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MODERATELY PLURALISTIC METHODOLOGY

The paper outlines the main assumptions underlying *moderately pluralistic* conception of methodology I am advancing. It is intended to address the most pertinent methodological issues of non-experimental research (in the remainder of the text it is be referred to more specifically as MIM – an acronym of *the Multi-level Integral Methodology*). The choice of this topic for the volume dedicated to the late Archbishop Józef Życiński is motivated by a striking parallel between his 'principle of natural interdisciplinarity' (in Polish: 'zasada naturalności inter-dyscyplinarnej) and my moderately pluralistic conception of methodology. Both are intended to overcome difficulties of the logical positivist and the post-modernist legacy in the science of science studies. Życiński's principle and my conception of methodology share the same motivation, but apply it to different areas: the former delineates a moderately pluralistic program for various disciplines concerned with science as their subject-matter, while MIM aims to set up research agenda for a given domain.[1]

Logical positivism, which dominated philosophy of the first half of the 20th century, and philosophy of science in particular, propounded too restrictive a conception of scientific research. Equally radical — in its relativism — reaction resulted from the criticism of logical positivism by historically oriented philosophy of science and postmodern philosophers. Życiński's principle of natural interdisciplinarity has remained largely ignored in the relevant literature, but I find it a remarkable attempt to set up a reasonable balance between the opposed poles in the currently debated 'scientific pluralism'.

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[1] C. Barker (2005, 209) specifies three major aspects within such an approach: a research, research program and the whole discipline.

The background for the assumptions discussed in Section 4 below consists mainly of a classification of different conceptions of methodology of scientific research into a broad spectrum of monism vs. pluralism. An early, and also ignored, attempt was *The logical construction of the world* by R. Carnap. His monograph was in principle continuous with H. Rickert's antinaturalistic methodological program, but undertook an effort to implement the unity of science principle within a radically new conceptual foundation of the whole edifice of science, i.e. Carnap's 'constitution theory'.[2]

There is a growing interest in scientific pluralism in science of science studies (Kellert et al. 2006; della Porta, Keating 2008). Of the varied proposals I find M. Heidelberger's paper (2011) particularly relevant to my conception of MIM. Inspired by P. Duhem's writings, Heidelberger provides a detailed proposal of an integral pluralistic conception of methodology of experimental research, which combines symbolic with causal understanding by means of scientific instruments and experimental manipulation.

The moderately pluralist conception of methodology discussed in Section 4 below is an attempt to extend Heidelberger's proposal beyond the original application and cast it in more general terms, which will make it applicable to non-experimental research.[3] The non-experimental research is facing a serious problem of varied aspects of the phenomena in question, each of which has its own elaborated methodology, but overall there is no coherent account of how to combine it into a comprehensive view. The MIM approach presented here is intended to alleviate this sort of problem or at least to bring forward a possible framework for future debates.

The paper is structured accordingly. The introduction to scientific pluralism is presented largely on the basis of the crucial criticisms of the opposite parties by Życiński. They pave the way towards his principle of natural interdisciplinarity as a moderate position between the contrasting poles of the debate. Next, the distinction between (radical) versions of monistic vs. pluralistic conceptions of methodology is discussed and illustrated. Carnap's conception of the constitution theory is discussed in more detail as an inspirational example of an early non-radical monist standpoint, which has affinities to more moderate versions of

[2] A detailed historical and systematic presentation of the constitution theory as a method of conceptual systematization which diverges radically from traditional philosophical methods is in my publication (Kawalec 2011).

[3] My earlier book (Kawalec 2006, 13-28) provides a more detailed characterization of the problems of causal reasoning and explanation in non-experimental research. For the characterization of experimental vs. non-experimental research see e.g. Gould 2002, 41-42.

pluralism. The final section presents and discusses the main tenets of the moderately pluralistic conception of methodology.

1. SCIENTIFIC PLURALISM

The development and gradual autonomization of particular scientific disciplines, starting with natural sciences through much later sociology and psychology, have usually been accompanied by methodological debates. The 19th century debate concerning monistic methodology in Germany is a special case. German philosophers, largely inspired by Hegel's philosophy, in particular W. Dilthey, W. Windelband, H. Rickert, or later on M. Weber, presented a wide spectrum of arguments substantiating the special and autonomous character of humanities against natural sciences. Specific subject-matter (nature vs. human being), difference in the aims (explanation vs. understanding) or perspective (generalization vs. individualization) or concepts (nomological vs. typological) were intended to warrant a special character to different disciplines within the broad limits of 'scientificity'.

