ABOUT PROCEDURAL FALSIFICATION IN THE SOCIAL JUSTICE

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Abstract

The quasi-impossibility of predictability in the social field makes scientific assumptions (or outcomes) subject to factual testing (Popper's falsifiability). In this context, the study examines the possibility of developing a second-order testability, i.e., testability of the testability. For this purpose, the general coordinates of a procedural test to test the factual (primary) test are developed. The study uses a methodology of logical and conceptual analysis, finally providing a methodological algorithm on the concept of procedural testing with direct application to social justice. Associated with this result is the proposal to classify the social factuals in: a) empirical factuals; b) methodological factuals. The usefulness of the study relates to "saving" testability in the social field (including the economic field) by switching from factual falsification to procedural one.

Keywords: *social justice, testability, procedural testing, algorithm, factual*

JEL classification: *B49, E02, P16*

Introduction

The study of testability in the social field highlights a certain feature, namely that it is difficult and in some cases impossible to apply the principle of direct factual testing (Popper, 1981). The three methods of testing the truth of a statement, the verifiability (proposed by logical positivism), the falsifiability (proposed by Karl Popper) and the confirmability (also proposed by logical positivism), each with its own attributes to test the truth of a statement, recommend choosing the confirmability for the design of a procedural test that could be used in the social field, more specifically in the field of social justice (Dinga, 2018).

The process of confirmability is recommended in the cases where the realization of the experimental conditions for direct factual testing, by means of the falsifiability criterion, is impossible or exhibits uncontrollable deviations from the conditions of the hypothesis (against the conditions required by the predictive statement). The questionable character of direct factual test experiments by falsifiability in the natural field consists in to non-recognize the result of an experiment. Even more so in the social field where the "procurement" of factual through observation, measurement and recording is much more difficult and disturbed by many factors outside the control of the experiment, is necessary to use such a criterion to test factual truth through a test of the order two, i.e. by testing the testability.

By applying the confirmability criterion, we will achieve a non-ambiguous outcome with regard to testability itself. In other words, applying this criterion tells us that if we test directly the factual target in the predictive statement, it will certainly provide a non-ambiguous result, either of corroboration (in Popper's terminology) or of invalidation of the prediction, but, of course, does not tell us what the result of direct testing is. From a logical point of view, a testing procedure based on the confirmability criterion gives a direct response not on the hypothesis tested but on the possibility of testing that hypothesis, i.e. on the possibility of providing a non-ambiguous answer to the testability of the hypothesis. Using the confirmability criterion, this paper proposes the designing of a procedural test criterion in the sense of falsification of the factual testing capacity.

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Description of the Problem

Designing and developing such a testing procedure involves first of all defining the main concepts that will be used throughout the article.

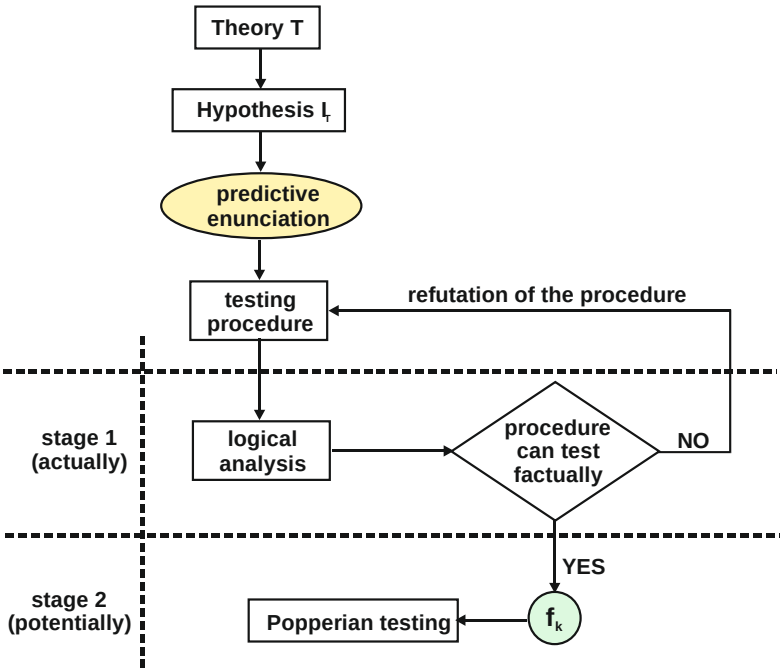
Thus, the concept of procedural falsifiability refers to a falsifiability (i.e. a testability) of the second order, a falsifiability which has as its "factual" the testability of a given factual (a class given by factuals). So that procedural falsifiability is a testability test mechanism that can only have two answers:

a) confirm the testing capacity of the procedure in question;

b) invalidate the testing capacity of the procedure in question.

