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Expert Knowledge: Its Structure, Functions and Limits

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Abstract:
Expert knowledge – a concept associated with Ryle's distinction of knowledge-that and knowledge-how – functions in distinct areas of knowledge and social expertise. Consisting of both propositional (declarative) and procedural (instrumental) knowledge, expertise is performative in its essence. It depends not only on expert's experience and cognitive competences, but also on his or her social and institutional position. The paper considers the role of heuristic and intuitional abilities, including particular experts' cognitive biases, as the vital and indispensable part of expertise. On the basis of selected managerial and juridical examples (procedures, standards, norms and institutional regulations) it analyzes the epistemological issues: the autonomy *versus* dependence of expert knowledge as well as the influence of social-cognitive circumstances on expertise.
Keywords: expert knowledge, expertise, intuition, biases, heuristics, Daniel Kahneman.

1. Introduction

The issue of expert knowledge belongs to the domain of epistemology and cognitive psychology, cognitive science, methodology of sciences as well as the theory and practice of management. It refers also to those scientific disciplines which have practical applications and assume the shape of specialized cognitive abilities as well as their results take on the form of expert judgements; the natural and social sciences such as biology, genetical engineering or economics and psychology imply expert knowledge and expertise in specific domains and their respective practices. It is also a practical issue in the social functioning of institutions, associations or professional corporation which deliver specialized skills and knowledge (expert judgments) in particular domains of life. Expertise, broadly perceived, is not only knowledge as well as a skill, but also social role of those who have it. Generally speaking, expert knowledge – according to the differentiation introduced by Gilbert Ryle, who said that knowing how appearing next to knowing that [9, pp. 28-32] – is a sort of *propositional* (theoretical, declarative) knowledge closely connected with elements of *procedural* (instrumental) knowledge.

Expert knowledge is usually analyzed from the perspective of its *structure* (i.e. the data at one's disposal, the collected information, types of exact knowledges) as well as the act of its

acquisition and realization. What is no less important is its realization and performance, for it is connected through procedures and specialized activities with the practical application of declarative knowledge as well as the social functioning of the expert a person of authority in a particular domain of knowledge, stating judgements, opinions and verdicts. The performative character of expert knowledge, transgressing beyond the classical understanding of knowledge (as principally, or even exclusively, propositional) implies many meaningful (epistemological) issues [cf. 8, pp. 103-108].

This article examines the issue of heuristic and intuitive rules that lie at the foundations of expert knowledge; the theoretical and performative character of expertise is considered in an equivalent degree as two complementary functions of knowledge in general. A thesis is formulated that heuristic and intuitive cognitive actions – different than algorithmic ones – are essential elements of expertise and are simultaneously present in every type of expert knowledge. A few cases from financial expertise and juridical procedure are also discussed, where the thematic and methodological autonomy of expert knowledge is limited by both psychological and institutional factors.

2. Origins, Structure and Functions of Expert Knowledge and Expertise

The specificity of expert knowledge is determined by its history and the way of its functioning in European civilization. Various forms of specialized expert knowledge as well as the institutional forms in which it was demonstrated, decided about the manner of defining, examining and evaluating this form of knowledge. Already in antiquity, within its intellectualist and absolutist framework of perceiving cognition and knowledge (the primacy of reason over empiric data), an opinion about the useful character of practical knowledge was construed, nevertheless, it did not measure up to the status of the cherished *episteme*. This view was preserved in the middle ages, with the economy being based on manual labor; the concept of craftsmanship competence was developed in guilds, trade unions and professional corporations. These institutions brought together people specialized in handicrafts as well as their adequate knowledge on the objects and phenomena which became socially significant and cognitively important to such an extent that they became subdued to strict procedures of gaining, preserving, transmitting and certifying them; scientific knowledge at medieval and early modern corporate universities was treated according to identical rules. Members of crafts guilds were the first experts due to the knowledge and competences that they possessed and evaluated on the basis of their utilitarian significance. Early modernity has even more so amplified the processes of monopolization and rigorous (competitive) protection of multi-generational expert knowledge in such fields as medicine, law, crafts and natural science. The practice of qualifying and certifying expert knowledge and skills also appeared, as well as the competition, in this respect, of the state, academies of arts and sciences, and professional corporations. In the early capitalist era, when empirical and scientific knowledge found their broad application in industry and everyday life, the state, in the public interest, started to play a major role in certifying expertise through the establishment of standards, examination forms and confirming expert knowledge. Expertise itself became the subject of teaching, training and it gained the status of a *profession* and important social role; expert knowledge remained in close relations with scientific knowledge as its theoretical background. Expertise became also in modern times the topic of independent methodological, psychological, sociological, science studies and epistemological inquiry, within which theoreticians and scholars try to consider and examine an array of important problems.