All these debates appeared to have long been forgotten when the logical positivists' idea of the unity of science had become dominant in the early 20th century discussions of science. The new developments in modern logic gave the old positivist ideal a new outlook tantamount to the expectation that the unity of science would be manifested by the unity of language and method. The logical positivists' ideal of science turned out, however, to be much too stringent and problematic for several reasons. They crucial ones have been succinctly scrutinized by Życiński (1996, 30-100) and I follow his exposition below.

The unity of science ideal of logical positivists shared its main tenets with the preceding conceptions of science, in particular the 19th century positivism. The emphasis on inductive proceedings with objects of the macro scale did not fit – and could not even be extrapolated to — an account for the emerging revolutionary studies in science (e.g. relativity and quantum mechanics). From that perspective the reductionist physicalist structures turned out to be dogmatist and largely naïve. Moreover, they put an emphasis on the empirical studies, while the emerging new paradigm in science was progressing by theoretical advances (in the case of natural sciences by developing sophisticated mathematical structures). Logical positivists did not manage to accomplish a unified account of the most relevant topics, e.g. a theory of inductive confirmation and the structure of scientific theories. They were undermined by the overwhelming objections like the paradoxes of confirmation, the riddles of induction or the ensuing indefi-

nability of the theoretical vs. empirical divide. In effect, proponents of logical positivism – in stark contrast to the declared thesis of the unity of science – offered themselves mutually incompatible methodological conceptions.

M. Polanyi in the early 1960's initiated an expanding flow of discussions on topics beyond the scope of logical positivism, concerning the subjective and ineffable aspects of scientific knowledge (Życiński 1996, 179-191). These were soon incorporated within 'historicist' conceptions of science, e.g. T. Kuhn's or P. Feyerabend's, which aimed to expand the strongly internalist focus of logical positivism, and demonstrated relevance of external factors to science, e.g. historical, sociological or political ones. Radical conclusions of postmodern philosophers of science, including Wittensteineans, like S. Toulmin, and the proponents of 'the strong program', especially B. Barnes and D. Bloor, resulted in a 'methodological anarchism'. Objectivity and rationality of science turned out to be fundamentally problematic as science was taken as a form of discourse on a par with e.g. astrology or shamanism. "In the culture shaped by postmodern mentality both the achievements of natural science and rationality of arguments is undermined. In public debates inspired by the spirit of time it is creativity that has become admired more than rationality. Creativity is conceived as an expression of artist's freedom quite independent from logical coherence, which is closer to an artistic loose play of associations than to the classical notion of truth" (Życiński 2009, 19; transl. P.K.).

Życiński argues that what is needed is a moderate position between the two extremes: "The fact that one can identify elements of personal knowledge and non-conceptualized intuitions in science does not make the undermining of the internal rationality of science legitimate. It only makes us aware that throughout the progress of science rational reflection […] is combined with arrational psycho-sociological factors. An account of the latter is a necessary condition of the comprehensive understanding of the nature of science" (1996, 190; transl. P.K.).

The rejection of the radical relativism motivated a search for more moderate positions. The breakthrough was accomplished by Patrick Suppes in his APA presidential address (1978). It was a sustained criticism of the tenets of logical positivists' view of science: "One form or another of reductionism has been central to the discussion of unity of science for a very long time. I concentrate on three such forms: reduction of language, reduction of subject matter, and reduction of method" (Suppes 1978, 5). However, different forms of methodological monism turned out to be strongly entrenched, so that it took time to overcome them and propound pluralistic conceptions. Życiński's principle discussed in the following section is an original and important illustration, but

remains largely ignored. The present volume dedicated to Życiński is a good opportunity to bring forth the principle and to point its merits.