It should be noted that, in the case of procedural falsifiability, Karl Popper does not raise the issue, namely that of replacing the verification term (specific verifiability), respectively of the confirmation, with the term of corroboration. In the case of procedural falsifiability, the confirmation term is recovered - indeed, the logical analysis of the capacity of a procedure to produce a non-ambiguous answer to eventual factual falsification may lead to confirmation of the existence of this capacity - so we have a confirmation, it is not possible that a subsequent logical analysis of the factual falsification can lead to an opposite conclusion - respectively, may lead to the invalidation of the capacity of the procedure to achieve factual falsification. If, eventually, the validated procedure is actually used for factual testing, it returns to Popper's pair of responses - corroboration / refutation. The following figure graphically illustrates the two "stages" (logical and chronological) of the procedural falsifiability.

Figure 1. The two stages (logical and chronological) of procedural testing



Source: author's research

By proposing a procedural testing of truth, it is in fact proposed to double the Popper's falsifiability criterion:

a) on the testing procedure;

b) on the factual.

To be mentioned that the first application of Popper's criterion is effective and the second application is potential. It is possible that the second application of the Popper criterion (application to the relevant factual) will never occur but, however, for social analysis needs, only the potential character of the application is sufficient, that testability (Popper, 2001) is sufficient to replace effective testing.

Another concept used in the procedure is *procedural testing* by which we understand a testing that has as its object to test a procedure, not a factual one. In other words, the "factual" that is the subject of procedural testing is a methodological artefact. It should be noted that, from a logical point of view, any experiment that concerns a factual fact it is a methodological artefact. In this sense, the specific difference between a proper factual (which will be named throughout the whole article as empirical factual) and a "factual" as a procedure (which will be named throughout the entire article as methodological factual) is that the proper factual - this is subject to a test of veracity (that is, if the predictive statement about that factual is identical, from the semantic point of view, i.e., of the referential, to the descriptive statement from the experiment), while the "factual" of a procedure type is the object of the capacity testing (that is, if that procedure is capable, if applied to a factual fact, to provide a non-ambiguous response in the sense of Popper, that is, standard factual falsifiability).

Procedural testing is also a test of Popper falsification, which is a dichotomous testing, i.e. it has either a positive answer (the testing procedure is capable of testing the factual fact), or a negative (the testing procedure is not able to testing the factual fact) this way it exhausts the spectrum of answers it can provide.

The question of "purity" of procedural falsifiability comes from the perspective of Karl Popper's concept of truth-correspondence testing, that is, of testing the scientificity of a theory / hypothesis. Testing truth-correspondence involves testing on the base of the proper factual, while testing the procedure does not involve the correspondence truth at all. Testing the procedure involves a test that has two attributes: a) adequacy / relevance; b) potential / capacity.

(a) Adequacy / Relevance

Adequacy / relevance testing refers to assessing the compatibility of the testing procedure with the empirical factuals considered. Thus, if we take into account the characteristics of the factual class that could be tested from the point of view of truth-correspondence with the procedure under consideration, it is examined whether the envisaged procedure is logically and methodologically compatible with that class of empirical factuals. This analysis concerns only the appropriateness and not the intrinsic capacity of the procedure to test truth-correspondence. For example, a testing procedure of a truth-correspondence that would require the observation and registration of subjective motivations of consumer actions would not be appropriate, because the external observation of subjective motivations of individuals is not possible.

