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On the Methodology of Practical Disciplines (Sciences) — From the Treatise »A Philosophy of Practicality«*

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The paper is a new edition of a Part Four of *A Philosophy of Practicality. A treatise on the Philosophy of Tadeusz Kotarbiński* (1st edition: Helsinki 1992). The text is devoted to the methodology of practical sciences and terminological issues, including the very notion of practical disciplines (or sciences/arts), the concepts of design (project) and design-making, and the specificity of scientific statements in this research area. The subject of the discussion is, in particular, Kotarbiński's concepts presented in the chapter „Practical knowledge" (Part V, Chapter 5) of the opus *Gnosiology*.

Key words: practical sciences, practical disciplines, practical arts, methodology, practical knowledge, design-making, philosophy of practicality, scientific practical statements, Tadeusz Kotarbiński, „Gnosiology"

* On the occasion of the 135th anniversary of Tadeusz Kotarbiński's birthday, we are publishing a fragment of prof. Wojciech W. Gasparski's *A Philosophy of Practicality. A Treatise on the Philosophy of Tadeusz Kotarbiński*. The Treatise was originally published in 1992 in Helsinki, in the series Acta Philosophica Fennica. We are grateful to prof. Leila Haaparanta, the Editor the Finish series, for permission to re-publish the text. Our publication covers the Part Four of the Treatise. The text is re-edited by Marcin W. Bukała, with the consent of the Author. Certain places in the text have been linguistically clarified; moreover, the translations of the quoted fragments of T. Kotarbiński's dissertations *Teoretyk i praktyk wobec przyszłości* [A theoretician

1. Methodology of Practical Disciplines

Tadeusz Kotarbiński did not write a separate treatise on the methodology of the practical disciplines. The bibliography of his works on this subject, strictly understood, contains only: a chapter „Practical knowledge" in the book *Gnosiology* [Kotarbiński 1966: 375–383][1]) (originally published as *Elementy teorii poznania, logiki formalnej i metodologii nauk* in 1929), and the papers:

- *Reflexions on Sciences* [Kotarbiński 1966: 455–464][2],
- *Zagadnienia metodologii nauk praktycznych* [Issues of the Methodology of Practical Sciences][Kotarbiński 1969_2],
- *The Methodology of Practical Arts: Concepts and Issues* [Kotarbiński 1971]
- *Pojęcia i zagadnienia metodologii ogólnej i metodologii nauk praktycznych* [Notions and Issues of General Methodology and Methodology of Practical Sciences] [Kotarbiński 1972].

This bibliography should be completed by the works which, though are not devoted particularly to the methodology of the practical sciences, deal with the problems connected with them. They are: *The ABC of Practicality*[3] [Kotarbiński 2002] the following papers[4]:

and a practician towards the future], and *Rodzaje zdań prakseologicznych i sposoby ich uzasadniania* [Types of praxiological statements and ways of their justification] [Kotarbiński 1913; 1960], and the fragment of the quoted paper of Konstanty Krzeczkowski (*vide infra* p. 25) were newly elaborated.

It is worth noting that the Part One of the Treatise, titled *On the Concept of Practicality*, was republished in the Volume 10 of the series „Praxiology" titled *Praxiology and Pragmatism* [Gasparski 2002]. In the same volume Kotarbiński's *Abecadło praktyczności* was published in English: *The ABC of Practicality* [Kotarbiński 2002].

[1] Part V: „Analysis of the specifying features of the branches of sciences", Chapter V: „Practical knowledge".

[2] Published in the Supplement to *Gnosiology*; originally published as: *Refleksje o nauce*: Kotarbiński 1958.

[3] Originally published as: *Abecadło praktyczności*.

[4] The texts: *Rodzaje zdań prakseologicznych i sposoby ich uzasadniania*, and the Polish versions of the papers *Practical Error* and *Praxiology and Economics*, were later re-published

- *Teoretyk i praktyk wobec przyszłości: Notatka metodologiczna* [A Theoretician and a Practician Towards the Future: a Methodological Note] [Kotarbiński 1913];
- *From the History of Science Classification* [Kotarbiński 1966: 465–480][5];
- *Rodzaje zdań prakseologicznych i sposoby ich uzasadniania* [Types of Praxiological Statements and Ways of Their Justification] [Kotarbiński 1960][6];
- *Practical Error* [Kotarbiński 1964][7];
- *Praxiology and Economics* [Kotarbiński 1965][8]
- *Zdania praktyczne a zdania teoretyczne* [Practical and Theoretical] [Kotarbiński 1967].

