

CARTESIAN PSYCHOLOGY

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The authors discuss the classical modern (Cartesian) paradigm dominant throughout the whole era of modern philosophy and psychology. Lately an influential anti-Cartesian movement has been taking its place. The core of the issue is dualism - whether there are two substances, the mental and the physical, or not. The preliminary conclusion is that the issue is far from a final solution, despite some promising approaches, such as discursive psychology (R. Harré), anomalous monism (D. Davidson) and neopragmatism (R. Rorty). The paper deals also with more specific issues in psychology although it gives account of main general conceptions, such as structuralism, functionalism, Gestalt, behaviourism and cognitive psychology. None of the latest conceptions (Johnson-Laird, Minsky) has given a satisfactory framework for transcending Cartesianism in psychology.

The history of philosophy and science would probably be a boring matter without some great shifts and turnovers, although the more epoch-making ones are not so frequent. But it seems as if the nature of philosophers (and probably also of scientists) involved a need to define their identity particularly with regard to their predecessors who had already been firmly established in history; as if we needed to pose at least a (or the) little "antithesis" against the universally recognized theses (if not even to try to make a synthesis from them). Aristotle did something like that to the detriment of Plato and Descartes almost four centuries ago attempted the same. Both Aristotle and Descartes succeeded; both became not only founders, but the symbols for the whole epochs in the history of human thought.¹ Just as Descartes refuted Aristotle, contemporary philosophy has also reached its *Rubicon*, behind which it discovers not only new territories where one can move and breathe more freely but also has opened entirely new horizons. This *Rubicon* - which should (allegedly) be definitely crossed - is *de facto* generally associated with Descartes, that is Cartesianism. Some even wave from the opposite Anti-Cartesian bank and almost irresistibly allure us to cross and join them: pragmatists Pierce and Dewey,

¹ Thus we can speak of traditional (ancient, Aristotelian, classifying) and modern (contemporary, Cartesian, relation-causal) historical types of rationality (see [1], 80).

and of course Nietzsche, had been pioneers long ago, but it was Heidegger and Wittgenstein who became leaders of Anti-Cartesianism and who deserve the name of the most outstanding philosophers of the twentieth century.

When Gadamer, Foucault, and Derrida joined them and, moreover, when analytical philosophy – one of the bastions of Cartesianism in our century (the second being the classical Husserl phenomenology) – started to disintegrate itself from inside due to the interventions not only of the late Wittgenstein and G. Ryle with their leaning towards neobehaviourism, but especially those of Quine and Davidson with their inclination to neopragmatism, no wonder that voices from the “old” bank started to weaken rapidly in a broad current, taking on mostly the confused name of postmodernism. R. Rorty, a renegade of analytical philosophy himself, and neopragmatist, became thus one of the eminent synthesizers of contemporary Anti-Cartesianism (cf. [2]). Under Rorty’s guidance, one part of current philosophy experiences a huge therapeutic effect: it resembles a patient being treated for schizophrenia who begins to understand that he cannot live in the state of inner tension caused by dualisms of all kinds any more, and has to liberate himself from them so that he will be able to understand his inwardness in an entirely different way – antidualistically – and not only that: he has to throw out even the basis of all dualisms itself – radical differentiation between the “interior” and the “rest of the world”. It seems that we can breathe freely since therapy is possible only if diagnosis is rightly settled: Cartesianism has been proclaimed responsible for all the maladies and mistakes of the modern era which (among others) placed reason in sharp contrast to culture as had been shown by E. Gellner (see in [3]).