Assessing adequacy / relevance of a testing procedure should cumulatively answer the following classes of questions:

• whether the procedure can test the targeted empirical factuals class; in other words, if the procedure has experimental access to data / information describing the empirical factuals in question;

• whether the testing of the empirical factuals concerned requires or does not require adjustments to the assessment procedure, or the application of the procedure is without such additional adjustments;

• whether or not the procedure is general, i.e. abstract; this question refers to the characteristics of the testing procedure that makes that procedure capable of testing several empirical factuals classes so that no ad hoc procedure, that is, specific, idiosyncratic, is required for each class of factual empirical. It is noted that this question is, moreover, related to any scientific result which, before being validated by factual testing, is logically tested under its aspects of generality and abstractness.

(b) Potential / Capacity

Potential / capacity testing refers to the functional evaluation of the testing procedure to test, in turn, the truth-correspondence of the targeted empirical factuals. If the adequacy / relevance assessment is of a holistic and qualitative nature, the assessment of the potential / capacity is of a strictly structural-functional nature. In fact, evaluating the potential / capacity of the testing procedure to test empirical factuals is a logical type of assessment that consists mainly of the following:

• the internal (structural and functional) coherence of the tested procedure. This assessment shall be carried out on the following aspects:

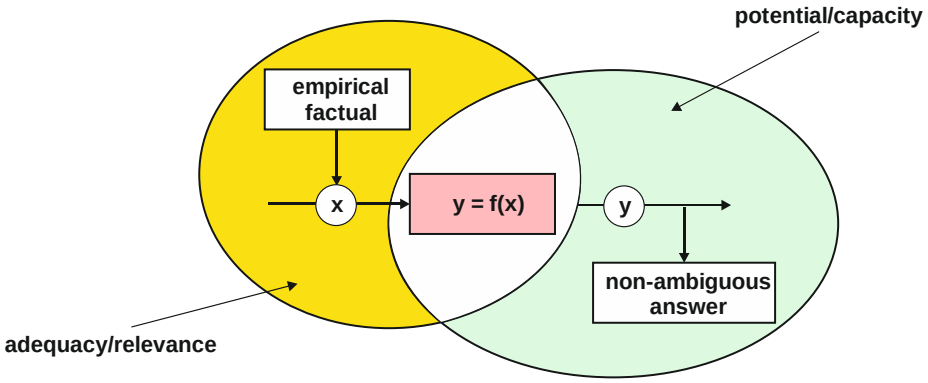
the existence of input logic "devices" (i.e. accepting inputs from empirical factuals that could be tested from the perspective of truth-correspondence);

the existence of the "transformation function" of inputs into outputs (i.e. delivering, in a form accessible to the human analyst, the result of the test of the empirical factuals target);

the ability to provide an answer (i.e. avoiding the situation where the procedure can provide an "undetermined or undecidable" output). This feature of the testing procedure is, in fact, the most important of all because, basically, testing the procedure must ensure that factual testing will be decisive, that is, it will receive an answer, whatever it may be. From a logical point of view, this means that the test procedure is bivalent, that is, it subordinates to the principles of bivalent logic (Aristotle-ian).

the stability of the testing procedure (i.e. the "suitability" of the procedure to provide the same answer when inputs are the same, however many episodes of use would be involved). This property of the testing procedure is important from the perspective of ensuring the certainty of the outcome of the application of the procedure and is, moreover, a version of the principle: the same cause, under the same conditions, creates the same effect. This property may also be called the predictability of the testing procedure and, as is well known, predictability is a necessary property of any model.

Figure 2. Concept of testing the methodological factual to test the empirical factuals.



Source: autor's research

Based on the concept of procedural testing, namely, on the base of the empirical factuals test procedure concept, the article will deal with the next section of the problem of construction of such a procedure from the point of view of the construction stages.

As shown above, the following points will be clarified:

• establishing the empirical factuals class that could (possibly) be subject to truth-correspondence testing by applying the procedure in question;

• designing "inputs" in the testing procedure;

• designing the procedure from the perspective of adequacy / relevance;

• establishing the method / methodology / technique for testing the empirical factuals;

• establishment of the method / methodology / technique by which the response of the empirical factuals test to the observer / experimentator is delivered;

• designing the procedure from the perspective of the potential / capacity property.