The above list should be completed by the reviews written by Kotarbiński, as the one of Georges Hostelet's book *L'investigation scientifique des faits d'activité humaine avec application aux sciences et aux techniques sociales* [Kotarbiński 1961] and the review article *La philosophie de la technique de Dupréel* [Kotarbiński 1968].

This part of the treatise[9] presents methodological issues which were discussed in the above works by Kotarbiński, and in particular the very notions of: practical disciplines and designs (projects), and moreover the norms being the statements of these disciplines and the problem of these statements' justification.

Let us remind that Kotarbiński closely connected the methodology of the practical disciplines with the general methodology of science

as Appendixes to the 4th Edition of *Traktat o dobrej robocie* [Kotarbiński 1969] (*vide infra* in footnotes 6-8); *Traktat o dobrej robocie* was originally published at 1955, it had also two English editions under the title of *Praxiology* [Kotarbiński 1995]. Unfortunately, the Appendixes from the 4th Edition are not included in the editions in English, but *Practical Error* and *Praxiology and Economics* were published in English separately.

5 Originally published as: *Z dziejów klasyfikacji nauk* [Kotarbiński 1950]

6 Re-published as Appendix in: Kotarbiński 1969: 433–451.

7 Originally published as: *Błąd praktyczny*.

8 Published also in Polish as: *Prakseologia i ekonomia*, as Appendix in: Kotarbiński 1969: 378–393.

9 I.e. this text, being Part Four of *A Philosophy of Practicality*.

(identified with praxiology), what he explained in his various works, including *ABC of Practicality* [Kotarbiński 2002].

2. Practical Disciplines, Sciences or Arts?

In his early works, Kotarbiński used the name „practical knowledge". This is the title of Chapter V of the final part of his *Gnosiology* (Part V), the chapter devoted to an analysis of the particularities of the main fields of this area of science [Kotarbiński 1966: 375–383]. In the first paragraph of that chapter, the Author presented the terms „appraisal", "standard", and „project" and their derivatives. These are – according to Kotarbiński – the terms connected with „practical abilities in the broadest sense of the term" [Kotarbiński 1966: 375]. These terms are discussed below.

Let us now pass to the problem of the delimitation among critical, normative, and practical disciplines. In the paper *Reflections on science* included in the Supplement to *Gnosiology* [Kotarbiński 1966: 455–464][10], we encounter three semantically related terms: „arts", „sciences", „disciplines", which appear interchangeably in connection with the adjective „practical" [Kotarbiński 1966: 459–460]. This interchangeability has its source in the difference between Kotarbiński's standpoint – aimed at considering science as the common home for both basic research and practical arts – and the advocates of narrowing the understanding of term „science" to the French notion *la science*. The dispute has never been settled definitively — nevertheless, as time passes, it seems more and more probable that the victory will be won by Kotarbiński[11].

The term „arts" as used by Kotarbiński means that when doing something, one does it with understanding: i.e. one can do a thing, and the understanding how to do it is based on scientific knowledge.

[10] *Vide supra* in footnote 2.

[11] E.g. cf.: Bunge 1967: passim; 1985: passim.

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Here the original term meaning „arts" – *umiejętności*[12] – is understood as used in the name of the predecessor of Polska Akademia Nauk[13], i.e. Polska Akademia Umiejętności [The Polish Academy of Arts]. That name of the academy is probably originated in the word *umiejętnia*, i.e. place where arts are developed. The term was proposed in the middle of the 19th century by Bronisław Trentowski[14] to replace the non-Polish word *uniwersytet* („university").

Kotarbiński used the name *umiejętności* („arts"), because it was also his intention to emphasize the relation between a design–making and implementation of the design. The former was perceived by him as the essence of practical sciences[15]:

> „Hence we may say that a person has mastered a given »practical ability« or a given »art« if we want to say that in a given field he [or she] can both make projects [i.e. designs] (in which a given practical discipline, or, in the last analysis, a given practical science, consists) and put projects [i.e. designs – W.W.G.] into effect (in which technical ability consists)" [Kotarbiński 1966: 381].

