions about the complexity of the problem and the complexity of the relationships involved. The intention of the research involves the position of the research in the epistemological arena and the kind of results that will be searched.

In this sense, the quantitative approach does not insure lack of bias (every problem begins with a question from the researcher, based on different theoretical conceptions). Second, does not allow either accurate explanation. Correlation is not the same as causation, and causation is a process, not a perfectly time-defined phenomenon. If the research question is talking about a process, statistical methods are handicapped to study that kind of question (Stoecker, 1991, p.94).

The distinction that Herre (1979) makes between intensive and extensive research designs, explains these problems very well. Extensive research, which includes primarily large scale samples and statistical analysis is most concerned with mapping common patterns properties of a population in a descriptive logic. Intensive research uses primarily qualitative methods for the purpose of causal analysis. The problem to use statistical methods to analysis of causal situations, is that requires the "taxonomization" of reality in groups that share common formal attributes, but that not necessarily are connected or interrelate with one another. In intensive research the causal relationships are based on observable concrete, and particular interconnections between actual properties and people within an actual concrete setting.

Case-oriented methods are holistic, they treat cases as whole entities and not as collections of parts. Second, causation is understood conjuncturally. Outcomes are analyzed in terms of intersections of conditions, and it is usually assumed that any of several combinations of conditions might produce a certain outcome. (Ragin, op.cit., p. x)

Unlike multivariate statistical analysis, which tends to be radically analytic (because it breaks cases into parts —variables— that are difficult to reassemble into wholes), qualitative comparison allows examination of constellations, configurations, and conjunctures. It is especially well suited for addressing questions about outcomes resulting from multiple and conjunctural causes -where different conditions combine in different and sometimes contradictory ways to produce the same or similar outcomes. Multivariate statistical techniques start with simplifying assumptions about cases and their interrelation as variables. The method of qualitative comparison, by contrast, starts by assuming maximum causal complexity and then mounts on that complexity (op.cit, p.x).

Qualitative analysis answers questions like, Which factors explain the characteristics of a social phenomenon, the forms it assumes, and the variation it displays?

Quantitative analysis answers, What are the causes and the consequences of a social phenomenon?

Qualitative analysis is addressed to the task of delineating forms, kinds and types of social phenomena (Lofland, 1971, p.13).

These arguments do not mean that the researcher can design a case study analysis without worrying about validity, reliability and the developing of clear criteria for interpreting and analyzing. These categories have been developed to evalu-

ate the positivist approach where the category "prediction" is substantial (thus other approaches, interpretative and critical, for example, having different goals and methods, should possess different criteria [White, 1986]). The arising of the induction dilemma has positioned a big challenge to this positivistic approach, since no rationale can be found to the inductive logic (at least, no rationale without using inductive thinking to justify inductive procedures). However, these positivist categories are important rules of scientific inquiry. *While no other criteria have been formulated so far, every research project should at least justify the use or dismiss of those positivistic criteria.*

For case study research design, the first important thing is to define its basic objective: analysis of complex causation to propose a plausible interpretation of the phenomenon. The possibility of case study analysis is to understand this causation in a real, particular setting, but not to generalize or to create general laws. *The goal is not to predict, but to understand.* Understanding to create alternatives, to define positions, to risk new concepts and possible relationships. It is over these concepts that case studies should be concerned with:

1. Internal validity (that the ideas, categories and relationships are actually useful and used by different actors);
2. External validity (case studies cannot define general laws and cannot be used to obtain general patterns, although the results and the interpretation can be enough convincing to generate ideas and alternatives for different settings);
3. Reliability (case studies not always can be repeated, because we are analyzing complex phenomenon in time, with social settings that change through time; case studies are not experiments);
4. Although the design of the researcher should be enough explicit so discussion and falsifiability of interpretations can be performed in a systematic way.
5. The role of theory is very important in case studies. Because causality of the process is so complex, the control and insulation of variables or group of variables is almost always a job for the theory. Theory is also used:
 - a) to identify relevant causes that should be included in the functional relation
 - b) to build a case that causes not included in a functional relation are not relevant causes
 - c) to specify the causal ordering of relations (James, et.al., 1982, p.25.)

2.4. *Criteria for selecting cases*

For comparative analysis, seems to exist two general strategies: “most similar systems” and “most different systems” (Przeworsky & Trune, 1970). The first strategy is also known as “concomitant variation”, and is based on the belief that systems that are similar as possible with respect to as many features as possible are the best samples. These studies yield a strong control of the variances, since there is a minimization process of the not shared characteristics. Differences could be explained for theoretic or practical variables previously defined. The second strategy of most different systems is based on the assumption that the comparable systems, although different, are drawn from a population that is homogeneous. If the relationship between the dependent and the independent variable is the same within groups of the population, then the systemic differences need not to be taken into consideration.