The present polemic between Cartesianism and Anti-Cartesianism seems not to be so easily resolved since the issue that is grounding it – the issue of subject – is more complex. Some (e. g. Ch. Taylor) point to the fact that Cartesianism with its idea of the “consciousness of consciousness” has its roots in Augustine or rather as early as in Plato, and as such forms a part of Western cultural identity that we cannot (need not) give up (see in [4]). The mentioned polemic (as well as a dualism in a way, though on a different level) does not satisfy some others who try to overcome it. For instance, R. Bernstein alerts to the fact that we have to be careful and to differentiate between historical Descartes and Cartesianism ([5], 115).² D. Davidson can be ranked among deliberate reformers who, although speaking about the

² The term “Cartesianism” might cover all doctrines initiated by Descartes (R. C. Solomon). T. Reid (1710-1796), father of the Scottish philosophy of “common sense” pointed out that such different philosophers like Malebranche, Locke, Berkeley, and Hume belong to the “Cartesian system” because they support Descartes’s view of the human mind. The starting point of this system is generally considered to be the thesis *Cogito*. R. Bernstein gave a concise reconstruction of the main features of the Cartesian heritage as follows: 1. rigorous distinction between *res cogitans* and *res extensa*; 2. introspective epistemological activity of the Self as the subject; 3. finality but at the same time perfection of the human being; 4. the truth is associated with correct judgement and both are in the control of the subject; 5. if we find a

“myth of the subjective” on the one hand, does not give up either the authority of the first person or the concept of mentality on the other hand (cf. in [6]).³ Similarly J. Searle tries to overcome dualism but wants to preserve inner subjective qualities of consciousness and intentionality about which he says they cannot be either eliminated or reduced ([7], xiii).

Let us move from these introductory remarks whose task was to enter the context, to the main topic of this essay. We use the term “Cartesian psychology” for Descartes’s metaphysical conception of the mental⁴ as it was used in modern philosophy and as it influenced psychology as a science. Internalism can be considered to be the main feature of Cartesian psychology of all kinds, i.e. a presupposition of the existence of a special mental reality (substance) in our “inner Self”, inaccessible from the outside and therefore somewhat mysterious, a sort of “black box” – as functionalists would say – functioning according to immanent psychological laws. Such a presumption is based on dualistic ontology as Descartes formulated it in the fourth part of his *Discourse on Method* ([9], 43-48) and then in *Meditations on First Philosophy*, particularly in the *Second* and the *Sixth Meditation* ([10], 81-86, 107-117).⁵ Within “Cartesian psychology” attention should of course be paid to Descartes’s conception of the Self (subject), emotions and volition, which, however, is beyond the scope of the topic of this essay.

stable point, we can build up the whole structure of human knowledge in a methodical way; 6. the reason which leads us to the same knowledge is universal and common to all people; 7. the role of senses and experiences is merely epistemological ([5], 115–118). We see that Cartesianism is a compound concept and thus criticism of one of its aspects does not necessarily mean its confutation in another. The core of Cartesianism is nowadays characterized as “ontologization of a transcendental subject as pure mentality”.

³ Some understand Davidson’s moderation as inconsistency and find in his conception of “anomalous monism” features of dualism, even though not directly Cartesian but Kantian ([8], 384-385).

⁴ For our purposes here we are concerned with the question what is the object of the interest of psychology whether philosophical or scientific, that means with the mentality or psyche as such, with their ontological status and the approaches to their understanding, and therefore we abstract in principle from the finest differences of such concepts as mind, soul, spirit, consciousness, etc.

⁵ Dualism in ontology is naturally not Descartes’s discovery (for the difference between Plato’s and his dualism see e. g. [4], 145-146). However, Descartes gave in his *Meditations* such a massive argumentation in favour of dualism that even his later interactionism in the *Passions of the soul* is not a denial of this dualism but rather its consequence. In spite of this there emerge interpretations from time to time which do not consider Descartes’s metaphysical conception to be dualistic (see [11]). We refer to the convincing study of M. Rozemond ([12]).

