

## ABOUT PRACTICAL PROBLEM SOLVING

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**Abstract.** *Knowledge is, by definition, reliable and, hence, it can be applied to a variety of different problems. Nevertheless, in practical problem solving, we do not rely on mere truthful knowledge, but also on information which frames the practical acceptability. We are not looking for truthful solution but an optimal solution. Optimal solution is found out by optimizing some given (practical) parameters. The optimization is both theory based and practice based process. That is, practical problem solving is a human deliberation that interconnects theoretical and practical knowledge. So, the philosophical foundation of practical problem solving interconnects theoretical and practical philosophy. Especially ethical deliberation plays – or should play – central role in practical problem solving. The complexity of the advanced scientific knowledge needed in solving present day practical problems separates the people who know, from the people who do (decide). The situation makes immediate that we need some deeper pedagogical conviction: we need ecological education.*

**Keywords:** *knowledge, practical reasoning, practical syllogism, responsibility*

The notion of knowledge has been under philosophical discussion since Plato. The classical notion of knowledge, which originates from Plato's dialog *Theatetus*, says that knowledge is a well justified true belief. The classical notion has been under extensive philosophical discussion. In particular, the truth condition and the justification condition have been philosophically interesting ones. The notion of truth is far from clear; in realistic tradition, truth has been understood as a fundamental semantic notion, and in pragmatist tradition, truth has been understood as an epistemic notion. It is not clear at all what kind of justification proper knowledge supposes. In fact, justification is an unending process. It is not easy

to recognize when we achieve knowledge. So, Hintikka (2007) speaks about information and knowledge as becoming an ideal end state. In this sense it would be adequate to speak about information needed in problem solving.

The notion of knowledge discussed in epistemology has been "so called" propositional knowledge, i.e. knowledge that can be expressed linguistically. This emphasis has implied that the problems of epistemology consider the special problems of truth and justification conditions. All this, of course, has been very interesting and important. However, the connection of knowledge to human practical life has not been close. How is knowledge related to human practical life? What kind of activity is human

practical life? What is knowledge? It is obvious that knowledge is related to the human activity, but, at the same, it is obvious that “so called” propositional knowledge is not very closely connected to human activity (ibid.).

Knowledge as a propositional knowledge can be expressed in the form “ $A$  knows that  $p$ ”, where  $A$  is an agent of knowledge and  $p$  is a statement, or a proposition, which expresses the content of the knowledge. For example, “John knows that snow is white”, the agent is John and the sentence “snow is white” expresses the content of the knowledge. However, it is important to recognize that the propositional knowledge is “subject centred”, in the obvious sense: the definition is related to the agent of knowledge. In this obvious sense, propositional knowledge is “subjective”. However, it is also important to recognize that propositional knowledge is not language dependent. Even if we are saying that the content of the knowledge – in principle – can be expressed linguistically, the content is not language-dependent: it does not make the difference which language we use in expressing the content. This language independence is in need of deep philosophical analysis, which has been one research area in epistemology.

How can such linguistically expressible knowledge be related to human practice? The relationship between practical activity and propositional knowledge is not easily characterized: Human practice is neither something which is based on linguistically expressed knowledge nor it is not mediated by linguistically expressed knowledge. Moreover, it is not possible to wait that the (unending) justification process justifies the knowledge, but we have to use the

best (uncertain) information we have. Still, propositional knowledge has a positive role in human practical activity. Human practical activity is not a “blind” activity, but a deliberating activity. The notion of deliberation is essential here. What kind of deliberation is there under human activity? How knowledge is related to the deliberation process?