2.5.- *Test for judging the quality of the design*

The traditional definitions of the basic criteria to evaluate the research designing are (Yin, 1986, p.40):

- *Internal validity*: establishing a causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships.
- *External validity*: establishing the domain to which a study’s findings can be generalized
- *Reliability*: demonstrating that the operations of a study can be repeated with the same results.

As we have seen in this section, the case study method searches for explanation, more than causation and prediction. Therefore, these criteria cannot be filled in the positivist way on analysis. Although, these elements are important as a “language” framework for methodological discussion. Since case study rests in the search for the best available interpretation, consensus are important and therefore, is fundamental to define a core of methodological “commitments”.

The formal definitions should be put in a way so case studies find their own methodological place. Here, validity means validity of the *interpretation*. The fact that uncertainty is always unattainable, is a limit which interpretation shares with many others (if not all) other methodological resources (Hisch, 1967, p.164.) A validation of an interpretation should seek that the interpretation is the most plausible one available (op.cit., p.171). *Indeterminacy is an unavoidable part of the social sciences. However, this does not mean that indeterminacy excludes neither rigorous*

theorizing, nor the search for evidence (Bohman, 1991, p.6.) Therefore, interpretation is unavoidable also, but can be managed by elucidating various purposes to which different types of interpretation can be put and by making specific the evidence for the choice of one interpretation over another (op.cit., p.233.)

For case study research, we can define these categories as follows:

- 1) Internal validity, that the concepts, categories and relationships are actually useful and used by different actors;
- 2) external validity: case studies cannot define general laws and cannot be used to obtain general patterns, although the results and the interpretation can be enough convincing to generate ideas and alternatives for different settings and to lead further research projects to interesting and valid subjects of analysis;
- 3) reliability: case studies not always can be repeated, because we are analyzing complex phenomenon in and through time, with social setting that are particular to the situation; they are not experiments;
- 4) although the design of the researcher should be enough explicit so discussions about the way interpretation have been accomplished and systematic falsifiability attempts can be performed in a systematic way.

When speaking about validity supporting the interpretation of the data collected, high valid data will be information than can be corroborated by different sources, for example placing:

- more validity in direct involved actors than external involved actors;
- validity of secondary data will be high if direct involved actors agree at least partially with the assumption and opinions posted by the secondary data
- validity of official documents required the confirmation that rules, orders and procedures are actually enforced or followed.
- opinions derived from political actors will be used only for contextual clarification proposes or to delineate a posture of political actors, not as a form of corroboration or as the main source of interpretation.

The second item (external validity) can be accomplished:

- 1) by the evaluation of research results by different actors of the organizations under study and
- 2) by the continued searching for falsifiability. In allusion to the first item, the evaluation of results by direct actors should be part of the normal procedure of inquiry that will be used.

The fallibility process requires a challenging theory to be continually used to make a different interpretation and to look for the supporting evidence of that interpretation. I need to define a low-level empirical hypothesis which describes an important element of explanation of the phenomenon (Popper, 1968, p.86-87) and that can be considered enough simple to be followed during the case and strategic enough that if corroborated, falsifies the original hypothesis.

About reliability, the research process requires the definition of general rules and procedures that should be followed and scheduled. This process will be defined in the Research Protocol (point four of the present section.)

2.6.- Research protocol

A research protocol is a document where the researcher makes explicit definitions of procedures, criteria, mechanisms, and assumptions, before launching the project. It is also a document that should maintain a strict order of documentation, schedules, and problems faced during the research process, so any other person could follow the path and understand the dynamic (in space and time) of the research process at any time.

This document is very important. The research protocol is one of the most strong instruments to defend the project regarding issues of external and internal validity and obviously reliability.

The research protocol, before the project is launched, might have the following sections:

- overviews of the case study project (project objectives and auspices, case study issues, and relevant readings about the topic being investigated);
- field procedures (credentials and access to the case study “sites”, general sources of information, and procedural reminders);
- case study questions (the specific questions that the case study investigator should keep in mind in collecting data, “table shells” for specific arrays of data, and the potential sources of information for answering each question);
- guide for the case study report (outline, format for the narrative, and specification on any bibliographical information and other documentation). (Yin, 1986, p.70)
- schedule of interviews
mechanisms for obtaining information from actors and the criteria to define “valid” information

During the research process, the researcher must keep the information ordered, maintaining an ordered archive of documents, interviews, and preliminary interpretation drafts, with explanations of deviations, new hypothesis generated through the process, and particular problems faced during the research.

3.- Conclusions

I will conclude this documents with some speculations regarding what makes a case study research a “good” one, that I think summarizes the basic proposal made through this document:

- 1) The researcher arrives to case study methods after extensive thinking regarding alternative methods. In other words, there is a justification about why using this method and no other.
- 2) The researcher defines explicit criteria for the definition of external and internal validity and reliability.
- 3) The researcher looks permanently for alternative and competing theories to develop his/her interpretations
- 4) Case study has and maintain a complete and explicit research protocol.
- 5) The case study displays sufficient evidence for all interpretations made. In other words, anybody can follow the track of evidences that lead the researcher to justify his/her interpretations

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