In a paper published in the English journal „Metaphilosophy", forty-two years after the publication of *Elementy*... (*Gnosiology*), Kotarbiński returned to the problem of understanding the term „practical arts". According to the explanation presented there, such arts are combinations of intellectual and practical operations. He did not mean *habitus*, but mainly actualizations. Such combinations are called „practical", when their main goal is not the obtaining of rationally-justified answers to questions, but the proper realization of designs. „ Answering" is the goal of the theoretical arts, in

[12] Word „arts" corresponds to the original term *umiejętności*, literally meaning „skills", cf. Kotarbiński 1971.

[13] PAN – Polish Academy of Sciences.

[14] On Trentowski, see works by Ewa Starzyńska-Kościuszko (Editor's note).

[15] This is a consequence of the Aristotelian classification of sciences in which "[...] theoretical sciences are followed by arts serving mainly a conceptual preparation of acting [...]" (Kotarbiński, *Z dziejów klasyfikacji nauk*, see: Kotarbiński 1958: 363).

which intellectual operations dominate; in practical arts, however, managing and manual skills come to the fore, both in the sphere of quantitative thinking and in the organization of a hierarchy for understanding. However, in both cases, the arts include research operations, i.e. operations whose goal is cognition — these operations make up the theoretical and practical sciences, respectively:

> „And thus, these sciences which belong to the practical arts clearly differ from those which belong to the theoretical arts: in the case of the former, they all serve to prepare the most effective performance of mental operation, the essence of which is to devise the means of reaching a goal" [Kotarbiński 1971: 159].

In regard to the term „disciplines", it was Kotarbiński' concession to those who denied the practical disciplines the right to belong to „sciences" because of their practicality: „And it would, perhaps, be best to speak of »disciplines«, critical, practical, normative, because of the etymology of the word (Latin *disciplina*, from *disco*, »I learn«)[16], and thus, to mean by a discipline »that which can be taught and learned«" [Kotarbiński 1966: 381].

Years passed after these words were written in *Elementy*… (*Gnosiology*) in 1929, and in *Reflections on science* this terminological postulate was extended to science as a whole (with certain additions): „[…] a scientific discipline means every whole which is worthy of being taught intellectually […] at university level and only at that level, as a distinct subject" [Kotarbiński 1966: 459][17].

In regard to the practical disciplines, Kotarbiński – in connection with the above postulate – stated: „Namely those practical disciplines belong to the field of science, at a certain definite time and under definite social conditions, which are sufficiently developed to be included in the curricula of academic schools as distinct intellec-

[16] Cfr.: *Disciplina*, in: *λογεῖον* (*Logeion*) [Dictionary], <URL: https://logeion.uchicago.edu/disciplina> (Editor's note).

[17] *Reflections on Science*, section 2.

tual disciplines" [Kotarbiński 1966: 463][18]. Having explained that we shall use the terms „practical sciences" or „disciplines" interchangeably, with preference for „practical disciplines".

3. The Practical Sciences and Other Groups of Sciences

What differentiates practical sciences from other groups of sciences is design-making:

> „The term »practical science« might be applied to any engineering discipline (bridge-building, machine-building, etc.), since such disciplines are engaged mainly in project-making [i.e. design-making – W.W.G.]. In that interpretation, project–making [design-maiking] – the principal concern of the »practical« disciplines – is not cognition, and with respect to plans, understood as similitudes of intended products, there can be no doubt that they are not true statements. Among the practical disciplines we may distinguish the normative sciences; this term may be applied, for example, to ethics, since being mainly concerned with making projects about actions it is principally engaged in that sphere in founding correct normative statements" [Kotarbiński 1966: 379–380].

It is not only the engineering sciences or ethics which may serve as examples of practical sciences. Tadeusz Kotarbiński also included here medical and legal disciplines, and in general all such disciplines which have as their main goal something other than a new formulation of the truth. Whereas sciences belonging to other groups strive to adjust their descriptions so that they can agree with the reality they describe, the practical sciences aim at adjusting reality to a design [Kotarbiński 1966: 382]. Thus, the practical sciences differ from other research specialities in their approach to the relation between description and reality. For some sciences it is the relation of reporting: reality is the original experience, the description is the image. And for the practical ones, it is the opposite:

[18] *Reflections on Science*, section 3.

the description is the model which serves *sui generis* to shape the desired real result.

