STUDIA METODOLOGICZNE
NR 35 • 2015, 111-122
DOI: 10.14746/sm.2015.35.8

ÖZGÜÇ GÜVEN

Ajdukiewicz on Anti-Irrationalism, Foundation and Self-Evidence

ABSTRACT. This paper aims to examine Ajdukiewicz's understanding of anti-irrationalism through foundational systems and the conception of self-evidence. The epistemic status of basic statements or axioms of foundational systems are problematic. A long-lasting tradition considers these primitive statements as self-evident. Looking for a precise conception of foundation, Ajdukiewicz rejects the notion of self-evidence. Instead, he proposes a conventionalism based on formalism.

KEY WORDS: Ajdukiewicz, anti-irrationalism, self-evidence, foundation, conventionalism

It may be seen that around the time of World War II there was a strong tendency in Polish Philosophy about certainty. One of the paradigms of the demand for certainty that occurred in Polish Philosophy was Ajdukiewicz's conception of anti-irrationalism, which is related to the clarification of cognition. Despite anti-irrationalism being a conception of Ajdukiewicz, he states that before him there had already been a tendency from the age of enlightenment towards anti-irrationalism [2001, p. 242]. By his own estimation the tradition of anti-irrationalism went back to the late 18th century. The early form of anti-irrational knowledge was a reaction to Kant and romanticism. Its main characteristic was being against irrational knowledge, which is proposed to be gained from supernatural sources. But this characteristic is not sufficient for Ajdukiewicz so that he offers a comprehensive anti-irrationalism which has additional features: [Ajdukiewicz, 1975, p. 46]

(a) Content of anti-irrationalist knowledge can be communicated to others in words understood literally.
(b) Correctness or incorrectness of anti-irrationalist knowledge can be decided in principle by anybody who is appropriate for the topic.
(c) Anti-irrationalist knowledge must be communicable and controllable.
(d) Anti-irrationalist knowledge must be clearly formulated.

As seen above, due to the anti-irrational thesis the verbal expression of cognition should be conveyable to others. Also, there is no need for any superficial faculty for justifying the truth. So theoretically knowledge must be clearly expressed and by any means comprehensible. In addition to the above mentioned points Ajdukiewicz gives another explanation as such:

> Anti-irrationalism, i.e. [is] the postulate stating that only such propositions can be acknowledged which are justified in a way that can be verified, and [with] linguistic precision. Apart from these two hallmarks, one should also stress the third element, i.e. accepting the logistic conceptual apparatus and the powerful influence of [the] symbolic. [Ajdukiewicz, 2001, p. 241]

Consequently, it is the relationship of the symbolic to logic which examines the truth of a proposition.

Within this frame a problem occurs related to the premises of inferences, especially deductive inferences. What guarantees the truth of the premises of a deduction?

How to found a deductive system?

For Ajdukiewicz there are two ways of founding a deductive system. One requires reference to other deductive systems, one does not. In a deductive science, which is not constructed by reference to any other science, there must be some accepted primitive statements for which there are not any proofs. The statements, which are accepted without proof, are axioms of that deductive science. Also the primitive terms in such a deductive system should be listed obviously. If not the primitive terms, do the constant terms occur in the axioms?

A deductive system may also be constructed with reference to other systems. This kind of a deductive system has two parts: the theorems loaned from other deductive systems and the statements contained within specific terms particular to that system. The later statements are the axioms of the system. For instance, when an axiomatic system of geometry is constructed, there is reference to logic and the arithmetic of real numbers.

A deduction is a process of deriving a conclusion from premises. But what are these premises? Surely, some of them are the conclusion to other premises. What about those that are not derived? How do we know these underived premises which are considered to be axioms?

The problem of foundation

Every foundational effort must be related to some primitive statements. The status of primitive statements is a long-running discussion in the history of philosophy. In the traditional philosophy the answer to the question regarding the truth of a premise is the notion of self-evidence. According to the self-evidence approach, any foundation attempt must start from the premises that are self-evident. Ajdukiewicz, however, is one of the pioneer philosophers of the 20th century who was against the notion of self-evidence.