2. THE PRINCIPLE OF NATURAL INTERDISCIPLINARITY

Many philosophers who followed Suppes in his "pluralistic turn" attempted to provide a more or less integrated conception within the broadly construed pluralism. Among these I would list also Życiński's principle of natural interdisciplinarity. He defines it as follows: "The proposed principle states that in assessment of different interpretations of the same set of facts one should primarily consider the interpretations which belong to the cognitive perspective which is natural to the research issue at hand, and only then introduce complementary accounts advanced from external perspectives, evaluating both their justification, as well as formal merits regarding their predictive capability, testability, etc." (1996, 171).

The principle of natural interdisciplinarity was primarily intended as a *metascientific* principle. It determines the relationship between various disciplines whose common object is science, but it also blocks hasty generalizations built upon an expanded aspect of a given phenomenon. The adjective "natural" refers to the internal rationale provided by proponents of a given scientific conception. It would counter any "attempt to discover universal and profound mechanisms which determine the proceeding of any phenomena" (Życiński 1996, 172) by requesting testability and predictability on their part as well as validation of the proposed account by alternative approaches. An example of an approach rejected by Życiński's principle is the claim of M. Walsh and B. Scandalis, who try to account for a vast variety of human behaviors in terms of a single mechanism of Oedipus complex (1996, 172-173).

The conception MIM discussed in the Section 4. below is juxtaposed with Życiński's principle on the level of methodological rules of conducting research *within* a single discipline, however, rather than become a principle regulating the relation *between* various disciplines.[4] Analogously, it attempts to *naturally* integrate various research perspectives on the same subject-matter of research. And likewise it is intended to block hasty generalizations with regard to symbolic (theoretical) understanding, which do not find an adequate grounding in causal (empirical) relations.

[4] S.H. Kellert et al. (2006, ix) offers a similar distinction worded as pluralism 'about' and 'in' the sciences.

3. PLURALIST VS. MONIST CONCEPTIONS OF METHODOLOGY OF SCIENCE

The diachronic overview of the methodological debates in the modern philosophy of science can be roughly presented as follows. The original doctrine of the unity of science is a typical illustration of methodological monism. It claims that there is one common scientific language for forming statements and a common valid procedure of empirical verification of thus formed statements.[5] In opposition to that, radical pluralism propounds the view that there are independent 'paradigms' which determine both the vocabulary and procedures of empirical validation of the proposed statements.

Over the course of time numerous attempts have been presented which could be classified in-between the radical monism and radical pluralism. For instance, I. Lakatos' conception of research programs is a version of pluralistic standpoint, which attempts to accomplish a homogeneous mechanism of dynamic development of the former. Yet another instance of an attempt to discontinue with the traditional dual opposition of the views presented is, I argue (Kawalec 2011), Carnap's constitiution theory presented in the *Aufbau*. The unity of science claim underpins the constitution theory, but it is not a typical radical monist strategy.

The constitution theory was meant to determine fundamentally transformed method of philosophizing given the then recent accomplishments in mathematical logic and elaboration of sophisticated formal tools, in particular the theory of order (formerly — the theory of types, later on – the formal relation or set theory). The outcome of constitution theory — so called 'constitution system' — was supposed to be formed as a coherent and comprehensive set of scientific notions, typically built up upon the set of basic notions. The choice of the basis was in principle pragmatic and dependent upon the assumptions given and upon the aim of inquiry. The exemplary constitution system, presented in the *Aufbau*, was using the basis in elementary lived experiences. The rationale for such a choice was the aim of rational reconstruction of natural sequence of cognitive processes, which stem from the subjective origin in lived experiences of an individual and proceed gradually to the objective scientific knowledge.

What makes the constitution system leaning towards more pluralistic methodology is its apparent antireductionism and autonomous character of objects constructed at the subsequent 'steps' of the constitution system. The constitution system, as already mentioned, was built upon the primitive basis and by logical

[5] A more detailed definition of monism is discussed in Kellert et al. 2006 (x-xii) and pluralism is defined therewith as a contrary view to so defined monism.

tools alone proceeded towards more complex objects. In the exemplary constitution system of the *Aufbau* on the basis of subjective experience of an individual his perceptual world is reconstructed up to the 'world of things', in particular his own living body. Next, the intersubjective world of physical objects and finally, the world of cultural objects, culminating in values is constructed. These major 'steps' in constitution are referred to as 'spheres of objects', which are assumed to be 'autonomous'. They are constituted in terms of formal properties of relations of objects of the lower 'step', but are not reducible to them. It's only the reference thereupon that is fixed in the formal manner. Carnap's application of the thesis of the unity of science in the *Aufbau* is highly influenced by antinaturalistic methodology of H. Rickert (1929).