The field of philosophy, traditionally (in a Cartesian manner) known as the “philosophy of mind”⁶ inclines today to a more adequate (Post-Cartesian) name – “philosophy of psychology” or philosophical psychology. It is a part of philosophy with a tradition dating back at least to Plato⁷ which cannot be eliminated from philosophy in spite of the fact that psychology as empirical science has existed since 1879, and even in spite of the present Anti-Cartesian wave. Rather the opposite: “the mystery of the stream of consciousness”, “the place of the mind in cosmos”, relations of the mind, language, and the world (controversy between representationalism and antirepresentationalism), the consequences of the cognitive revolution and contemporary research on the brain and other psychic phenomena (mainly emotions) – and not only the traditional problem of the relation between the mind and the body (mind-body problem) – all these attract more and more attention from philosophers; research on the borders between philosophy and psychology are very attractive and promising (see in [14]).

Who are we and how do we exist? Are we bodies plus minds, or just the former or the latter? Is there the mental (in contrast to the bodily) i.e. consciousness, thought, emotions, will, intentions, visions, etc.? If so, how does it exist and where? Does it exist in any special whole which is called the human spirit, soul, mind, psyche, consciousness? Are there minds, bodies or just thinking bodies (or bodily minds), that means bodies whose integral part is capable of mental production, feelings, perceptions, visions, concepts, ideas, etc.? How can such a special body with mental abilities exist? These are only some questions from the mentioned domain of philosophy – philosophical psychology. The problem is thus not only the ontological status of the mental but also how is it possible to understand and explain it.

To say that we do not think or that we do not have mental states, that we are just “bodies”, means to substantially distort or degrade our self-image. The distinction between the mind and the body, between the mental and the physical seems to have been natural for our conception of ourselves from ancient times.⁸ Our language proves it – we use mentalistic (intentionalistic) terminology, and psychology (philosophical or scientific) make use of it too as a field of exploration. Descartes in fact

⁶ The philosophy of mind has an immense tradition particularly in the Anglo-American linguistic domain and there is a confused plethora of literature (see e. g. [13]). In our opinion, the philosophy of mind is part of a broader philosophy of psychology.

⁷ The first more systematic project of psychology, of course speculative, is found with Plato (his tripartite theory of the soul). The Aristotelian conception of the soul can be considered as the first attempt at naturalised theory. Psychology is thus constituted by contemplating on the soul or by its investigation.

⁸ Here is probably also the source of the so-called folk psychology, i. e. of the explanation of our behaviour and actions by mentalistic, intentionalistic terms, such as beliefs, desires, intentions, motives, etc. These terms are summed up under the rubric “propositional atti-

philosophically articulated our everyday conviction that we have body and mind, that we are aware of the difference between the body motions which are observable even by other people, and the motions and tensions somewhere inside of us to which only we have a privileged access (introspectionism is another sign of Cartesian psychology). Mentalism and internalism thus have support not only in Plato's philosophical tradition but also in a "folk psychology", even in the whole Jewish-Christian cultural tradition of the West.

One of the Cartesian ideas which had been influential in philosophy for many years was the idea of the existence of the "real difference" between the soul (mind) and the body, between the mental and the physical.⁹ But Descartes ontologized this phenomenal difference (as we know today) and used a scholastic concept of substance to justify it (see in [12]). His procedure was typical for the modern science: an inference from manifestations to the basis, or from consequences to the cause; if there exists thinking as a manifestation and consequence, there must also be a mental substance which is the basis and the cause. This substance is then examined by a procedure into its "interior" – by introspection. Descartes inaugurated such thought about the mind in the history of modern philosophy which separated it not only from the body but also from the rest of the so-called external world.¹⁰ His reward for it was not only a sharp critique from contemporary Anglo-American philosophers of mind but also pejorative metaphors: G. Ryle spoke about his conception as of Cartesian myth and an absurd doctrine of the "Ghost in the Machine" based on categorial error ([15], 13-25); similarly G. Vesey wrote about "philosophical myth of the internal and external" ([16]) and D. Dennett even about an illusionary "Cartesian theatre" as a presupposed "place where 'everything is taking place' and where consciousness is created" ([17], 39). Siding with them all, A. Kenny, who, when assessing the philosophy of mind during the past twenty-five years, points to the fact that the Cartesian heritage became the main obstacle to a correct understanding of the nature of human mind ([18], vii). It concerns in principle a matter notoriously known from textbooks but it is often forgotten that a necessary and logical part of this conception was naturally a mechanistic and materialistic idea of the completely "thoughtless", non-thinking body as a body or, in a more modern way of a "machine". It would have been absurd for Descartes to say that "body is a thinking substance", that means that "the body thinks". Descartes de-biologized and de-teleologized the Aristotelian concept of body