> „A practician, when asked about the future, would apply the criterion of his desires, and he would answer according to this criterion. He would do it as follows: he would generate in his or her mind a creative drive, a vivid emotion; following this drive, he would start to picture – in his internal world […] – a creative vision of the desired object. This object, from the first barely outlined view would be developed – by the subject's effort – into the desired form, »realized«: it could be the form of the statue to be erected later, of a song to be sung later, or of a construction which would be built later.
>
> […] A practician would do something, the theoretician is unaccustomed to, and reluctant to do it: he would take the shape of the product of his imagination as the basis of his judgment about the future, he will transfer the features of things seen in the world of imagination to the real world. He will make a hypostasis. And justly so! Hypostasis is an unreliable cognitive method in every case, except for the questions of one's own desired future. Here, hypostasis is right and the best cognitive method." [Kotarbiński 1957: 172–173][19].

Having this in mind – this shaping of reality on the basis of hypostases-designs – Kotarbiński [1969_1: 189; 1995: 188][20] and Herbert Simon [Simon 1969: passim] unanimously call these products of design-making „artifacts". Let us add that Simon, one of the creators of the science of design-making, went as far as to name the practical sciences „sciences of the artificial", in contrast to sciences of nature, natural sciences.

The two groups of sciences mentioned by Kotarbiński – practical sciences and theoretical sciences – are not fully distinguished from each other. And this may be an argument for the thesis: theoreticality is not an antithesis of practicality. At the same time it allows to regard Kotarbiński's philosophy as philosophy of practicality:

[19] From Kotarbiński, *Teoretyk i praktyk*…; see also: Kotarbiński 1952 (Editor's referrence).

[20] *Traktat o dobrej robocie/ Praxiology*, cap. XI.

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> „After all the theoretical sciences are the preparation for the practical sciences. And the latter ones are, to large extent, the applications of the former ones. Moreover, theoretical sciences are the necessary preparation without which the practical sciences would not be able to perform more and more difficult tasks. It is necessary to know more and more how things are, to figure out how things should be, and this way things can be better than they are"[21].

Furthermore, Kotarbiński did not only point out the above-mentioned dependence of practical sciences on the theoretical ones. As early as in *Gnosiology*, he clearly stated:

> „[...] the more a given practical discipline develops, the more it is concerned with truths from other fields, which truths are needed for the principal objectives of the practical discipline in question. Thus, for instance, contemporary medicine is less and less concerned directly with devising ways and means of treatment, and more and more engaged in solving physiological, pathological, chemical, etc., problems, the solution of which is required as a foundation for the appropriate norms and projects [i.e. designs – W.W.G.]" [Kotarbiński 1966: 382].

Thus, it seems necessary to distinguish between two meanings of the term „design-making": design-making *sensu largo* and design-making *sensu stricto*. By design-making *sensu largo* we mean the theoretical task of the practical sciences, which lies in seeking general conditions for a satisfactory state of affairs. On the other hand, by design-making *sensu stricto,* we understand finding individual solutions for given conditions, i.e. seeking satisfactory conditions for the specific state of affairs. In both cases, seeking these conditions is carried out: „[...] on the strength of some objective relationship, such as certain natural laws of the sequence of certain events, or some fixed order of things made obligatory in the world of human beings"[22] [Kotarbiński 1966: 462].

[21] Kotarbiński 1948, quoted after: Kotarbiński 1957: 680–698, cit. p. 693.

[22] *Reflections on Science*, section 3.

The suggested distinction between design-making *sensu largo* and design-making *sensu stricto* may allow the standpoints of Tadeusz Kotarbiński and Konstanty Krzeczkowski to be reconciled. The latter demanded that design-making (in our terms: design-making *sensu stricto*) should be distinguished from the „theory of design-making" (in our terms: design-making *sensu largo)*. According to Krzeczkowski:

> „It should also be stressed that design-making is not the »main work« of the practical sciences. Design-making is an introductory step in any consciously performed work: it is an introduction to planned action and is usually reflected in its programmes, selection of goals, means and methods. Practical sciences, on the other hand, aim at studying goal-oriented activity, assessing the purposes and the plans, and the design-making. Science itself does not pose goals and programmes, but studies their significance and merits. In other words: practical sciences do not consist in direct design-making, but in the theory of design-making in various fields of human creative activities and work. A purpose of each theoretical discipline is research for the sake of research, aimed at reaching valuable general statements without being concerned with practical results. The purpose of practical and applied sciences is the same, if we deal with their theory and not with their practical application" [Krzeczkowski 1936: 65–66].