This is the reason why, I should claim, Carnap's approach is an early attempt at a position between radical monism and radical pluralism. On the one hand, it is intended to realize the ideal of the unity of science. And a very ambitious one, which would embrace not only natural sciences, but also humanities. Moreover, the latter in the constitution system presented in the *Aufbau* form the most complex and objective scientific disciplines. On the other hand, however, there is a single method of construction that thoroughly permeates the whole enterprise.

There is, however, a number of drawbacks in Carnap's project of the constitution theory. The new method proposed to construct sets of objects on the basis of the unique characteristics of the formal aspects of their relational properties, so called 'quasi-analysis', fails. The major reasons have been recognized by Carnap himself and pinned down by early analytic philosophers: N. Goodman and W.V.O. Quine.

The whole project seems also to turn out to be fundamentally of exclusively formal nature. As the empirical basis of Carnap's system, constituted by the so called relation of 'recollected similarity', is attempted to be ultimately defined formally as the unique relation which could sustain the construction of the constitution system of the *Aufbau*.

Apart from more detailed objections, the above mentioned are the major reasons why 'the constitution system' cannot be taken for granted even as an inspiration for subsequent projects within pluralistic methodology. However, Carnap's idea of developing a complex but coherent methodological tool to generate conceptual outcomes combining diverse kinds of concepts (e.g. purely subjective and most objective) remains a challenge. And so appears his idea of autonomous spheres of objects within the constitution system. These are still, I would claim, challenges posed to any pluralist stance that is not to be identified with the radical version.

In the following section I discuss some tenets of what I would call 'moderately pluralistic methodology'. These, as it seems, satisfy Carnap's strictures imposed upon non-radical methodological conception.

4. THE TENETS OF MODERATELY PLURALISTIC METHODOLOGY

Granted the objections against the radical versions of monism and pluralism, discussed in Section 1, a more moderate position is needed. Especially, given the research problems encountered by scientists.[6] D. della Porta and M. Keating express it succinctly as regards research in the social sciences (2008, xv): "pluralism can enrich the experience of research by encouraging us to learn and borrow from each other. […] We believe that social science must never become prisoner of any orthodoxy and must continually renew itself by learning from other disciplines and from new developments, and by revisiting its own past. This is not to say that we believe that 'anything goes' or that researchers can mix and match any idea, approach, theory or method according to whim".

The proposal discussed below focuses, however, mainly on non-experimental research. What makes it different from experimental study is in particular a complex methodological issue of causal inference. Some of these, including the methodology for discovery of causal dependencies, have been presented in my earlier book (Kawalec 2006). The focus there was on the graphical models of causal dependencies discovered in non-experimental research. The paradigm case of such discovery is the study of the causes of cholera outbreaks in the 19th century London. The role of causal dependencies in non-experimental study requires, as I argue, a specific model of explanation in the disciplines, which rely mostly or exclusively on non-experimental research.[7]

The project of *Multilevel Integral Methodology* (MIM) as moderately pluralistic conception of methodology of non-experimental research extends the

[6] Życiński (2006, 87-91) discusses several examples of the interplay between 'theoretical' and 'empirical' modes of research in natural sciences. These roughly correspond to 'symbolic' and 'causal' understanding discussed later in this section. A. Jaffe et al. (1993) adopts an analogous distinction between 'theorists' and 'empiricists' to different manners of research in mathematics, in particular taking mathematicians as 'experimental community' who gives a solid grounding to hypothetical structures of theoretical physics (1993, 2).

[7] Bohman (2009) defends the role of causal inference in the social sciences even in context where they be conceived on purely pragmatic grounds with normative – instead of theoretical – aims at hand.

line of argument outlined in the preceding paragraph. In the present section I outline its main tenets and shortly discuss them.