Considering the problem of expert knowledge and expertise from a cognitive perspective, an array of significant questions arise [cf. 3]. What is the nature of the cognitive activities that lie at the foundations of the general disposition of issuing expert judgements? Is expertise an innate or acquired cognitive competence; to what degree can it be improved – can it, on the other hand, deteriorate and vanish? Can anybody be taught it or is it accessible only to a select few; what role does intuition play in it? Is expert knowledge a different, specific epistemic category than the

general and universal knowledge coming from particular scientific disciplines; is it a type of meta-knowledge or is it distinct (dependent) only for a particular discipline or competence? Can expert knowledge be automated and function independent from human knowledge as an autonomous system; can artificially intelligent system be better than human experts?

3. Types and Degrees of Expert Knowledge and Competences: from Novice to Master

Expert knowledge, especially, the action (abilities and skills) that accompanies it, such as acquiring experience, inferring, justifying as well as communicative skills, do not assume a homogenous form. The diversity within the field of expert knowledge and skills assumes the form of degrees, levels of complexity and sophistication. Generally, in the already elaborated classifications [5], [2] several degrees and types of experts are distinguished: from the complete ignoramus through a novice, trainee to a full expert or even a master; these classifications correspond partially with historical stages (periods and epochs) of the emergence of expertise as such in the Western world and also its institutionalized forms.

In this classification I assume three criteria that determine, and at the same time differentiate, expertise as well as the types of cognition which are appropriate for it: (1) the field of *knowledge* and *experience* which is distinguishable due to the discipline of knowledge and science, to which expert knowledge refers to; (2) *actions* and *dispositions* which the subject (expert) has got; (3) forms of *action* and *institutions* (meaning modes of behavior and social organization) co-creating expert knowledge in a particular environment. The initial level of an expert is a *novice* – someone who obtained elementary knowledge ("introductory", "school" knowledge) in a given domain and is endowed with the typical and sufficient cognitive and communicative capabilities (inborn intelligence) enabling him or her to obtain expert knowledge to which he or she is only yet aspiring. One can consider an *aspiring* expert as somebody who is acquainted in a minimal degree with the specifics of a particular domain (initially "informed" and undergoing the stage of "initiation"), who passively acquires knowledge, usually by imitating standardized expert procedures. The next stage, a *trainee*, is already subject to a learning process that is spread out in time, multi-stage, in which the personal relation student-master is crucial, because it provides the appropriate opportunity for the trainee to imitate the knowledge and competence patterns of his or her master; such practice is strongly connected with a particular institution (e.g. guild, a chamber of crafts, a professional corporation with a distinctly "familiar" character). An *apprentice* could have been considered such an expert that has standardized and specialized knowledge in a given field as well as knows the rules and principles of making it, at the same time is efficient in carrying out tasks (orders and instructions), but is not necessarily self-reliant, he or she is an apprentice that is just becoming self-reliant in relation to institutions that certify (approve and guarantee) expert status.

An *expert*, in the basic meaning of the term, (as an *ideal type*) is distinguished on account of his or her knowledge correlated with a particular domain of arts and science, has got knowledge that is built upon the experience of a trainee and apprentice (whom he or she must have been earlier). He or she is already fully proficient in all the cognitive dispositions specific for a particular domain, knows them all as well as uses them freely and interchangeably depending on a particular task. Apart from that, he or she is authorized to formulate (relatively) constant and credible opinions and expert judgements accepted by the general public and other experts; in this respect he or she is a licensed and certified expert. He or she approximates the level of (relative) excellence in his or her area of expertise; specializes in various subdomains of expert knowledge, issuing not only standard but also atypical expert judgements. He or she conducts a calculation of his or her cognitive efforts, minimalizing it and maximizing the intended effects; sometimes he or she overestimates this "calculus", underestimating especially the mistakes committed. His or her specialized skills and dispositions – more and more general, yet at the same time becoming narrow and routine – become at times the source of distinct cognitive errors. His or her social position, that is licensed as well as certified by specialized institutions (state-run and/or autonomous, corporate), becomes a factor no

less important than the content and scope of his or her knowledge; one also becomes an expert on the basis of tradition and custom, not only one's knowledge by itself. Competing with other experts, including those with other methodologies, standards and values, becomes a factor that determines the essence of complete expert knowledge.