Sometimes humans act reactively, which does not allow any deeper deliberation or reflection:

And so what we do without reflection, we do quickly. For when a man actualizes himself in relation to his object, either by perceiving, or imagining or conceiving it, what he desires, he does at once. For the actualizing of desire is a substitute for inquiry or reflection. I want to drink, says appetite; this is drink, says sense or imagination or mind: straight away I drink. (Aristotle, *On the Motion of Animals*: Part 7)

Such a quick action without deliberation is sometimes called intuitive. Moreover, such action does not separate humans from (other) animals. There are several kinds of non-deliberating or intuitive actions (Booth, Rowbottom 2014). We intuitively do such and such things. One class of intuitive actions is acts that we have learned to do and the action has become automatic (Goldman 1970). Kahneman (2011: 20–24) separates system 1 and system 2. System 1 is intuitive and fast. In everyday contexts, this system is working well. However, we also need a slow and calculating system 2, when we have to guarantee that the result will be the one intended. If we take a closer look at human activity, we recognize that there is proper deliberation behind it. The discussion about deliberation is connected to Kahneman’s separation of system 1 and system 2, but it

is not the same. Such deliberation can be characterized as practical inference:

But how is it that thought (viz. sense, imagination, and thought proper) is sometimes followed by action, sometimes not; sometimes by movement, sometimes not? What happens seems to be parallel to the case of thinking and inferring about the immovable objects of science. There, the end is the truth seen (...), but here the two premises result in a conclusion which is action – for example, one conceives that every man ought to walk, one is a man oneself: straight away one walks; or that, in this case, no man should walk, one is a man: straight away one remains at rest. (Aristotle, *On the Motion of Animals*: Part 7)

Aristotle says that the conclusion in such a practical inference is action. This separates the practical inference from the theoretical inference, in which the conclusion is a statement. However, Aristotle says that practical and theoretical reasoning are parallel processes. As a conclusion, the action is, or should be, a conclusion from some set of premises. Aristotle's examples demonstrate that practical reasoning is an "incomplete" inference, i.e. not all the premises are explicated. However, we have to study the character of the inference more closely. What kind of reasoning is in question? What is its "binding power"?

We have to consider the interconnection of knowledge (theory) and action more closely. According to common opinion intuition, or Kahneman's system 1, is good enough, that is mere experience is enough, which is "justified" by stories how an experienced agent acts just as well as and even better than a knowing agent. This was already noted by Aristotle:

If, then, a man has the theory without the experience, and recognizes the universal, but does not know the individual included

in this, he will often fail to cure; for it is the individual that is to be cured. (Aristotle, *Metaphysics*: Book I, Part 1)

The role of knowledge is not just seen by looking at the practical action. Knowledge gives a reason why something happens. Knowledge gives an understanding, which makes an experienced agent a master. Mere experience gives knowledge about a singular case at his or her hands, but not general knowledge; mere experience tells that the case is such-and-such, but not why it is so. There is proper need for general knowledge about reason:

But yet, we think that knowledge and understanding belong to art, rather than to experience, and we suppose artists to be wiser than men of experience (which implies that Wisdom depends in all cases, rather on knowledge); and this is because the former know the cause, but the latter do not. For men of experience know that the thing is so, but do not know why, while the others know the 'why' and the cause. (ibid.)

Aristotle assumes that the agent needs causal knowledge, which tells why something happens or is the case. How this causal knowledge is connected to the activity, is not obvious. We have to study practical inference more closely and how knowledge is connected to it. Moreover, we also have to more closely consider what kind of knowledge causal knowledge is and how it is related to practical reasoning. More generally we are considering practical human reasoning which is related to the dynamic turn in logic (van Eijck; Visser 2012; Gochet 2002; Rebuschi, M., 2006). In the following we will consider practical syllogism and generalize it in order to see how the very fundamental conceptual ideas allows us to understand more complex practical problem

solving situations. In the paper we follow von Wright's ideas very closely.

## Practical Syllogism

Aristotle distinguished two kinds of inferences, namely, theoretical and practical inferences. An essential difference is that in theoretical inference, the conclusion is a statement, and in practical inference, the conclusion is an act. Syllogistics is the theory of theoretical inferences. However, Aristotle's treatment of the practical inference "is very scanty and unsystematic. The examples, of which he gives hints without elaborating them in detail, are rather a mixed bunch. Some of his general remarks on practical syllogisms, however, are of great interest. They show that Aristotle was aware of the peculiar character of a type of reasoning, which logicians after him have tended to either ignore or misrepresent" (von Wright 1983: 1).