Philosophers appeal to the notion of self-evidence when there is no argument for the underived premises of a deduction. It is usually understood that a self-evident proposition is the one that does not need any assistance. One knows immediately that a self-evident proposition is true and it is not derived from any other propositions. But what is it to be self-evident? To whom is a statement self-evident? Is it self-evident to everyone? Does a self-evident statement have relativeness? How it is possible that some propositions are thought to be self-evident, while the same propositions are being evaluated as not self-evident. Ajdukiewicz contributed to this controversy with his viewpoint of anti-irrationalism criticizing the assessment which indicates the primitive truths as self-evident. He criticises the notion of self-evidence. So the debate about self-evidence is related to the problem of foundation and anti-irrationalism.

Ajdukiewicz analyses the concept of foundation and concludes that it is not clear and precise. [Ajdukiewicz, 1978, p. 295] He begins with the cases which are thought to be the examples of precise foundations before him.

In the first case, a statement is substantiated if it is accepted during a procedure which assures the truth of the statement. Related to a statement, if one uses a method and always gets the same results, then the statement is said to be substantiated. This is a vague and unsatisfactory definition for Ajdukiewicz because if this definition is accepted, he declares, most of the scientific statements become unfounded.

In the second case, which is a modified version of the first, a statement is substantiated if it is accepted as a result of a procedure which ensures the truth of the statement [*ibid*. s. 295]. This argument is not satisfactory too, because we would have to appeal to the inability to recognise which statements are founded and which are not! [Ajdukiewicz, 1978, p. 296]

In the third case,

> the procedure which led the other scientist to the assertion of a statement substantiates this statement if the procedure applied by the other satisfies the criteria he himself respects in deciding whether or not to assert a statement. [Ajdukiewicz, 1978, p. 296]

This is not sufficient too because the term 'founded' may be used without being defined. So “the term 'founded' has in the language of scientists an operational meaning, but it does not possess a definitional meaning” [Ajdukiewicz, 1978, p. 296]. The consensus of scientists about a procedure resulting in the assertion of a statement may be called foundation. Nonetheless, this is a factual problem for Ajdukiewicz: “it is not an attempt at making precise some vague, intuitive concept of foundation” [Ajdukiewicz, 1978, p. 297].

In the fourth case, in a deductive science a statement is well-founded if and only if it has been derived by means of a deductive proof. But for Ajdukiewicz this is not sufficient for a precise conception of foundation, since for a deductive science it is not clear what a deductive proof is. Still there may be a precise definition of the proof, but it should be relative to an assumption. That assumption is arbitrary. So for Ajdukiewicz a proof that is “relative to some arbitrary assumptions and rules is not sufficient to render a statement well-founded” [Ajdukiewicz, 1978, p. 298].

In the fifth case, it may be said that the proof of a statement depending on some rules, renders it well-founded only if the rules have certain properties. But what are these properties? Ajdukiewicz defines the problem as ‘proper choice of axioms’ which may be accepted without proof and the problem of the choice of appropriate rules of inference [Ajdukiewicz, 1978, p. 298]. First he proposes a solution to the problem via hypothetico-deductive systems. At first sight, for Ajdukiewicz there is no problem of foundation for hypothetico-deductive systems because in this type of systems nothing is claimed so that there isn’t any requirement to justify any assertion and no need for the foundation of these statements [Ajdukiewicz, 1978, p. 299].

But at a second glance, there is also a problem for hypothetic-deductive systems related to distinguishing appropriate rules of inference. For instance, in mathematics there are the derivation rules of a statement which one must follow in order to be accepted by mathematicians as a proof justifying the assertion of the statement .

For Ajdukiewicz the solution was provided by formal logic in its systematization of the methods of inference given in mathematics. But even the arrangement here is problematic, namely:

> There are many logics: there are multivalued logics alongside the bivalued one; there is the logic of material implication and the logic of strict implication; alongside the classical non-constructivist logic there is the constructivist logic of intuitionists. Which of them is respected by mathematicians when they prove their statements? [Ajdukiewicz, 1978, p. 299]

After presenting the vagueness of the notion of foundation for Ajdukiewicz, we are now ready to address his critics over self-evidence as the foundational attempt.