In specific cases, though rather infrequent ones, after a long period of functioning, the expert reaches the level of *mastery* and then he or she has the complete knowledge about a given domain with the awareness of its complexities and limitations. His or her judgements and opinions become rules, standards and ideals of expert knowledge. He or she is authorized to tutor both an apprentice and an expert as well as to license their knowledge and competence; he or she supervises institutions of general certification and is an expert for experts, approved by the vast majority of specialists.

4. The General Definition and Epistemological Model of Expert Knowledge and Expertise

The historical analysis of the epistemic side of expert knowledge and its institutional functioning (the creation and evolution in society and culture) shows that one cannot encompass it in a general definition as well as a homogenous epistemological model; one can find significant examples of that in literature [1], [2]. In this article I propose to extend such a model by factors endowed with an essentially cognitive and performative nature. Apart from the analysis of propositional knowledge, it is important to examine cognitive activities and dispositions, i.e. heuristic and intuitive rules. Besides the standard rules of algorithmic acquisition, inference, argumentation or communicating the propositional side of expert knowledge, these factors play an equally important and in many cases, even a dominating role. Their specificity, including unreliability and falsity – which is on the other side of the coin of expertise – because it, nonetheless, is not a shortcoming of expertise, for in particular situations it leads to beneficial cognitive solutions; this factor must irrefutably find itself in the model of expert knowledge.

In the newest inquiries [1, p. 21-30], two approaches on expert knowledge and cognitive dispositions that condition it, as well as the social position and role of an expert, are dominant. In the first one, based on empirical and laboratory quantitative methods (e.g. questionnaires), selected experts are examined in comparison with other specialists from the same or another, even very different, realm of knowledge. The assumption in this research is the thesis that expertise is rather a unique sort of knowledge and cognitive ability, different than the methods and epistemic qualities typical for scientific knowledge. A comparison of knowledge and competence of the experts is made, from the side of one or several criteria, such as the time required to resolve a problem, memory resources and the ability to operate it, the range of the received results, the level of acceptance by others, etc. In this approach one formulates the thesis about the innate disposition for becoming an expert; this approach basically *absolutizes* expertise as such. In the second approach (also empirical) the experts are examined in comparison with non-experts like novices, apprentices, regular, naively thinking people. The initial assumption in this case is that expertise is gradable and essentially grows out of the novice's knowledge. Studies show that there is a continuum of expert knowledge and competences; most people capable of learning can achieve that. The purpose of this inquiry and theoretical approach is to elaborate the methods and rules of teaching and improving expertise; this approach *relativizes* expertise. Both approaches, if one does not seek for as many differences as there are similarities, are not targeted as such at recognizing the otherness of expert knowledge, but rather at the factors which decide about its development and improvement. As Chi writes: "[T]he goal is to understand how experts become that way so that others can learn to become more skilled and knowledgeable" [1, p. 23]. It is more crucial to answer the question, how does expert knowledge function and develop, not only what it is *per se*.

In the inquiry on expertise the issue is not only about its general definition; what is much more important is the issue of apprehending the phenomenon from the perspective of the practical application of the hitherto acquired *knowledge* about expertise. What is the *prototype* of expertise, what is the *model* on account of its general character that shall allow the improvement of the

analyzed phenomenon? These are the questions posed by many scholars. Which of these most essential traits, despite their natural differentiation with respect to the conditions of functioning of the specific types of expertise, can be, nonetheless, susceptible to modelling and operationalization in order to improve it in a practical and socially significant manner? What conclusions may be inferred from the expert knowledge for its own benefit? "[T]he prototype view of expertise maintains that expertise is relatively domain specific and that the attributes of experts may be specific to a time and place. (…) Importantly, the prototype view of expertise recognizes the diversity of skills that can lead to successful performance, and that expertise can be thought to exists in degrees rather than in an all-or-none fashion" [2, p. 614]. The versatility of levels of sophistication and differentiation of knowledge and expertise as well as their continuity, points to the fact that in the framework of the epistemic and institutional conditions in which one makes the expert judgements, one can construe a prototype and a model of expertise as such; one must only define its boundary conditions, including, especially, its general advantages and disadvantages.