tudes" and they are thought to have not only the content but also the causal efficacy (reasons as causes of actions). Philosophical psychology using mentalistic intentionalistic terminology was criticized from the two perspectives: first the proponents of the late Wittgenstein maintained on the basis of logical conceptual arguments that reasons are not causes, and later cognitivists declared this terminology obsolete and non-scientific (see [14], 1-19).

⁹ The fact that Descartes's main intention was, along with the proof of the existence of God, to prove this "real difference" between the soul and the body is evidenced by the subtitle of the *Meditations* and the title of the last of them.

¹⁰ From that Descartes also derived his conception of the Self or the subject (cf. in [9], 44).

and adapted it to the physicalist term of body. This in principle applies to his philosophy despite his doctrine of reflex arch.

In spite of the fact that some authors speak about unending revival of Neo-Cartesianism,¹¹ the main current of present-day philosophical psychology is represented by the two lines, both attacking the ontological (dualism) as well as epistemological side (introspectionism) of internalism. The first of them is a wide current of naturalism based on the latest results of cognitive science, neurophysiology of the brain, artificial intelligence, etc. (see e.g. [20]). On the one side of the spectrum there are the strictest reductionists – the so-called eliminative materialists (P. M. Churchland, P. S. Churchland, P. Stich) who refuse the existence of the mental (intentionality) as a whole and try to explain everything either by the structure and the function of the brain or by the models of artificial intelligence. Consequently, it would mean a paradoxical liquidation of the object and the status of traditional psychology in the name of its scientific character. It seems, however, that a more moderate attitude predominates, which, despite respecting the development of science attempts to reconcile it with the defence of specific qualities and the existence of the mental (J. Searle, D. Dennett and many others). This moderate movement cannot naturally avoid accusations of insufficient overcoming of Cartesian dualism from the part of eliminativists. A neutral or undecidable position in this polemic is occupied by for example the so-called new mysterians (T. Nagel, C. McGinn), according to whom the mystery of the mental is an insoluble problem.

The second line of contemporary psychological Anti-Cartesianism is represented by various versions of externalism, e.g. contextualism. It concerns criticism based on the work of the late Wittgenstein. If mentality was presented as pure consciousness and self-consciousness (the consciousness of consciousness) of a subject (Self) separated from language and action in the Cartesian tradition, then Wittgenstein's radical demand of ontological connection of the mental and the social through (language) activity wants to put an end to the object and the status of traditional psychology by placing the externalist standpoint of the third person versus the internalistic standpoint of the first person (see e.g. in [21]). The most systematic attempt at such an overcoming of Cartesian psychology is today represented by the exceptionally interesting and attractive concept of discursive psychology of R. Harré which claims to be the "second cognitive revolution" and will certainly stimulate a lot of discussions (cf. in [22]).

But it seems that if we had to decide just between these two lines and choose either (in principle internalistic) naturalism or (in principle externalistic) contextualism, we shall not resolve the problem. It is probably D. Davidson, who approaches its solution

¹¹ Kenny denotes as causes of the formation of neo-Cartesianism inadequate understanding of Wittgenstein and the influence of such authors as N. Chomsky ([18], 12) or P. M. Churchland. According to Flanagan, the most important defence of dualism was presented by Popper and Eccles ([19]).