It is well known that Aristotle developed his theory of theoretical inferences in syllogistics, which is also the fundament for present day logical study. Present day deductive logic is a direct generalization of the syllogistics. There has been enormous development in logic; in particular, the development of logic in the late 19<sup>th</sup> century and early decades of the 20<sup>th</sup> century were extremely progressive. Moreover, in logical study, there are several different kinds of logics that are studied in the spirit of Aristotle's syllogistics. Let us mention, for example, many valued logic, intuitionist logic, inductive logic and modal logic. How is practical syllogistic related to these different logics? Aristotle had very general theoretical approach into which his logical theory was included (Hintikka 2007).

To get a better grasp, let us consider more closely an example of practical inference. The following formulation is called practical syllogism. The first example is formulated in the first person mood (von Wright 1983: 11):

*I want to make the hut habitable.  
Unless I heat the hut, it will not become habitable.  
Therefore, I must heat the hut.*

The first premise explicates my intention; it explicates what I want to be actualized. The second premise explicates a mean for my intention. It says what I must do in order to achieve my intention. It is essential here that the statement is in the first person form. What about the conclusion? It says that I must heat the hut. It is not clear what kind of relationship is between the premises and conclusion. The relationship is not logical; the conclusion does not follow logically from the premises. Moreover, the conclusion is not an act, but a statement which tells me what I should do. Especially, as a conclusion, I do not start to heat the hut straight away.

The practical syllogism explicates what Peirce later emphasized: belief is as effective as knowledge; our action is based on belief. Knowledge that can be seen as effective is not "so called" propositional knowledge, but knowledge that is internalized, i.e. which is part of the agent's "belief system".<sup>1</sup>

If the conclusion would be "I start to heat the hut", then the conclusion would be an act. In this case, the inference seems to be binding in an obvious sense: if I accept the premises, then if I would be a rational

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<sup>1</sup> We are not considering the problem of belief revision; about the belief revision, see Hanson 2014.

person, I should start to heat the hut. The interconnection between premises and conclusion is not deductive, but practical, which can be characterized by the *Sellars' Lemma*: If the premises of the practical syllogism above hold, then I start to heat the hut here and now, provided that I am rational, I do not change my intention and beliefs, and nothing prevents me from heating the hut (Pietarinen 1992: 30). So, it is natural to say that “I must heat the hut”, which is the conclusion in the inference above. Hence the conclusion expresses a practical necessity (von Wright 1983: 2).

The first person pattern of the practical syllogism gives a natural characterization of an individual's actions. An individual himself or herself may make such an inference, which can be characterized by a practical syllogism, before the act he or she does. In this case, it is natural that not all the obvious premises are explicated. The individual may also use the practical syllogism if he or she wants to explain his or her behaviour to somebody. Moreover, other people may use practical syllogism in trying to understand the behaviour of an individual. Hence, practical syllogism can be seen as a criterion of rationality of an agent's behaviour: if it is possible to submit the behavior under practical syllogism, then the behaviour can be understood as being rational (independently how rational or irrational the intended goal or the means actually are) (Tu, Hsiao, Wang 2015).

This first person pattern interconnects the intentions and beliefs of the agent and his or her act together. The connection is practical necessity, which is a conceptual connection. The practical syllogism does not give a causal explanation of the action, since the explanation uses a causal

connection in which the explanation and the thing explained should be logically (conceptually) independent. However, the practical syllogism allows us to understand the action. According to von Wright (1971; 1974), this makes the methodological difference between the human sciences and natural sciences.