4. Designs and Norms as Statements of Practical Sciences and Their Justifications

The term „science", as it should be remembered, is notoriously ambiguous. In one understanding of this term, called the functional one, science is a set of functions specifically connected with forming the (scientific) constructs. These constructs make up science in the second understanding of the term, called the material one. They are scientific statements, since language is the material from which science creates its opus.

Practical sciences – as the other types of sciences – give their results in the form of statements, namely: norms or designs. Let us

explain what „norms" and „designs" we have in mind, in order to avoid misunderstandings (which could be caused by the colloquial use of these two terms).

Following differentiation of design-making *sensu largo* and design-making *sensu stricto* (suggested above), it would be worthwhile to distinguish statements made in these two types of design-making. In design-making *sensu stricto* – i.e. design-making performed for direct use in a definite practical situation (and similar activities called in different ways, e.g. planning[23] in different spheres of human activity) – the statements are individual designs and norms. These statements are different from the statements of practical sciences. The latter, in design-making *sensu largo*, are formulated as general norms and designs concerning classes of practical situations and they constitute the fields of the respective practical sciences.

Speaking about norms as statements of the practical sciences, Kotarbiński pointed to normative statements. He distinguished them from Polish term *normy* in the proper sense, meaning rules, i.e. orders, precepts, counsels or warnings of the kind: „Thou shalt not kill!", „Don't drop litter!", „Don't walk on the grass!", etc. These rules (*normy* in the proper sense) do not belong to science, because they are not statements, and thus they cannot be assessed according to the logical criteria of the truth and falsehood. They are not, therefore, provable statements. Normative statements are sentences of the following kind: „Such and such action is necessary for this or that to occur", „Such and such action suffices for this or that to occur" (sentences are called factual statements) or „Such behavior would be revolting (or noble)" (sentences called the statements expressing emotions). The sentences of the last three examples are affirmative sentences, true or false, possible to scientific verification or falsification [Kotarbiński 1966: 378].

[23] We do not mean, however, making plans understood as spatial allocation of elements [cf. Kotarbiński 1966: 378–379].

Discussing normative statements, Kotarbiński adds that they are appraisals of possible actions; i.e. they are actions which are to be performed (or not performed), depending on someone's decision. A normative statement is called „an appraisal" when the action and its consequences are intended — and if the goal and actions leading to it are intended, then we are speaking about standards (requirements). The term „appraisal" has been used here as a real name, a name of a sentence uttered by the appraising subject as such [Kotarbiński 1966: 376].

The objection against normative statements, which would disqualify them as scientific statements, is that such statements do not speak about how something is, but how it should be. Arguing against this standpoint, Kotarbiński indicates that „Appraisals, even if they are emotional, are true or false statements; and, hence, to appraise correctly, to think correctly that something is »beautiful«, »heinous«, etc., and in particular to judge truly about something (that is, to think truly and with conviction) that it is such and such, is to acquire knowledge in a certain way" [Kotarbiński 1966: 380]. And according to Kotarbiński, the objection that „normative statements do not say how things are" is as unjustified as the analogous objection to some statements of physics. These physical statements say that „if one thing is the case, then something else is the case", for they are not categorical but hypothetical statements. Moreover, statements of this type may pertain to possible events: i.e., „For something to occur it is necessary that something else should occur earlier" [cf. Kotarbiński 1966: 380]. A variant of such conditional statements pertaining to the future are normative statements. The latter statements are composed of two parts: the first one points to the necessary or sufficient condition for the occurrence of the state defined in the second part; such state is the desired state, the consequent of which is an emotional appraisal.