Self-evidence

It may be said that there are two main kinds of self-evident statements: mediate and immediate. Immediate self-evident statements are those whose truths are grasped without any inferential grounds. For instance, a statement as “Every a is a”, or ‘a = a’ is an immediate statement which can be easily understood by reflection on it. The meaning of the statement is such that fully understanding is enough to grasp its truth. Analytic statements are examples of this kind of immediacy. On the other hand, there are statements such as “Any straight line segment can be extended indefinitely in a straight line”. The apprehension of such a kind of statements requires a mediate in order to combine concepts together. At the level of the philosophical controversy, both immediate and some types of mediate statement are considered to be self-evident.

Why is a statement considered to be self-evident? There are several aspects about the origin of self-evident statements. Some philosophers argue that it is experience that makes a statement self-evident. Being confirmed by experience many times, a statement becomes self-evident. Even though the statement in question can be not directly justified in experience, it is related to experience. According to empiricists, it is experience which substantiates the primitive theorems. This aspect to self-evidence is named as ‘psychological empiricism’ by Ajdukiewicz.

For some philosophers the psychological empiricism aspect is not satisfactory. Statements depending on experience can not satisfy certainty and irrevocability. So it is not experience that makes a statement self-evident but the meaning of the terms which the statement is composed of, such that the truth of a self-evident statement cannot be thought to be without any contradiction. And a statement of this kind is an analytic statement. The problem of self-evidence depending on the meaning of terms is that the meaning of the terms are so vague that it is not possible universally to get a fixed incoming. The intensions of the terms would change from time to time, and person to person, so that the self-evidence of a statement would change too.

Some of the philosophers claim that the denial of axioms does not result in contradiction. They title the statements as ‘synthetic’. Also, a statement cannot always be composed by the meaning of the terms. They assert that because of the cognitional faculties in our mind, we have self-evident propositions. For instance for Kant the truth and the foundation of the statement ‘Any straight line segment can be extended indefinitely in a straight line’ depends on our faculty of sensibility, which produces intuition. It is intuition which mediates two separate concepts to compose a judgement. Together with the forms of sensibility and the faculty of understanding, we construct a priori statements. Thus, we have intuitions, which enable us to think of objects and construct statements. The self-evidence of statements depends on the inter-subjectivity of the faculties. This aspect to self-evidence called is ‘psychological apriorism’ by Ajdukiewicz.

The pre-axiomatic intuitive stage

According to Ajdukiewicz, the deductive sciences have evolved through a number of stages: starting from the intuitive stage, going through to the abstract stage. The intuitive stage consists of two stages: the pre-axiomatic stage and axiomatic stage. The pre-axiomatic intuitive stage corresponds to the ‘dawn’ of science in Europe and still many deductive sciences are in progress in this way for Ajdukiewicz. We may itemize the properties of the pre-axiomatic intuitive stage as follows [Ajdukiewicz, 1974, p. 194]:

1. A statement is self-evident if only it is considered to be so. Without any proof, common consensus over a statement makes it self-evident.

2. Any statement which follows self-evidently from other accepted theorems is accepted as a derived theorem.

3. Terms are used without definition.

4. Primitive theorems are accepted without a proof.

5. The vocabulary of a given deductive science may be made richer by the inclusion of new terms without their definitions if only they seem to be universally comprehended.

6. At any level of a deduction one may use a new self-evident statement joined to earlier accepted self-evident statements.

So in this stage one may at any time refer to a theorem which they consider to be universally self-evident. There may be various terms which may be used at any time if the term is self-evident. Self-evidence is a criterion of the acceptance of primitive theorems.

What is crucial to this stage is the ‘confidence’ in statements which seem self-evident. Since proof is not used, the certainty of statements is a matter of confidence. A counter-example, which weakened the confidence in self-evidence, was the example of incommensurable line segments. When Greek mathematicians understood that there is no common measure between the side of a square and its diagonal, a need for restructuring geometry occurred according to Ajdukiewicz.

The axiomatic intuitive stage

The conversion of the pre-axiomatic stage to the axiomatic stage involves the transition of the statements and terms to fixed ones. In the pre-axiomatic stage theorems are accepted without proof and the primitive terms are used without definition. After the transition to the axiomatic stage, no self-evident statement may be accepted without proof and no universally comprehended term may be used without definition.