## Objectivity of Practical Syllogism

The first person pattern characterizes action from the actor's point of view, which the practical syllogism is binding – the rationality of the agent gives special validity for the reasoning schema. However, it is not necessary to take a first person point of view; we can formulate the practical syllogism from a third person perspective (von Wright 1983):

*A wants to make the hut habitable.  
Unless A heats the hut, it will not become habitable.  
Therefore, A must heat the hut.*

In this case, the binding power is not any more so binding as in the first person case. Moreover, this formulation allows us to study, more generally, the structure of practical inferences. As an extreme case, the practical inference is possible to write down in an “impersonal” or general point of view, as follows (von Wright 1983):

*One wants to attain x.  
Unless y is done, x will not be attained.  
Therefore, y must be done.*

von Wright (1983: 2) calls an inference of this form “a *primary* practical inference”. It is easy to see that these formulations are not as similarly binding as the first person pattern is. In the first person pattern, the connection between the premises and conclusion is, as mentioned above, conceptual. The reason for this is that the first order

formulation makes the mean believed binding for the agent himself or herself. In the case of a third person or the general practical syllogism, the second premise is not as similarly binding as it is in the first person case. The formulation “Unless  $y$  is done,  $x$  will not be attained” is “objective” in a sense that it is natural to ask whether the actor, who he or she in fact is, knows it. It is also easy to see that in the third person case, the second premise need not be known by the agent  $A$ . The same holds in the general case.

There is another sense of objectivity, which is connected to all kinds of practical syllogisms. Namely, whether or not the means is a really good means to achieve the intended goal, which is called the problem of the effectivity of the means. The effectivity of the means has to be studied empirically; it is a normal scientifically researchable problem that can be studied using empirical or, even experimental methods.<sup>2</sup> This is a usual task in technology and in experimental science.

The agent may believe that a means is effective, even when it is not. This does not affect the binding power of the argument. In the third person or in the general case, this problem does not occur. In the third person case and in the general case, it is not obvious that the second premise characterizes the belief of the actor. The effectivity of the means is related to the truth of the statement that expresses the connection between the means and the end. These statements are called technical norms (von Wright 1996). The truth of the technical norms refers to a causal connection between the means and the end: if there is a causal connection, then

the corresponding technical norm is true, otherwise it is false. The problem of truth or falsity is an objective problem concerning the means-end relation.

It must be recognized that this scientific task is not part of the first person practical inference; the agent may not know the effectivity of the means; the essential thing is that the agent believes that the means used are effective: “I believe that ...”. The believing or not believing is a “subjective” relation between the agent and means-end relation. It is belief which makes the practical inference “binding”. Hence, it is subjectivity, not objectivity, which makes practical inference “practically valuable”. However, a wrong mean may be effectively used in practical inferences. The fact that the intended goal is achieved does not tell about the truth or falsity of the mean. However, the truth guarantees the success, case after case (Hughes, Kroes, Zwart 2007).

Practical syllogism characterizes a *reason* why the actor does what he or she does. If the means is truthful, the action is successful. In an everyday context, the knowledge supposed is not scientific, but practical, every day causal knowledge. The old technology was not based on scientific knowledge, but practical everyday knowledge. Such knowledge can be understood by the worker himself or herself. Hence, the practical syllogism helps us to understand the logic of old technology (von Wright 1989). Because of the industrial production, the means should be truthful and hence, the deliberation of the means-end relation cannot be done only “subjectively”, but also “objectively”.

The intention to guarantee the achievement of the intended goal supposes that the corresponding technical norm is true, i.e.

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<sup>2</sup> Of course, the multitude of the possible means would make the study more complex, but this is not studied in this paper.

that there is the believed causal link between the mean and the end. However, it is not obvious what it means that there is a causal link. What is usually meant by a cause is a “so called” *nomic cause*, for which a “relation between two terms, *C* and *E*, should satisfy *at least* the following two conditions: (i) *C* and *E* are logically independent of one another; (ii) *C* and *E* are connected by a *universal law*. Whenever *C* occurs (in the frame or setting of some circumstances *F*), *E* follows” (von Wright 1983: 53). As mentioned, in the practical syllogism, the mean and the end are conceptually connected, hence it does not exemplify a causal relation. However, conceptually causation “is intrinsically connected with ideas of human action (experiment, interference, manipulation)” (von Wright 1974: ix). This manipulative notion is not subjective, but says that the factual cause between *C* and *E* means that we can, in principle, produce *E* by doing *C* (von Wright 1983).