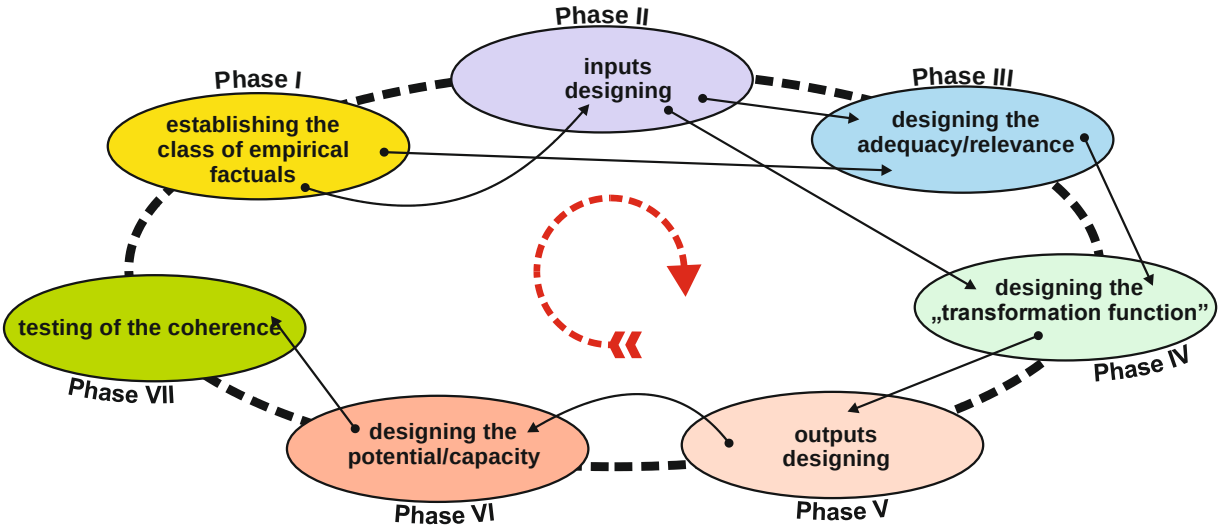
Methodology and Data Sources

The designing of the empirical factuals testing procedure is not confused with the designing of experiment of the factual testing. The distinction between designing of the experiment to testing empirical factuals and designing the procedure to empirical factuals testing is characterized by the following:

- the designing of the experiment results in a particular artefact (refers to a given empirical and idiosyncratic factual), while the designing of the procedure results in a general artifact (it concerns an empirical factuals class, of which, no particular / concrete empirical factuals is known at the time of designing);
- the designing of the experiment is aimed at a single testing (only one single testing, only one empirical factuals is targeted), while the designing of the procedure refers to a testing class, thus a class with an indefinite number of testing;
- the designing of the experiment is aimed at an effective testing (after the designing of the experiment, the experiment is actually tested) while the designing of the procedure is aimed at a possible testing (the designing of the procedure does not imply its application for the actual testing of an empirical factuals of the empirical factuals class in sight);
- the designing of the experiment is not adjustable ("it is of „single use"), while the designing of the procedure is adjustable (depending on its behavior in cases of actual application on the empirical factuals for which it was designed);
- the designing of the experiment refers to truth-correspondence, while the designing of the procedure refers to truth-coherence;
- the designing of the experiment follows an ambiguous verdict (if the result of empirical testing is corroboration, nothing can be said about the theory / hypothesis teste;, only if the result of empirical testing is refutation, it can be said with certainty that the theory / hypothesis was rejected) while the designing of the procedure follows a non-ambiguous verdict.

The construction of the test procedure involves seven logical and chronological stages, so each stage will be built from the previous step (or from some of the previous stages in their interconnection). Figure 3 shows the process of building the testing procedure.