5. Cognitive Errors and Illusions Accompanying Expert Cognition

Among the most interesting epistemological issues connected with the specificity of expert knowledge is the problem of cognitive mistakes distinct for some of the actions of acquiring it, as well as illusions about these errors in which many experts participate. Errors and illusions accompanying expert activity, examined empirically and generalized theoretically, assume a more or less homogenous form, relatively independent from the domain of expert knowledge or practice. Such mistakes characterize especially expert judgments in the situation of incomplete or uncertain knowledge as well as complex degree of probability of events that are the object of the expert judgments and prognoses issued. The nature and role of these errors are the subject of research in cognitive science, especially the analyses of cognitive heuristics.

Daniel Kahneman created the general concept of two cognitive systems constituting the structure of human cognition. He proposed a model of cognition consisting of two levels, two modes of thinking [7, pp. 19-30]: System 1, which functions quickly and automatically, without a significant intellectual effort as well as without the feeling of conscious control, and System 2, which in turn requires rather high intellectual effort, acts in stages and rather slowly, engages substantial mental resources (e.g. memory) and is connected with the subjective feeling of being focused, having free choice and conscious action. Dedicating the most attention to System 1 (contrary to traditional research on reasonableness/rationality attributed exclusively to the first system), Kahneman states that indeed it is that system "effortlessly originating impressions and feelings that are the main sources of the explicit beliefs and deliberate choices of System 2." Both modes of cognition are equally important and one must "think of the two systems as agents with their individual abilities, limitations, and function" [7, p. 31]. Human action is the effect of the co-occurrence of both systems. These systems are equivalent and in may cognitive situations they cooperate, indicating at the same time the autonomy of action.

In the analysis of the effectiveness of both systems Kahneman distinguishes an array of cognitive mistakes which accompany their realization. They are also appropriate for describing the work of experts. He analyses in particular financial advisors, whose routine cognitive and institutionalized actions (i.e. defined by corporations to which hire them) such as issuing judgments and predictions are, admittedly, signified by effectiveness as well as specific, surprising lack of understanding of expertise itself. Financial experts take advantage of System 1 as well as System 2, but in the case of judging and assessing random events, such as investing at the stock market or advising other people in this respect, they fall into a mental trap of "quick and slow thinking". Having at their disposal thorough and objectivized knowledge about complex financial processes, experts commit significant mistakes, especially in the predictions they make.

In this case, the issue is not about knowledge itself, but rather about the limitations in experts' competences. Cognitive errors and illusions that accompany them most often relate to random events; experts have the most problems with such cases, even those most skilled in their

profession. Financial experts and advisors act on the market, where the riskiness of events (e.g. accuracy of investments) and the degree of unpredictability (of expected profits or losses) is particularly high. Such a state of affairs, nonetheless, does not correspond with the state of awareness and self-cognition on the part of the experts. Due to the randomness of events, their actual competences and cognitive capabilities play an insignificant role; they themselves succumb, however, to the feeling of their own competence, accuracy and usefulness of the formulated predictions. They believe that they achieve in financial consulting better results than the market itself (and corresponding objective, scientific knowledge about it), despite this being contrary with the economical theory that they take into consideration. It is not their knowledge (or rather the lack of it) plays a key role here, but a cluster of emotional-cognitive feelings and illusions, which accompany it. This is demonstrated by the research on their expertise in the sort of that, which was carried out by Kahneman himself, being a kind-of "expert of experts". "There is general agreement among researchers that nearly all stock pickers, whether they know it or not – and few of them do – are playing a game of chance" [7, p. 215]. Financial experts and advisors, similarly to their employers as well as the general population (who remain impressed with the complexity with expert judgments in the financial sector), are convinced that the level of competence required to predict and asses risk of anticipated results is high and amazing (to a similar extent as their paycheck). The analysis of the statistical correlations of values of expert predictions and knowledge, from which they are derived shows, however, as Kahneman notes, that the accuracy of such predictions – meaning the repeatability of the result, its increase or improvement – is generally close to zero. Despite this, these experts do not take into consideration this fact from the realm of the theory of probability, they rather live in the illusion of the reliability of their knowledge. „The illusion of skill is not only an individual aberration; it is deeply ingrained in culture of the industry. (…) Their own experience of exercising careful judgments on complex problems was far more compelling to them than an obscure statistical fact" [7, p. 216]. The trust in the infallibility of expertise is stronger than facts. There is a shift in the awareness of experts with respect to the rank attributed to objectified expert knowledge for the sake of skills alone; these lead to knowledge or not. An illusion of knowledge appears to exceed the significance of knowledge itself; it is a feature characterizing financial experts, whose position distinguishes them in an unfavorable manner in comparison with other types of experts.