The logic of experiment shows clearly that it means that causation is “intrinsically connected with ideas of human action”, which is explicated by von Wright (1974: 49) as follows: “causal relations exist between natural events, not between agents and events. When by *doing p*, we *bring about q*, it is the *happening* of *p* which *causes q* to come”. In the experiment, the experimenter is trying to show that a certain functional relationship between the parameters holds. The idea is to show this by doing an experiment, i.e. actively making changes in the reality such that the intended relationship can be seen. The active changes made by the experimenter are a carefully planned active search for the information needed in the Kantian spirit, such that the experimenter may not behave

“in the character of a pupil who listens to everything that the teacher chooses to say, but of an appointed judge who compels the witnesses to answer questions which he has himself has formulated” (Quote from Sintonen 2006: 829).

Causal relation is not a “subjective” relation between act and reality, but an “objective” relation in the reality. The agent brings about the state of affairs that is the cause of the caused state of affairs. In fact, the relationship between the agent’s action and its result is conceptual: by opening the door, the agent, because of conceptual reasons, brings about the opening of the door. The relationship between the agent’s action and causation is counterfactual, in the sense that it is not necessary that the agent, in fact, does the act needed, it is enough that the agent, in principle, could do the act and the act would bring about the state of affairs that factually cause the searched result. This is expressed by von Wright (1974) as follows: “If *p* causes *q*, then if I can produce *p*, I can also bring about *q*. The statement about action possibilities *follows* from the causal statement. So, am I not, in fact, trying to reverse the logical order here?” (von Wright 1974: 52).

Moreover, the “dependence of causation upon action is *conceptual*” (ibid.: 50). The conceptual relation does not make the causal relation subjective. The causal relation is an objective fact which can, in principle, become known via an experimental method. The experimental or “objective” aspects play a central role in analysing human practical action. The history of technological reason is rooted to everyday rationality, in which an individual trusts his or her own instrumental knowledge. In fact, the knowledge needed in early indus-

try was not properly scientific, but only an everyday instrumental knowledge: “Early technology, on the whole, did not generate unintended side-effects which were harmful or, otherwise, a cause of concern. Technical constructions could misfire: a ship may sink or a bridge collapse or a steam engine burst. But such undesired consequences did not affect either the human or the physical environment much beyond the immediate range of the constructions themselves” (von Wright 1989: 22.). The instrumental use of modern natural science was fundamental behind the scientific-industrial revolution which made a revolutionary change in the use and consequences of industrial work. Moreover, if the knowledge that is the foundation of the industrial work becomes advanced scientific knowledge, then it cannot any more be understood by the workers themselves. This means that the people who do (and decide) and the people who know become separated. The separation became evident when the problems supposed properly scientific knowledge. Moreover, the separation enforces us to consider responsibility more closely.

### **About Responsibility**

Western cultural tradition is based on the scientific and moral tradition. The scientific tradition has its roots in the scientific culture of ancient Greece and moral tradition has religious roots. There has been fundamental tension between the traditions. The moral tradition had long been in the dominating role. But eventually, science won the battle for freedom of knowledge. In a sense, Humboldt University can be seen as a result of the battle in which science had the freedom from the authority of moral fundament. At

Humboldt University, science was seen as a pedagogical tool; science had the value in itself, but the aim of the University was “the *Bildung* of a person” (ibid.: 20). Humboldt University was based on a common ethical basis: it was a pedagogical university. The pedagogical foundation was not in religion, but in science. However, science was not the science of antique, but a modern experimental science. Moreover, as a result of the battle, science and scientific inquiry were released from the outer control (ibid.).

The pedagogical basis of Humboldt University was based on modern experimental science, which had several consequences. As Hume’s guillotine tells us, science is “value-free” and, hence, knowledge and morality was separated from each other. Knowledge had the role of an instrument. However, as an instrument it cannot be responsible any more:

Technologically oriented science has turned out to be of the greatest instrumental value for the achievement of purposes which man sets himself. This in itself is no guarantee that what is achieved is also for this good. Technology can serve purposes which are in themselves either good or evil. It is a knife that cuts both ways (ibid.: 16).