There is a restriction about the list of primitive theorems and primitive terms in the axiomatic approach. At the axiomatic stage, there are axioms and theorems from the logical deduction of explicitly listed axioms. Reference to any other premises accepted without proof is not allowed. The same applies to terms. The terms that need not to be defined are those loaned from logic and the arithmetic of real numbers, and also those specifically geometrical terms which occur in explicitly listed geometrical axioms. Any other term may be used if only it has been definition of any reduced to the primitive terms of the theory in question.

Still for Ajdukiewicz there is a similarity between the pre-axiomatic stage and axiomatic stage: the role of intuition. Intuition dominates the occurrence of premises. Also, the meanings of the terms are taken from daily use. Additionally, the axioms peculiar to a science are self-evident because of the meanings of the terms they contain.

The abstract axiomatic stage

Ajdukiewicz proposes a two-fold approach to abstract deductive theories. On the one side the terms of the deductive system receive their meanings according to their success in satisfying the axioms of the system. On the other side, nothing is decided about the meaning of the terms.

Consequently Ajdukiewicz, regards the intuitive stage as the 'dead past' and underlines the difference of the intuitive stage and the abstract axiomatic stage as follows:

> At the intuitive stage of the deductive sciences, the primitive terms. i.e. those which are used undefined, are taken in their received meanings and it is required that the primitive theorems, i.e., axioms, be self-evident for the received meanings of the terms they contain, i.e., that they be convincing without proof for anyone. The basic difference between the intuitive and the abstract approach is that in the latter case the received meanings of the specific terms are disregarded, and the meanings of these terms are established anew." [Ajdukiewicz, 1965, p. 201]

So at the abstract axiomatic stage, we are faced with a kind of formalism. At the first phase of this stage of deductive systems, the received meanings of the specific primitive terms are neglected. For instance, '>' is interpreted as 'is bigger than', and '=' is interpreted as 'equal to'. These interpretations are thought to be self-evident and do not require any proof for accepting their truth. For Ajdukiewicz, for transition to the abstract stage, one should abandon using the terms in their received meanings. The terms should be thought to be constituents of systems which satisfy the conditions exposed in axioms. So a term such as '>' is not interpreted just as 'is bigger than' but also 'is later than' or 'is more complex than' etc. depending on the exposed axioms.

This approach does not allow any fixed meaning of the terms. So “the terms of a deductive science in the abstract stage establish their meanings anew by deciding that the said terms are to denote such objects which satisfy the axioms of a given theory i.e., satisfy the conditions formulated in those axioms.” [Ajdukiewicz, 1965, p. 205].

At the second phase of the abstract stage of deductive systems nothing is decided about the terms of the system. They are treated as variables whose meanings are undefined. Since the meaning of these terms are undefined as such in an abstract axiomatic deductive system, the axioms and theorems are neither true nor false. They are just a schemata of statements. They don't state anything. So in this approach “an abstract deductive theory does not consist of anything that could express the conviction of the researcher who is concerned with that theory” [Ajdukiewicz, 1965, p. 206].

Since in the abstract deductive approach nothing is asserted, there is not any output which contributes to the knowledge of the real world. Yet, for Ajdukiewicz these axioms of the abstract deductive theory are highly important in the scientific study of facts.

So concerning the self-evidence of mediated statements, like the axioms of Euclides, Ajdukiewicz proposes a formalism. Therefore, he omits the notion of self-evidence, leaving aside all the the ontological and epistemological questions accompanying the self-evidence, namely ‘To whom is something self-evident?’, ‘How a statement becomes self-evident etc. ?’.