from another, probably better – neopragmatic, Quinean perspective with his “anomalous monism” when proposing the ontological but not conceptual reduction of the mental to the physical (cf. in [23]). O. Flanagan also says that the mind appears just as another name for the brain ([20], 91-92). J. Heil, who follows Davidson, attempts to reach compatibility of both strategies, naturalism and externalism, but leaves the conflict unresolved for the time being; he writes: “Post-Cartesian philosophers face the challenge of comprehending minds as natural objects possessing apparently nonnatural powers of thought. The difficulty is to understand how our mental capacities, no less than our biological or chemical characteristics, might ultimately be products of our fundamental physical constituents, and to do so in a way that preserves the phenomena. Having abandoned Cartesian dualism, we confront a dilemma. On the one hand, we could opt for an out-and-out *eliminativism*, according to which minds and their contents are taken to be, like Ptolemaic epicycles, discredited posits of outmoded theories. On the other hand, we might suppose that mental properties or kinds are, in one way or another, *reducible* to physical properties or kinds. Since reductionism is often taken to be a species of implicit, *back-door* eliminativism, and since naturalism gives rise to the dilemma, it may seem that we must choose between eliminativism and some nonnaturalistic conception of mind” ([24], ix). Contextualism is such a non-naturalistic conception but if Heil is right in saying that “mental characteristics, while distinctive, have a place in the material world” (ibid.) and that undoubtedly “it is patent that we have something like a Cartesian entrée to the contents of our thoughts” (ibid., 164), which is in evident contradiction with externalism, we have to close this part with skepticism toward all efforts to break with any form of Cartesianism.

The Cartesian paradigm in psychology as a science

As yet we have not been able to cope satisfactorily with the heritage of Cartesian dualism in psychology as a science. Continuous attempts to refute the mind-body dualism increasing at the end of the twentieth century rest mostly in the effort to reduce mental phenomena to physical ones and eliminate consciousness from the area of scientific investigation. In the most radical form the concept of consciousness as such is even rejected together with the discipline to which it belongs, i.e. psychology (see [25]). We shall therefore try to sum up in short how the main streams and schools dealt with dualism in this scientific discipline. As nowadays J. Searle ([7]) takes an original standpoint to the polemic between a small group of intellectuals supporting Cartesian dualism and an overwhelming majority of thinkers trying to put a definite end to dualism along with mentality as an irreducible phenomenon, we shall confront these opposing views with his understanding.

In the early stage of experimental psychology, structuralism, using introspection as the chief method, prevailed. Introspection was employed for studying elementary contents of consciousness such as feelings, visions and emotions. But how can we separate an observer from the thing being observed during self-observation, how can we

differentiate between the process of observation and its object? – these were the questions raised by the opponents of this method from the very beginning and posed again by Searle today. And since no division can be placed here, we cannot expect any explanation of the nature of consciousness by this method. Although we are able to provide some information on the status and contents of consciousness by means of this method, we cannot investigate by self-observation the way they are created in the consciousness. For instance, when listening to the communicated, we are usually able to replicate the content as well as describe casual accompanying emotional states. But we cannot listen and simultaneously look at ourselves and observe how we listen and process information. The second principal problem, to which Searle alerts, is the separation of the mental region from the physical. This also results in separating the brain from the consciousness and the mind from the environment.

Functionalism was formed as a reaction to this drawback. Its chief aim was to investigate the ways men – their consciousness – adapt better and better to the environment (see [26]). Although the explicit interest of functionalists was centred on the mind, human behaviour was explored implicitly (expressed for example by the reaction time) as a criterion of the organism's adaptation to the environment ([27]).

The understanding of consciousness in terms of functionalism is well illustrated by the well known statement of W. James: "We are sad because we cry, we are furious because we beat somebody else." The states of consciousness are here expressed as the consequence of the behaviour and physiological processes not taking account of its specific subjective experience. It is precisely the elimination of the attributes of subjectiveness from the consciousness that is criticized by Searle since the consciousness itself is thus actually eliminated.