> „Following this analysis, it is easy to grasp the meaning of the thesis that normative statements declare »what should be« or »what should be in accordance with our intentions«, etc. By

> saying this one judges that normative statements pertain to hypothetical actions, or that they pertain to something which is necessary for something else, described in the form of an emotional appraisal. This shows clearly that, when saying »what should be«, etc., in other words, »how things should be«, etc., they do not cease to say »how things are« in some respects. This would probably refute the arguments adduced above against the inclusion in the field of science of the disciplines now under consideration" [Kotarbiński 1966: 381].

In contrast to normative statements, in which it is not important whether the possible states can actually exist, there are numerous cases in which it is of great importance. Then, we are dealing with designs:

> „When we say that a person makes a project [i.e. design – W.W.G.] of something, we usually mean that, on having decided to perform a certain action or to suggest its performance to someone, or intending to decide whether to perform it or to suggest its performance, he tries mentally to devise that action or its product or result" [Kotarbiński 1966: 378–379].

Thus, making designs, one has to define the desired possible state and the sequence of intermediate states leading to the realization of the desired one. This sequence is the necessary condition of the occurrence of the desired state — it is supposed to have justification and appraisal, as the best one, in one or in many aspects.

Kotarbiński believes that designs understood in such a way do not serve cognition. I question this view, using the same argument, the Author or *Gnosiology* applied when talking about appraisals: he considered making them as a mode of cognition[24]. Albeit one should agree that designs commonly understood as images of possible objects, do not deserve the status of true (or false) statements. Yet this status can surely be ascribed to the statements formulated in answer to certain types of practical questions, characterized by Kotarbiński as follows:

[24] The thesis was also presented in *The ABC of practicality* [Kotarbiński 2002].

> „Of course, no one doubts the importance of technology, medicine, or political and managerial administration, but some people refuse them the right to be termed scientific. For instance, the research plans of scientific institutions should not, in the opinion of such people, include such tasks as designing an improved apparatus for this or that use in the national economy. It is sometimes claimed that the task of science consists only in mapping reality – that is, stating what is – and therefore it does not include such problems as answering the question as to what should be. To plan is the task of practical disciplines, and not of science. But if we examine the matter more closely, we cannot agree to such a delimitation of theory and practice. For what is the general type of problem characteristic of practical disciplines like engineering and medicine? Such disciplines seek to answer the question: what event – among those we know how to provoke – should occur under given circumstances in order to bring about a prior sufficient condition for a certain state of things? And that certain state of things, which is desirable for some reason, though it has not yet occurred, can occur only if preceded by the event in question. […]
>
> But if so, then the appearance of an essential difference between the practical and the theoretical disciplines gives way to their essential similarity"[25] [Kotarbiński 1966: 461–462].

In his other investigations concerning statements of practical sciences – and in particular their relevance to the methodological analysis of praxiology[26] – Kotarbiński took up the issue of practical directives (paper *Rodzaje zdań praktycznych i sposoby ich uzasadniania* /1960/)[27]. Kotarbiński explained that a practical directive is a normative statement composed according to the following pattern:

[25] *Reflections on Science*, section 3.

[26] Cfr. T. Kotarbiński, *Rodzaje zdań prakseologicznych i sposoby ich uzasadniania* [Types of praxiological statements and ways of their justification]: „I understand praxiology as the science of efficient action. As such, praxiology has a purpose to provide – and give reasons for – the indications of what action, under the circumstances, is necessary to take, what is good to take, or what is sufficient to take to reach the intended goal in the most efficient way. Briefly it can be expressed that praxiology is to search the conditions the maximum of efficiency depends on. It is needless to add that in the above formulations both positive recommendations and warnings are included […]." (Appendix to *Traktat o dobrej robocie*, quoted after: Kotarbiński 1969: 433).

[27] Later published as the Appendix with *Traktat o dobrej robocie*: Kotarbiński 1969: 433–451.

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> „»In circumstances *A*, it is required (or it is good, or it is sufficient) to do *B* to cause *C*«. By »it is required« we indicate a condition that is necessary under the circumstances *A*, i.e. without such condition *C* cannot occur under the circumstances *A*. By »it is sufficient« we indicate a condition that is sufficient under circumstances *A*, i.e. after providing such condition *C* must occur under the circumstances *A*. By »it is good« we indicate the action which makes *C* more probable (than it would be without it), under the circumstances *A*." [Kotarbiński 1969_1: 434].