An attempt to overcome the aforementioned debate between proponents of naturalism and antinaturalists is presented in Heidelberger 2011. The two opposing views are referred to as 'causal' vs. 'symbolic' understanding. M. Heidelberger makes an attempt to defend the claim that "causal understanding constitutes a basic part of science, which, in the course of its development, becomes more and more superimposed by a culturally and historically variable symbolic superstructure" (2011, 467). A major tenet of causal understanding is that it sets up a common basis for everyday and scientific understanding and that only the assumptions underlying its application can be claimed to be culture specific. Theoretical 'symbolic' conceptual systems in science develop towards 'a-causal' conditioning and interpretative structure, but are inherently bound by causal dependencies by means of scientific instruments.[8] The instruments are constructed and calibrated in accordance with theoretical dependencies, but they are then employed to perform interventions in the causal system, which would verify the theoretical setup.

What seems common to such diverse projects as Carnap's and Heidelberger's is the attempt to integrate two perspectives, denoted by Heidelberger as 'symbolic' and 'causal' understanding. 'Causal' in this context is understood as related to our natural cognitive representation of dependencies we observe. Independently of how it might be implemented in our 'cognitive hardware', it does not seem to involve any theoretical vocabulary to be carried out successfully.

The 'symbolic understanding' is primarily characterized by 'theoretical load'. It involves interpretation of the established dependencies in theoretical terms, and usually within an established or at least alternative 'research program.'[9]

The aforementioned example of cholera research could well illustrate the difference. John Snow was a physician involved in taking care of the cholera patients. This is how he became acquainted with the symptoms, which gave him an incentive to form a hypothesis. Accordingly, he considered cholera to be

[8] This view elaborates its earlier exposition by P. Duhem (cf. Heidelberger 2011, 475).

[9] It could further be investigated whether it is the symbolic understanding that the main area of scientific progress: "One must admit, however, that the development of modern science reveals the transition from the empirical tension of the concrete towards abstract structures. Both the search for a new unified theory as well as investigations of the conception of superstrings confirm the earlier proceeding towards abstracts constituting the ontic field of the rationality of the world" (Życiński 2011, 101). This claim finds a close parallel in Heidelberger 2011: "The central idea is that causal understanding constitutes a basic part of science, which, in the course of its development, becomes more and more superimposed by a culturally and historically variable symbolic superstructure." (468)

a disease of organic origin, caused by a parasitic and then unobservable micro-organism, which typically entered the host organism with contaminated water and needed some 3-4 days to multiply, causing then the observable symptoms, most often manifested in parts of the digestive system of the host organism.

Snow's hypothesis was, however, opposed to the mainstream alternative, so called 'miasma' theory. On this theory cholera was a disease caused by intoxination of organism with 'cholera poison', typically transmitted with contaminated air. The 'cholera poison' catalyzed in the air when the evaporations from the river Thames met with the smog generated by decaying organic matter. In general, the study of cholera was very sophisticated, involving more than 30 variables studied systematically, and with some 'precise' laws being established (in particular W. Farr's).

The miasma theory was accepted by the Committee for Scientific Inquiry (CSI in short) of the Board of Health, a parliamentary body established to explain the causes of cholera outbreaks in England and to prevent it. Snow delivered the outcomes of his study to the CSI, which supported his causal hypothesis with a solid evidence (for a description of his natural experiment see Kawalec 2006, ch. 1). Nonetheless, the final report of CSI did support the miasma theory.

The latter is an illustration of the distinction between 'causal' vs. 'symbolic' understanding. The CSI did not reject Snow's evidence. On the contrary, the CSI report provided an interpretation of his results on the grounds of miasma theory. Firstly, water was recognized as a 'contributing', but not — as claimed by Snow — an active causal factor of cholera. And secondly, the cholera prevention recommendations of the CSI included operational indications on how to reduce water contamination as a 'contributing' factor.

The prevention recommendations of the CSI report indicate that the causal dependencies established by Snow were largely not contradicted therewith on the level of 'causal understanding'. They were provided with a different interpretation on the level of 'symbolic understanding'. Indeed, the one supported by the research program of miasma theory.