This made a huge difference. Science became an effective instrument and, at the same time, the scientific-industrial revolution opened up totally new perspectives. Moreover, the commercialization made new insights into the picture. Science and industry began to be commercialized: “Science itself could not stay aloof of these developments – leaving industry to pick up whatever fruits happened to fall from the Tree of Knowledge. The new relationship between science and industry had repercussions on both parties. The ensuing changes could be

described as the integration of science into the economy of industrialized societies” (ibid.: 16). The scientific-industrial revolution made it obvious that the knower and the agent, or the decision maker, are separated: the knower becomes an objective knowledge expert that does not make practical decisions and, hence, is not responsible for the consequences of the decisions. On the other hand, the decision makers trust the advice of the knowledge experts and cannot evaluate the reliability of the given information. Moreover, decision makers do not have any common moral or ethical foundations. Hence, neither the decision maker nor the knower can be responsible for the decisions. The actor merely executes the decisions give to him or her. The responsibility seems to disappear from the entire process.

There is no possibility to go back to the societies with shared (ethical) values. “The integration of science in the economy which is in progress has changed the picture. The ideals of Humboldt University appear more and more as a pastoral dream of bygone days” (ibid.: 20). However, there is still need for the search for the foundations of the values: responsibility is based on the fundamental values. This has been done by the philosophers: “Western philosophy after the Renaissance has been in search of a new ground for morality. As in science, and inspired by its example, this ground was sought in reason too. But unlike the search

for truth by science, the search for new values has not been very successful” (ibid.: 21–22). Perhaps the foundation should be sought from the balance between humanity and nature. If it is eventually possible to understand humans as part of the nature: “New people are entering the stage and may one day be leading in creative talent and innovative energies. Perhaps their cultural legacies will be less contradiction-loaded than ours and therefore, let us hope, make it easier for them to respect the natural bounds that men must not transgress lest *nemesis* revenge their *hybris*” (ibid.: 28).

Present day discussion about respect and responsibility, and even about dignity, seems to be searching the moral ways of living a good human life in this modern messy technological world. However, the discussion seems to be rather proclaiming than arguing. The deep moral value of life is not found out from simple proclamations, but something which integrates us to our history, our culture and our common future. This has to be in balance with the natural resources; otherwise, nature will “revenge the *hybris* of humans”. This can already be seen from the problems of global pollution or climate warming. The solution cannot be a simple trick or conceptual bluff, but deep responsibility that interconnects humanity and ecological responsibility, which Värri (2012) calls *ecological education*. This is closely connected to Rorty’s (1980) edifying philosophy.

## REFERENCES

Aristotle, n.d. *On the Motion of Animals*. Translated by A. S. L. Farquharson, no page numbers. Retrieved from [http://classics.mit.edu/Aristotle/motion\\_animals.html](http://classics.mit.edu/Aristotle/motion_animals.html) (Read 7.9.2015.)

Aristotle, n.d. *Metaphysics*. [Translated by W. D. Ross; no page numbers.] Retrieved from <http://classics.mit.edu/Aristotle/metaphysics.html> (Read 7.9.2015.)