The actual component of the work of an expert, in every sphere of social life, as Kahneman notices, is, firstly, the broad knowledge about the mechanisms and processes ruling a particular sphere of a particular reality and, secondly, specialized skills of recognizing, calculating and predicting. Skills alone are not enough to make an accurate decision; relying on routine skills without referring to knowledge, as well as without their correction and being aware of them, is illusive. When this takes place, as it is demonstrated by Kahneman's research, yet another phenomena occurs that has the properties specific of a cognitive mistake – the replacement of the ability to objective assess by the sole feeling (impression) of the appropriateness and correctness of one's own skills. This second skill – subjective, not objective – is overestimated and it replaces (admittedly crowds out) objective skills and knowledge; this is the condition which afflicts the financial experts subject to this attitude. "[S]ubjective confidence of traders is a feeling, not a judgment" [7, p. 211].

This type of feeling experienced by experts – an impression, not conviction; skill, not knowledge – is contradictory to objective knowledge which characterizes the realm of their activity, both factors are situated in a paradoxical relation to each other. The first one, belonging by definition to System 1, appears in System 2 in the form of the self-awareness of experts; however, it is illusory, because it is uncontrolled and non-reflective. The actions of experts are accompanied by the feeling of confidence in their own skills, not fully backed by reliable knowledge. The sources of such a feeling are essentially subjective (psychological, dependent on personality), but they are determined and also conserved by the social situation in which the experts subject to the illusion act. A significant role is played especially by corporate structures, in which these experts formulate and develop their predictions and evaluations. "[I]llusion of validity and skill are supported by a

powerful professional culture" [*ibidem*]. The feeling of being part of an intellectual and financial elite of liberal society fuels this illusion. There is also another determining (falsifying) factor, Kahneman notices, namely, a sort of "consulting in the field of political and economic trends" connected with mass-media (television and specialized press), which both created the category of media experts as well as they fuel the social interest in them, conserving the inclination of some of the experts themselves to delude themselves. Under the influence of the media-promoted vision of the reliability of particular expert judgments (e.g. in the realm of finances), the natural illusiveness of certain experts becomes even more amplified.

6. Expert Intuitions: its Advantages and Limitations

Intuition in expertise – on the skill level – does not lead to mistakes in of itself; it is not only intuition that contributes to exaggerated confidence of experts referring to their own level of competence. It is an actual factor of expert judgments, it takes place, however, on multiple levels, it is a kind of game played between both of Kahneman's cognitive systems.

Herbert Simons's view is generally accepted (Kahneman also refers to him) – he states that expertise is a mode of decision making in which a significant role is played by intuition. In the decision making schema (model) several activities take place which depend on using basic cognitive skills of the deciding subject – intuition is one of them. The model of decision making is always realized in a specific environment; expert actions, including intuitions, should be, therefore, analyzed in a particular context, it can be examined as a reaction of the decident to the signals (hints) of a particular environment. The expert's action is the recognition of appropriate hints (information) both in the environment and the hitherto acquired knowledge; recognizing hints takes place within the framework of the hitherto obtained cognitive resources – propositional knowledge, memory and skills, including intuition. Simon states: "The situation has provided a cue; the cue has given the expert access to information stored in memory, and the information provides the answer. Intuition is nothing more and nothing less than recognition" [10, p. 155]. A key role in expert intuition, apart from recognizing, is played by memory in which the basic information/knowledge is stored and that the expert communicates in reply to a question/problem situation. One remembers much more than one knows in a particular moment (than one can be aware of and that one can verbalize) and because of that intuitive referring to appropriate hints does not have anything mysterious connected to it, as Simon states, because it is based on hitherto acquired knowledge. A key factor in expert judgments are also association mechanisms, characterized by that that one recalls from his or her memory, in general, consistent and obvious information and ideas. Nonetheless, this generates a feeling of the ease of formulating beliefs and their consistency, but they are not, however, (what Kahneman also indicates) a sufficient condition for the reliability of expert knowledge. The intensity and the clarity of the feelings accompanying the belief in the expert judgment does not guarantee its accuracy, adequacy or greater truth value.