But what about the statements we mentioned above as immediate? Ajdukiewicz offers two close approaches. One is in the text which he wrote in 1935 [Ajdukiewicz, 1978, p. 111]. He proposes a new attitude to immediate statements banning the notion of self-evidence. Ajdukiewicz uses language for grounding immediate statements like analytic statements. In a language there are meaning rules which determine judgements composing concepts. Thus, the meanings of the statements of a language include certain norms to which one must conform in accepting or rejecting statements. For Ajdukiewicz the reason for the acceptance of a sentence like ‘Every a is an a’ is a meaning-rule. This means we don’t accept the statement because of its self-evidence, but due to a meaning-rule. He states that there are three kinds of meaning rules [Ajdukiewicz, 1978, p. 112]:

1. axiomatic meaning-rules or axiomatic meaning rules: which require an unconditional readiness to accept certain sentences. The sentences, formed by axiomatic meaning rules can under no circumstance be rejected as long as they are used in the mentioned language.

2. deductive meaning-rules "demand a readiness to accept certain sentences, not unconditionally, but only on the supposition that certain other sentences are accepted" [*ibid*.].

3. empirical meaning-rules "demand the readiness to accept certain sentences in the presence of certain data of experience".

The totality of meaning rules determines all the sentences of a language. Ajdukiewicz calls this totality as the 'world-perspective of that language'.

Later in a 1958 essay Ajdukiewicz again emphasizes language concerning rules. This time he prefers to use the term 'conventions'. Language is the base for explaining the self-evidence of immediate statements. Language is composed of terminological conventions, which make two persons deal with the same rules. Thus Ajdukiewicz approaches analytic sentences via terminological conventions. A terminological convention is 'a declaration of intent concerning the use certain terms' [Ajdukiewicz, 1978, p. 254]. He offers two terminological conventions. One is semantical; the other is syntactical. A semantical convention concerns the relation of a term and the object designated by it. Ajdukiewicz's instance is such. "I decide to use the word 'centimeter' as a name for the length of one hundredth of a meter" [Ajdukiewicz, 1978, p. 254]. A syntactical convention is a relation between two expressions as: "I decide to use the term 'centimeter' in the same sense as 'one hundredth of a meter'". Then for Ajdukiewicz a semantic convention in a *L* language is a postulate in *L*. He defines the postulate as follows: "a sentence S is a postulate of the language L if in L there is a terminological convention which determines that a term A occurring in S is to denote an object which satisfies S in place of A" [Ajdukiewicz, 1978, p. 254]. An example of a postulate in English is "A centimeter is one hundredth of a meter". Hence according to Ajdukiewicz "a sentence S is analytic in the language L in the semantic sense if it is a postulate of L or a logical consequence of the postulates of L." [Ajdukiewicz, 1978, p. 256].

Consequently Ajdukiewicz rejected the notion of self-evidence on behalf of his anti-irrationality because the notion of self-evidence includes the defects of being subjective, unjustifiable and psychological. So for a precise foundation, one can not depend on the self-evidence of premises. What he proposes is, rather, a hypothetical formalism based on the satisfaction of the aims concerning the discourse and conventionalism.

Bibliography

Ajdukiewicz K., (1974), *Pragmatic Logic*, Dordrecht, D. Reidel Publishing Company.

Ajdukiewicz K., (1975), *Problems and Theories of Philosophy*, London, Cambridge University Press.

Ajdukiewicz K., (1978), "The Scientific World-Perspective", [in:] K. Ajdukiewicz, *The Scientific World-Perspective and Other Essays 1931–1963*, [ed.] J. Giedymin, Dordrecht, D. Reidel Publishing Company, pp. 111–118.

Ajdukiewicz K., (1978), "The Problems of Foundation", [in:] K. Ajdukiewicz, *The Scientific World-Perspective and Other Essays 1931–1963*, [ed.] J. Giedymin, Dordrecht, D. Reidel Publishing Company, pp. 296–305.

Ajdukiewicz K., (1978), "The Problem of the Foundation of Analytic Sentences", [in:] K. Ajdukiewicz, *The Scientific World-Perspective and Other Essays 1931–1963*, [ed.] J. Giedymin, Dordrecht, D. Reidel Publishing Company, pp. 255–268.

Ajdukiewicz K., (2001), "Logistic Anti-Irrationalism in Poland", *Poznań Studies in the Philosophy of the Sciences and the Humanities*, vol. 34, pp. 241–249.

Özgüç Güven,
Istanbul University, Department of Philosophy, Turkey
ozguc@istanbul.edu.tr