- Booth, A. R.; Rowbottom, D. P. 2014. *Intuitions*. Oxford: Oxford University Press.
- Gochet, P. 2002. The Dynamic Turn in Twentieth Century Logic. *Synthese*, Vol. 130, No. 2.
- Goldman, A. I. 1970. *A Theory of Human Action*. N.J.: Englewood Cliffs.
- Hansson, S. O. 2014. Logic of Belief Revision. In E. N. Zalta (ed.), *The Stanford Encyclopedia of Philosophy* (Winter 2014 Edition). Retrieved from <http://plato.stanford.edu/archives/win2014/entries/logic-belief-revision/> (Read 2.2.2016.)
- Hughes, J.; Kroes, P.; Zwart, S. 2007. Semantics for Means-End Relations. *Synthese* 158: 207–231.
- Kahneman, D. 2011. *Thinking, Fast and Slow*. New York: Farrar, Straus and Giroux.
- Hintikka, J. 2007. *Socratic Epistemology*. New York: Cambridge University Press.
- Pietarinen, J. 1992. Problems of Practical Argumentation. In Juhani Pietarinen (ed.). *Problems of Philosophical Argumentation: II Special Problems*, Turku: University of Turku.
- Plato, n.d. *Theatetus*. Translated by Jowett, B.; no page numbers. Retrieved from <http://classics.mit.edu/Plato/theatu.html> (Read 7.9.2015)
- Rebuschi, M. 2006. IF and Epistemic Action Logic. In J. van Benthem, G. Heinzmann, M. Rebuschi, H. Visser (eds.). *The Age of Alternative Logics: Assessing Philosophy of Logic and Mathematics Today*. Dordrecht: Springer.
- Rorty, R. 1980. *Philosophy and the Mirror of Nature*. Princeton: Princeton University Press
- Sintonen, M. 2006. From the Logic of Questions to the Logic of Inquiry. In R. E. Auxier, L. E. Hahn (eds.). *The philosophy of Jaakko Hintikka*. Library of Living Philosophers, vol. XXX. Chicago: Open Court, p. 825–850.
- Tu, C. C.; Hsiao, M. Y.; Wang, L. 2015. Knowledge-How and Performance Success. *Philosophia* 43: 1–14.
- van Eijck, J.; Visser, A. 2012. Dynamic Semantics. In E. N. Zalta (ed.). *The Stanford Encyclopedia of Philosophy* (Winter 2012 Edition). Retrieved from <http://plato.stanford.edu/archives/win2012/entries/dynamic-semantics/> (Read 5.2.2016.)
- von Wright, G. H. 1971. *Explanation and Understanding*. London: Routledge and K. Paul.
- von Wright, G. H. 1974. *Causality and Determinism*. New York: Columbia University Press.
- von Wright, G. H. 1983. *Practical Reason: Philosophical Papers Volume I*. Oxford: Basil Blackwell.
- von Wright, G. H. 1989. *Science, Reason and Value*. Documanta No. 49. Stockholm: The Royal Swedish Academy of Sciences.
- von Wright, G. H. 1996. *The Varieties of Goodness*. Bristol: Thoemmes. [Originally published in 1963.]
- Värri, V.-M. 2012. Kasvatusteoreettisia ja filosofisia näköaloja ekologiseen sivistykseen. In Arto Mutanen (ed.). *Näkökulmia asiantuntijaksi kasvamiseen*, Publications of the Finnish Naval Academy No. 1/2012. Tampere: Juvenes Print.

## APIE PRAKTIŅĀI PROBLEMŪ SPRENDIMĄ

### Arto Mutanen

**Santrauka.** Žinojimas pagal apibrėžimą yra patikimas ir todėl gali būti pritaikytas gausybei įvairių problemų. Tačiau sprenddami praktines problemas pasikliaujame ne tik teisingu žinojimu, bet ir informacija, kuri nustato praktinio priimtimumo ribas. Mes ieškome ne teisingo, bet optimalaus sprendimo. Optimalus sprendimas pasiekiamas optimizuojant keletą praktinių parametrų. Optimizavimo procesas remiasi teorija ir praktika. Kitaip sakant, praktinis problemų sprendimas yra žmogiškasis svarstymas, susiejantis teorines ir praktines žinias. Todėl filosofinis praktinio problemų sprendimo pagrindimas jungia teorinę ir praktinę filosofiją. Svarbiausia vieta praktiškai sprendžiant problemas tenka ar turėtų tekti etiniam svarstymui. Pažangaus mokslinio pažinimo, reikalingo praktiniam dabartinių problemų sprendimui, sudėtingumas skiria žmones, kurie žino, nuo tų, kurie veikia. Situacija rodo, jog mums reikalingi gilesni pedagoginiai įsitikinimai: mums reikia ekologinio ugdymo.

**Pagrindiniai žodžiai:** pažinimas, praktinis svarstymas, praktinis silogizmas, atsakomybė

*Įteikta 2015 m. rugsėjo 10 d.*