This is even more strongly highlighted by behaviourism denying any consideration of causal relations between the mind and behaviour. Aiming to put psychology on the level of the exact objective sciences, behaviourism eliminates the mind with all its manifestations of subjectivity from scientific research and merely concentrates on observable and verifiable quantities, such as various environmental stimuli and diverse behaviour patterns as responses to them. Instead of the methodology focused on the analysis of the utterances of people regarding their feelings, their actions have been investigated [28]). Not the consciousness and even not the brain above the level of reflexes was a matter of interest to behaviourism. The complex and complicated aspects of personality have also been considered to be products of multiple conditioning. Rejection of the existence of mental states is presented by Searle as the cause of the sarcastic accusation of behaviourists of "fictitious anaesthesia". It is probably not necessary to give examples from everyday life clearly showing that the same stimuli are experienced by subjects differently and that even if the intensity of experience is similar for various external or internal stimuli, the observable behaviour need not correlate with the depth of personal experience in which the primary factors are volitional and motivational aspects, which were not taken into account by behaviourism.

The emergence of Gestalt psychology brings the renaissance of consciousness. It was developed in parallel with behaviourism. Among its most significant discoveries belongs the finding that the whole is more than the sum of its parts and that human, during perception separates the object from the background. The first argument is documented by the classical examples of automatic completion of the missing parts of letters or recognition of the figures on a drawing formed only from single points. This is assigned to the ability of the brain to actively organize perceptions into structures. The second discovery – saying that what is in the focus of attention becomes the object, the background being on the periphery – is for instance justified by reversible figures where the same part of the picture occurs once as an object and once retreats to background and the original background becomes the object. Searle uses these findings in his argumentation that consciousness is always consciousness of something from a certain point of view and this aspectual side is a necessary part of intentionality.

Another area that behaviourists left out from their interests – motivation – took up one of the main places in psychoanalysis. Motivation for faulty tasks and the formation of neurotic symptoms are sought in unconscious mental processes. In view of the relationship between consciousness and unconsciousness, it is substantial that the origin of a particular symptom consists in impressions which came from the external environment and must have been conscious before they became unconscious, while intentions which the symptom serves are endopsychic and have never had to become conscious ([29]). The therapy of symptoms consists in efforts to get unconscious processes into the patient's consciousness and to do away with his/her unconscious motivation leading to disorders. Although Freud dealt primarily with unconscious processes, he had to pay great attention to questions of consciousness as well. He defines it as follows: the perception-consciousness system "is facing the external world, mediates its perception and the phenomenon of consciousness arises in it just during the performance of this function" (ibidem, 405).

In his investigation of consciousness, Freud is necessarily confronted with the same controversy for which structuralism was criticized, that is, how can the ego/self, which represents the area of consciousness to the largest extent, play simultaneously the role of both, the subject and the object. He resolves it by a division of the ego into two parts – ego and superego, where superego observes the ego and stands for the function of conscience. Since Freud did not deal with the function of cognitive processes, he avoided the problem of introspection from the point of view of investigating the ways the contents of consciousness is being formed. The introspective method is legitimate in his perception and does not oppose common sense.

Before we come to recent trends in psychology, let us sum up the approaches given so far from the point of view of the Cartesian paradigm. We shall base it on Hillner's categorization ([27]) who assigned: 1. structuralism to psychophysical parallelism characterized by a presupposition that there is no interaction between the mind and the body; 2. functionalism into Cartesian dualism according to which the mind and

body interact; 3. Gestalt psychology to either modified psychophysical parallelism or dual aspecticism, according to which conscious experiences and behaviour are just different denotations of the same ultimate reality; 4. behaviourism to monism, either materialistic which assumes that mind does not exist or mentalistic epiphenomenalism assuming that from methodological or empirical perspective the mind is irrelevant to the explanation of behaviour; 5. Freudian psychoanalysis to modified materialism according to which mental events are understood as non-reducible physical and physiological entities. The first two currents are thus dualistic, the third cannot be classified unambiguously, and the last two are monistic.