Practical directives are – according to Kotarbiński – praxiological statements because of their efficiency aspect, for they are indications of effectiveness of actions. In regard to its theoretical foundation and technical basis, each directive is a statement belonging to a practical discipline:

> "Whenever referring to a new theoretical premise justifies a better way of acting to achieve a given goal, the whole progress consists in demonstrating that: in the given circumstances, according to the new causal relation consisting in replacing B_1 with B_2, an occurrence *C* takes place, either with greater probability or faster or with lesser usage of certain objects, etc. To transform this statement into a comparative directive, it is enough to make a trivial modification by formulating the instruction: »in given circumstances it is enough to reach for B_2, to trigger *C* with a greater probability (or faster, or with lesser usage of certain objects, etc.), than with the use of B_1«. In general, whenever one may ascertain the relation »*B* causes *C*«, the instruction: »to have *C*, reach for *B*« is justifiable; provided that *C* is appropriate to be a goal of action, and that *B* is an occurrence resulting from a stimulus of one's will. *Mutatis mutandis,* the same can be applied to validate the instructions of improvements based on the changed of technological foundations [Kotarbiński 1969_1: 443]".

However, the practical sciences do not deal with creating individual practical directives (this is the domain of design-making *sensu stricto*, according to the distinction we have proposed), but with formulating adequate statements which are the foundations of these directives. The assertion-like sentences related to practical directives were called by Kotarbiński practical statements [Kotarbiński 1967: 10].

Kotarbiński also indicated two other sources of validity of practical directives, namely:

a) a theoretical foundation in relationships common for the natural sciences and the humanities, belonging to „the theory of events" (as Kotarbiński called system theory) [Kotarbiński 1969_1: 438];
b) studies of the actual practice [Kotarbiński 1969_1: 445], i.e. historical observation and the generalization of practical experience.

These very sources, especially studies of practice, are methodological arguments which finally determine the distinct character of the practical disciplines:

> „Practical arts – i.e. those being sets of practical directives (among them, praxiology) – are entitled to be considered as distinct disciplines, but not because of the directival form of their component statements. This form is, in fact, not a very important feature. It is important, however, that practical arts cannot be limited to borrow from strictly theoretical disciplines the statements on relations among occurrences. Practical arts are supposed to find out the relations on which practical directives are based on. […] Moreover, practical arts have their own ways of validating the relations they find out, and thus indirectly validating the directives founded on these relations" [Kotarbiński 1969_1: 445].

Each practical science – due to the features which differentiate it – uses various particular methods, in addition to the methods common to all sciences (both theoretical and practical). These differences in special methods arise not only from the specific character of the issues solved by the respective disciplines, but also from moral constraints or legal reservations.

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[28] *Vide supra* in the introductory footnote.

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STRESZCZENIE

O metodologii dyscyplin (nauk) praktycznych — z traktatu »Filozofia praktyczności«

Tekst stanowi nowe wydanie czwartej części traktatu *A Philosophy of Practicality. A Treatise on the Philosophy of Tadeusz Kotarbiński* (1. publ.: Helsinki, 1992, w ramach serii „Acta Philosophica Fennica"). Poświęcony jest metodologii nauk praktycznych oraz zagadnieniom terminologicznym, w tym pojęciu dyscyplin praktycznych (lub nauk/umiejętności), pojęciom projektu i projektowania oraz specyfice zdań naukowych formułowanych w ramach dyscyplin praktycznych. Omawiane i rozwijane są w szczególności koncepcje Kotarbińskiego przedstawione w rozdziale „Wiedza praktyczna" (cz. V, rozdz. 5) dzieła *Elementy teorii poznania, logiki formalnej i metodologii nauk* (w przekł ang.: *Gnosiology*). *Traktat* Wojciecha Gasparskiego ukazał się również w języku polskim w książce: *Filozofia praktyczności. Traktat o filozofii Tadeusza Kotarbińskiego oraz similaria,* Warszawa: Wydawnictwo IFiS PAN 2021 (część czwarta: s. 101–114).

Słowa kluczowe: nauki praktyczne, dyscypliny praktyczne, umiejętności praktyczne, metodologia, wiedza praktyczna, projektowanie, filozofia praktyczności, naukowe zdania praktyczne, Tadeusz Kotarbiński, „Elementy teorii poznania, logiki formalnej i metodologii nauk"

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