Figure 3. Logical scheme of designing of the testing procedure

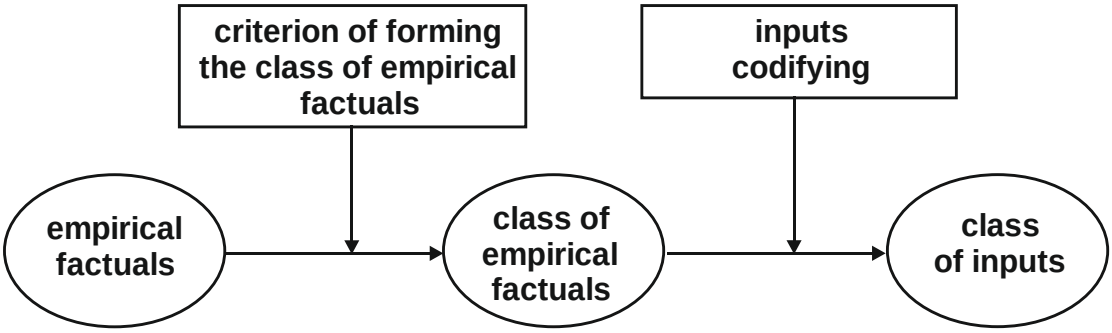


Source: autor's research

A feature of this testing procedure is that it is not specific to a particular empirical factuals (as is the case with the experiment), but neither is it universal. It is "customized" to a class of empirical factuals, identified / selected on the basis of predetermined criteria (in the article we refer to a procedure for testing empirical factuals from the class of social objects related to social justice). It can be said that such a procedure should be considered as a sectoral procedure. In the first step, therefore, it is necessary to identify the empirical factuals class for the experimental testing of

which the procedure in question is built. Let's note with c_i^k a number of i criteria designed to form the empirical factuals class k ($i = \overline{1, n^k}$). Based on these criteria empirical factuals will be identified / selected $f_j^{c^k}$, ($j = 1, m^k$) so those empirical factuals that form the class k on which the testing procedure under construction is to be applied. Each factual will also need to be associated with a quantifier that is accepted by the input methodology (acceptance of the inputs) of the procedure (for example, the quantifier can be numeric if it is economic or social indicators registered by official statistics). This phase of building the procedure can be called the encoding phase of the input. Figure 4 describes the design / establishment of the empirical factuals class.

Figure 4. Establishing the empirical factuals class to design the testing procedure



Source: autor's research

In the second stage we will design the inputs in the testing procedure of the empirical factuals and we have to consider the followings:

the nature and configuration of the actual experiment that eventually would have been achieved for the use of the truth-correspondence testing procedure for empirical factuals in the already established / identified class. The actual (possibly) experiment differs in the social field (where the use of procedural testing is recommended), from the natural one (where no procedural testing is required, but direct testing of the truth-correspondence applied to empirical factual situations). From this reason, the procedure must contain a step in which it is needed to specify the general (logical and chronological) structure of the eventual experiment applied directly to the empirical facts;

the "input" echelon that is significant (i.e. statistically sufficient) to "challenge" a response from the testing procedure. This concerns the size of the data series, its (spatial and temporal) structure and, as far as possible, the quality of the data in question.

Stage III aims at designing the adequacy / relevance of the testing procedure. As we have shown so far, the adequacy / relevance of the testing procedure is one of the two conditions of sufficiency for such a procedure. Consequently, it must be designed with particular care since, in fact, this characteristic is capable of invalidating the testing procedure itself and, consequently, invalidating the answer generated by the application of the procedure to the testing of empirical factuals. Obviously, designing the adequacy / relevance of the testing procedure is closely related to Stage I and Stage II respectively.

The fourth stage envisages the designing of the "transformation function" of the testing procedure which itself carries out the testing mechanism (potentially) applicable to empirical factuals, it will logically explain by what is called, in the system theory, black box. This stage has two components, a structural component and a syntactic-functional one.

(a) the structural component

It refers to the logical "links" of the transformation function $y = f(x)$. More precisely, for algebraic operators or, if applicable, for logical operators that, applying the inputs as they were designing above, generate outputs. From a technical point of view, designing of this component will result in two categories of transformation operators:

- algebraic operators: are those operators (or functions) that apply algebraic transformations to inputs - typically statistical transformations: sums, averages, indices / rhythms, marginal variables, elasticity, etc., obtaining quantitative variables (dimensional) relevant to generate outputs;

• logical operators: are those operators (or functions) that apply to the inputs of logical transformations (logical calculation) - as a rule, transformations of propositional or prediction logical expressions as appropriate: ordinances / hierarchies, positions, classifications (classification in classes), validation / inferential invalidations, etc., relevant for generate outputs;

(b) the syntactic-functional component

It refers to the temporal and logical concatenation of algebraic operators, logical operators, and both categories, so as to obtain the response of the testing procedure, whatever it may be. As stressed above, the testing procedure must necessarily provide a unique and non-ambiguous response. Making this component creates the operational conditions for this property of the test procedure. From the semiotic point of view, the procedural discourse will be projected at Stage IV.