What, therefore, justifies the value of expert predictions based, among other things, on intuition? What is the appropriate schema (model, pattern) of a problematic situation for an effective resolution of a problem that is minimally burdened with errors? If not the subjective factor itself – certainty or the ease of formulating opinions and decisions – then what guarantees this value? The objective factor – the adequate recognized principle in a complex (indeed, very complex) reality as well as the specialized knowledge acquired on this topic – on its own, it is not a solution for the aforementioned problem/question. Kahneman notices that in the case of interrogated financial experts, this factor is not only the financial services market itself, understood as an ultimate reality. None of the abovementioned factors in of itself, only their joint cooperation, is a basis for issuing expert predictions and making decisions on their basis. A model and pattern for expert judgments as such is the game of chess, bridge or poker, as well as situations which are encountered by (and are used in the form of simple rules of functioning) diagnostic physicians, clinicians, nurses, some athletes and firefighters. In each example of such actions there is one common pattern and model (demonstrated already by Simon), it is simple, it does not have to be

fully made aware of and named, it functions quickly and generally reliably. “The accurate intuitions (…) are due to highly valid cues that expert’s System 1 has learned to use, even if System 2 has not learned to name them” [7, p. 240]. Environments in which financial experts and advisors as well as political scientists and experts (“who make long-term forecasts [and] operate in zero-validity environment”) are not environments of this type, hence the inadequacy of their predictions, combined, nonetheless, with a strong feeling of being accurate and an illusion of skillfulness.

What plays a key role is a strong and unambiguous hint from the environments which is crucial for a particular challenging situation, which guides the expert to the appropriate schemas and programs for action that were hitherto collected in his or her memory; hints are integrated in to the existing patterns of knowledge and action. Combined with prior experience, they constitute expert knowledge. Fully developed and effective expert knowledge (in a propositional form) appears as an effect of hitherto preserved simple cognitive schemas which lay at their foundation that function to a large extent intuitively. As much as mature expert knowledge can consider very complex situations and problems, intuitive skills emerged and function in simple situations and schemas. “The acquisition of skills requires a regular environment, an adequate opportunity to practice, and rapid and unequivocal feedback about the correctness of thoughts and actions. When these conditions are fulfilled, skill eventually develops, and the intuitive judgments and choices that quickly come to mind will mostly be accurate. (…) A marker of skilled performance is the ability to deal with vast amount of information swiftly and efficiently” [7, p. 416]. Expertise considered as a subjective competence and social role is a complex cognitive disposition, but it functions based on simple schemas and cognitive patterns.

7. Limitations of Expert Judgments in Judicial Practice

Susan Haack [4] analyzes from an epistemological point-of-view the American judicial system and indicates the correlation in judicial expert judgments, used especially in the criminal procedure, of objective (methodological) and subjective (personal) factors. The first type includes, in general, the incomplete knowledge of judicial experts or faulty results of forensic tests or experiments, the second one includes emotions, excessive desire for power (i.e. an advantage over the other party in a trial) and political correctness (which appears at many stages of the judicial procedure). Collectively they decide about the particular mistakes that a typical judicial expert commits during his or her functioning in the judicial system. Mistakes of this sort occur in the work of a judicial expert (expert witness) who is appointed for the sake of deciding about the defendant’s guilt. Also the witnesses, whose testimonies and confessions are distinctly conditioned by cognitive and personal factors, contribute to these mistakes; in both cases similar cognitive patterns are signified. Haack recognizes this problem in a much broader perspective than the cognitive one (just as Kahneman or Simon do), including also to it socio-political factors which explain why an expert sometimes demonstrates a specific bias in his or her expert judgments. “Bias may be due to expert’s greed, his desire to feel important or to help police or a sympathetic plaintiff, his undiscriminating conservatism about new and radical-sounding ideas, or his undiscriminating attraction to the novel or the radical” [4, p. 149]. What is crucial in this case is the exaggerated trust of the expert in the infallibility of scientific knowledge (of the natural and experimental sciences), significant parts of substance and methodology of which belong to his or her expert knowledge and skills. Not in every case the knowledge that a judicial expert makes use of finds its acceptance in the judicial procedure, although this is not decided by its inherent value (truthfulness or falsity). What is also, nevertheless, significant is that what is specific for a criminal trial, namely the emotional involvement of the expert, and also the witness, in the situation of the victim, sympathy for him or her, which sometimes leads to issuing expert judgments that do not fulfill standards of impartiality and objectiveness.