Heidelberger proposes to integrate the two levels of understanding by means of different kinds of experimental manipulation. In fact, the natural experiment performed by Snow could be taken as an illustration of this proposal. The CSI did not, as it seems, respond to that part of Snow's evidence. They could not provide an alternative mechanism explaining the same empirical evidence.

Snow's research on cholera is in this respect exceptional. In principle, Heidelberger's proposal does not apply to non-experimental research. I claim that there is, however, a more general way to combine the two levels of under-

standing.[10] Manipulation of objects in experimental setting can be more generally characterized, as I argue, as *delimiting* counterfactuals. Non-experimental research has at its disposal alternative means in handling causal dependencies to achieve the same effect of delimiting counterfactuals implied by symbolic understanding. These usually will involve conceptual, rather than physical, manipulation of objects in order to develop causal beliefs.[11] In this regard counterfactuals appear to share an important characteristics of scientific instruments used in empirical research: "Scientific instruments can be seen as another kind of secondary tools: tools in order to further develop causal beliefs" (Heidelberger 2011, 477).

What is needed at this point is a distinction between *delimiting* counterfactual reasoning and *causal* counterfactual reasoning.[12] The latter steadily becomes a part of standard methodology of non-experimental research (Morgan, Winship 2007). In a nutshell, a causal effect *E* of a given factor *F* for individuals in a group *G* can be counterfactually assessed as follows. Suppose we measure the effect of *F* at the individual level *I* as a difference in the case *F* would and would not be present. Because only one course of events takes place for an individual *I*, what is needed a following stepwise procedure. Individuals in *G* are divided into — what is usually referred to as — a treatment and control groups. For *I* we identify matching individuals in the control group. Then we observe the effect *F* for *I* and the average behavior of the matching individuals. The causal conclusion of this counterfactual reasoning at the level of *I* is the difference between these two effects. Overall, the effect of *F* for *G* is assessed as the average of its individual effect for individuals in the treatment group.

The delimiting counterfactual reasoning sets out the stage for the causal counterfactual reasoning to operate. Its helps to delimit the structure of the causal counterfactuals. In the first instance, what is needed is an identification between the observed sets of outcomes and potential causal factors. Secondly, the most relevant correspondence need to be settled. Finally, the agenda is set for conducting the proper counterfactual reasoning, i.e. the causal counterfactual.

Let us illustrate the delimiting counterfactual reasoning with the cholera case. Snow in the early 1830's delimited the set of outcomes relevant to the disease.

[10] Heller and Życiński (1996, 219 ff.) point out the drawback of too broad and unspecific linkage between symbolic and causal understanding, amply illustrating it with the conception of sociobiology. They find a traditional demarcation in the form of falsification sufficient to set up the borderline.

[11] J. Collins et al. (2004) gives an informed introduction and overview of causal counterfactuals, advancing the original proposal of D. Lewis.

[12] N. Cartwright (2007, 200) introduces independently a similar distinction between 'genuine' and 'impostor' counterfactuals in the context of inference in economics.

Next, he undertook a research to delimit the possible factors corresponding with the outcomes. He considered two: an organic vs. non-organic cause. The study of blood samples and also of the process of development of the disease in the host organism led Snow to eliminate the latter factor in favour of the organic one.

Finally, given the results of the earlier two stages of his investigation, he identified several setups corresponding to the typical causal counterfactual. In particular, he identified the large-scale natural experiment described in Kawalec 2006 (31-61).

The outlined MIM model thus provides rationale to the subsequent assessment of the CSI's report as incorrect, and not just alternative to Snow's. Mainly because given the 'miasma' conclusion of CSI it is not possible to substantiate an alternative delimiting standard. The 'miasma' delimitation did not yield unique results. Only some thirty years later E. Koch delimited a standard setup for a general class of causal counterfactuals concerning an organic origin of malfunctioning behavioural outcomes.

A possible sophistication to the MIM model might be inspired by Życiński's conception of "emergent methodology" (2009, 38).[13] He adopts G.F.R. Ellis' ontological distinction between five autonomous ontological levels: "In present circumstances it is rational to claim that Ellis' ontology of irreducible worlds most adequately expresses the truth concerning the ontological structure of reality" (Życiński 2011, 23; transl. P.K.). Given that, it is claimed that at each level an independent set of factors is operating. Therefore, any attempt at causal understanding needs to be appropriately stratified. As it seems it is the delimiting counterfactual that, however, can fulfill the double task. It can be used to delimit the structure of the causal counterfactual at each stratification level.[14] But it can also be used to delimit an unspecific common aggregated proxy for causal effects at each stratification level.