Stage V involves designing the outputs of the testing procedure and, of course, refers to the designing of the response mechanism of the procedure in question. So, after the inputs have entered the "transformation function" mechanism, by applying algebraic operators, logic ones and their combinations, the testing procedure will form the output, in which case we will formulate a response by applying it to the factual empirically targeted. This output is, in the first instance, a response in "machine language," i.e. a response in algebraic, logical or mixed form. Thus, the answer is to be "translated" into the language of the observer / analyst, i.e. in a natural language understood by this observer / analyst. Through symmetry with encoding inputs, which are expressed from the natural language of the observer / analyst, in the "machine language", the outputs must also be translated from "machine language" into the natural language of the observer / analyst. In fact, at this stage, we will ensure that the testing procedure can formulate a response in the language understood by the observer / analyst.

The potential / capacity of the test procedure is the second condition of sufficiency (in addition to its adequacy / relevance). The sixth stage in the designing of the testing procedure has the following two aspects: a) assurance on the formulation of a response; b) ensuring the dichotomic type of response (or, what is the same, the unambiguous response).

(a) to ensure about the answer, we will ensure that the "transformation function" of the testing procedure will never output the "impossible to decide" response. Here, it will be taken into account that the testing procedure does not "block" in providing an answer if it is applied to a "real" case, i.e. on an empirical factuals;

(b) regarding to the dichotomic type of response, we will ensure that the testing procedure does not provide a "undecided" or "indeterminate" answer or another with close significance. Therefore, the test procedure will have the analytical capacity to discern, in the case of applying on ~~an~~ empirical factuals, between the two alternatives: positive or negative (or equivalent: yes or no etc.).

The coherence testing is the seventh stage of the testing procedure, which aims primarily at ensuring the reliability of the testing procedure. This refers to the stability of the testing procedure, to ensuring that the application of the procedure to the same empirical factuals will always produce the same answer. It is not acceptable for the testing procedure to wear out and hence provide different responses to identical inputs or to provide identical answers to different inputs, respectively (we specify that this stage or condition of designing of the testing procedure is analogous to the property of any model to be reliable, in other words to provide functional representations of the modeled reality that are stable in relation to that reality).

Obviously, coherence testing is an effect of the two crucial stages in designing a testing procedure, namely Stage III (Adequacy / Relevance Designing), i.e. Stage VI (Potential / Capacity Designing). Generally speaking, the "prototype" of a testing procedure is validated by the 7th stage, which also has a simulation, testing role. Of course, simulating a testing procedure through coherence testing is not infallible but greatly reduces the likelihood that that procedure is liable to provide incoherent responses.

Conclusions

The conceptual conclusions of this article, which address the social field, show that testing statements about their value in truth cannot be done directly, but indirectly.

Logical conclusions from the paper for the social field show that there are two categories of factual: empirical factuals, and procedural (methodological) factuals, respectively; both are of the nature of artifacts (as opposed to the case of natural sciences where empirical factuals are or may be of non-anthropic nature).

From the epistemological point of view, in the social field, it is not possible a directly Popper falsifiability about the truth of predictive statements, verifiability is "recovered", not at the level of testing empirical factuals, but at the level of testing procedural factual, and the truth-correspondence has no significance in the social field, where relevant seems to be the truth-coherence.

From a methodological point of view, the testing of the statements on the empirical factuals has, in the social field, a potential character and not an effective one, the testing is done in two "stages" (two methodological-chronological modules): the first floor - the direct testing, respectively the second floor - indirect testing.

Future Directions to Be Approached

Future research directions will aim to examine the possibility of replacing truth-correspondence with truth-significance (especially truth-coherence) in the social field, by recovering the teleology of social action, the methodological algorithm of procedural testing (testing of the coherence of the testing procedure of empirical factuals) in the field of social justice, the critical evaluation of a possible concept of "procedural truth", the line of the Vienna Circle of confirmability, and the introduction and operationalization of the concept of "procedural truth" in the analysis of social justice.

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