There is yet another, much more epistemologically significant trait of an expert witness to which Haack draws attention. The expert judgment of an expert witness undergoes analysis and an assessment process during the court procedure; it is not always taken in full by the judge (or the

jury) in its complete and final version formulated by the expert. An expert witness, generally speaking, is evaluated by the court on the basis of the conclusion which are a result of the expert judgment prepared by him or her. It is analyzed, as Haack notices, basically with the consideration of the judicial procedure, especially the arguments of the litigants, analyzed with respect to the manner of inferring from its premises, but also on account of the possibility of a court at a give level to appeal and annul verdicts, at the basis of which an expert judgment was issued. Because of that it acquires distinct significance, being part of a whole. Besides that, expert knowledge, what is demonstrated by discussion in the American jurisprudence and judicial practice [cf. 4, pp. 149-155] is the subject of assessment, also from the methodological side – the procedures of their formulation and justification. Courts are empowered to question and reject expert judgments, considering them to be insufficiently grounded in accepted and socially acknowledged knowledge in a particular domain; what is, however, significant, Haack notices, is that the term "reliable" in reference to expert judgments does not appear in the terminology of court rules and procedures. Therefore, the expert may be limited in this way in his or her independence (i.e. formulating an opinion on a given case) by the court which shows its autonomy (independence) with regards to arbitrary expert judgments. Such a situation indicates, Haack concludes, an epistemologically significant (important for the general model of expert knowledge) fact that the doctrinal-legal case presented above "gives federal judges substantial responsibility and broad discretion in screening expert testimony, but offers them little really substantive guidance about how to do his" [4, p. 155]. The position of an expert – non-biased, operating with objective and reliable knowledge according to scientific and socially accepted standards – in certain situations seems limited, especially with respect to his or her cognitive autonomy. A factor that decides about that is the social position of the expert – the social role which he or she play in institutions that gave him or her this status.

8. Conclusion

The abovementioned concepts, theories and positions, formulated in an interdisciplinary discussion on the specificity of expert knowledge, manifest that it is a complex, multifactorial and contextual phenomenon of a cognitive as well as social nature. A model of expert knowledge and expertise that could be constructed is one for which not only theories or empirical research are crucial – including decision making theories and ones relating to creative problem solving – but also practical remarks are significant, e.g. referring to the practice of judges and managers. This allows one to grasp key elements of this phenomena and to distinguish them both on the *epistemic* level (i.e. co-occurrence of propositional knowledge and skills, including the active role of intuition) as well as on the *epistemological* one (i.e. social conditions of expertise, including factors other than cognitive, such as the social roles of the experts or institutions within the frameworks of which they act). Although expertise on the one hand is a type of knowledge or cognitive competence and on the other hand as a social skill it assumes various shapes and forms of realization, within the framework of a model constructed on the basis of comparative analyses and empirical research, it is possible to grasp many of its crucial factors. One of them is the evermore broadly considered and generalized intuition that lays at the basis of the skills and dispositions to make decisions. Its nature – pre(un)reflexivity, simplicity and automaticity – is not considered to be antithetical (like in other theories) to rational, reflective and verbalized cognition. Intuition turns out to not only be a factor for making decisions and resolving problems with which experts are confronted, but also indirectly influences the state of the experts' consciousness. It is a determining cognitive as well as meta-cognitive factor; in the second case it is the condition for achieving a top level of expertise, it repeatedly disrupts the methodological skills (reflexivity and the ability to correct mistakes) of experts in some domains of their activity. What plays along with this destructive fact is the impact of institutions and procedures conditioning the functioning of experts (in a model where expertise is understood as its contextuality) in particular social situations on the crucial pre-conditions of the status of expert knowledge and competences.

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