For instance, in the cholera case, each stratification level can be specifically delimited. Because of technical limitations the level of blood-cells analysis was problematic at the time of Snow's investigation as he was not able to perform a full investigation. However, it was technically available as evidenced by the observation drawings by James Hasall, contained in the CSI report. The causal effect could be thus delimited at the number of *vibrio cholera* observed in blood samples of the patients. At the level of individual host organism, the specific

[13] A. Ahmed and R. Sil (2012) argue that is in fact should be considered a necessary condition of any pluralist methodological conception.

[14] Życiński (2006, 96-97) presents a proposal for the ontological status of structures or dependencies which can theoretically be delimited, but are not yet causally instantiated.

delimitation would typically consists of a set of symptoms observed. Finally, at the levels of groups (parish, town district, township, metropolitan area, etc.) the specific delimitation would typically be derived from the number of casualties in the relevant area of inhabitation.

Nonetheless, the delimiting counterfactual reasoning could also be applied to deliver a common aggregated proxy for causal effects at these different levels. Snow's actual counterfactual reasoning led him to the conclusion that contamination of water is the basic proxy for cholera effect. Due to technical limitations he was not able to provide evidence at the level of blood-cells, but he took every effort to prove it for each individual and group case.

The moderately pluralistic methodology outlined here can be accordingly referred to as *multilevel integral methodology*. The function of delimiting counterfactual reasoning allows, as I argued above, not only to structure the causal counterfactuals, but also to delimit a proxy for *all levels of analysis* involved.

5. CONCLUDING REMARKS

The complexity of research domains and the increasing sophistication of research methods are putting a pressure on methodology to come up with a pluralistic program that would address an integration of the obtained results. This problem was recognized by Joseph Życiński, who formulated the principle of natural interdisciplinarity in order to come to grip with the issue at the cross-roads of different research domains. The moderately pluralistic conception of methodology presented here in the form of MIM is juxtaposed to the principle and intended to address the problem internally with regard to the research domain at hand. The discovery of the cause of cholera was used here as an example illustrating how – along the lines of MIM — to integrate the symbolic (theoretically informed) and the causal (common-sense) understandings by means of a specific kind of counterfactual reasoning, namely *the delimiting counterfactual*.

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UMIARKOWANIE PLURALISTYCZNA METODOLOGIA

Streszczenie

Artykuł prezentuje i omawia zasadnicze założenia koncepcji umiarkowanie pluralistycznej metodologii. Ta ostatnia jest zbieżna z J. Życińskiego zasadą naturalności interdyscyplinarnej. Reprezenuje ona szeroko rozumiany nurt pluralizmu naukowego w zakresie sposobu prowadzenia badań w danej dziedzinie. W tej koncepcji połączone są dwa poziomy rozumienia symboliczny i przyczynowy za pomocą swoistego rodzaju wnioskowań kontrfaktycznych, określonych tu jako

rozgraniczających wnioskowań kontrfaktycznych. Dzięki nim umiarkowanie pluralistyczna metodologia ma zastosowanie do badań nieeksperymentalnych.

Streścił Paweł Kawalec

MODERATELY PLURALISTIC METHODOLOGY

S u m m a r y

The paper outlines and discusses the major tenets of *moderately pluralistic methodology*. The latter is juxtaposed to J. Życiński's principle of natural interdisciplinarity. It instantiates scientific pluralism as a domain-specific agenda for research. The symbolic and causal understanding are integrated in this methodological conception by means of a specific kind of counterfactual reasoning, which is coined the *delimiting counterfactual*. It makes the moderately pluralistic methodology applicable to non-experimental research.

Summarised by Paweł Kawalec

Key words: scientific pluralism, Józef Życiński, Rudolf Carnap, counterfactual.

Słowa kluczowe: pluralizm naukowy, Józef Życiński, Rudolf Carnap, wnioskowanie kontrfaktyczne.

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