Such a categorization of individual psychological currents is primarily based on fundamental mind-body dualism which does not correspond always to dualism between the objective and subjective, if this is dualism at all. The Cartesian tradition is mainly built on the struggle for maximal objectification and universalization of phenomena and from that perspective it was chiefly developed by behaviourism.¹²

An ambiguous understanding of Cartesianism approaches related to it can best be illustrated by contemporary cognitive psychology and artificial intelligence based on the symbolic representation of the world. Almost all essential principles and presuppositions of the currents mentioned so far are applied in various extents and modifications in these disciplines. Cognitive sciences at least implicitly assume that algorithmic symbol processes having particular mental contents (e.g. Chomsky's generative grammar or Fodor's language of thoughts) are innate and are accomplished at the level of unconsciousness. In contrast to psychoanalysis which strives to make the suppressed conscious contents again accessible to consciousness, algorithmic processes with symbols remain eternally inaccessible to consciousness. Thus, their nature can be in no way evidenced. It is precisely this prerequisite of cognitivism – ultimately leading to the separation of the mind from the environment since the interaction with the environment is largely conscious – that is sharply criticized by Searle ([7]).

In spite of the fact that the brain is incapable of evidencing algorithmic operations and the whole conception is purely speculative, the results of artificial intelligence in simulation of human behaviour are so convincing that many people are willing to believe that the (conscious) mind also behaves according to the same rules. This actually produces a paradox leading from the conviction of the existence of algorithmic symbol processes in the mind to a behaviouristic denial of consciousness and modelling of human personality only according to the criteria of adequate behaviour.

Similarly, the behaviouristic underestimation of the brain complexity was well applied in cognitive psychology. According to Johnson-Laird ([31]) any object or

¹² Marková ([30], 8) also speaks about four fundamental presuppositions of the Cartesian tradition in psychology. They are: 1. the character of the mind is individualistic; 2. the mind is static and passive in knowledge acquisition; 3. the knowledge is gained through algorithms; 4. the criterion of knowledge is external. From this perspective only the fourth presupposition relates to behaviourism.

equipment able to meet the conditions of the Turing Machine and to represent binary symbols can model human cognitive processes. Therefore these processes might be studied regardless of the performing substances. Johnson-Laird, however, does not identify himself with behaviourism because it does not provide an explanatory but only a descriptive frame for behaviour and because many human skills cannot, according to him, be controlled only by the events from the environment but mental processes are also necessary. Therefore he considers it important to also return to introspective methods, mainly in exploring the rules used by men to solve the problems or the ways they are motivated to do something.

In cognitive psychology verbal protocols were largely used as introspective methods. They recorded "thinking aloud" during problem solving. In contrast to the original demand of structuralists, a subject should not have reached conclusions on the states and contents of his/her consciousness but only to convey information and intentions which he/she realized (see [32], [33]). Although this introspective method did not and could not bring any satisfactory results on mental operations participating in information processing, its outcomes were used by Newell and Simon in creating the conception of a hierarchical structure of knowledge. It was used not only in cognitive psychology but also in linguistics and artificial intelligence. For example, Quillian ([34]) constructed a model of semantic memory in which memory units were hierarchically organized and interconnected through various types of associative connections.¹³

In spite of the proclaimed differences between the structuralistic approach to introspection and approaches focused on the investigation of "thinking aloud", the fundamental presuppositions of structuralism remained unchanged even in this new understanding. The first of them is the assumption regarding the reducibility of the contents of the mind to elementary units without the quality loss of higher wholes (i.e. non-acceptance of the findings of Gestalt psychology that the whole is more than the sum of its parts) and the second one the isolation of the mind from the environment and the real situations which men experience.

Therefore, the other two theories, also partially based on verbal protocols, reacted to various models grounded on the presupposition of the possibility of dividing the meaning of the words into elementary components and to the research oriented only on the decomposition and creation of individual sentences. It is the theory of scenarios by Schank and Abelson ([36]) and Minsky's theory of frames ([37]) representing the current top of the Cartesian paradigm. Both of them emphasize the necessity of investigating larger and more structured contents of conscious-

¹³ Experiments focused on the confirmation of various models of the hierarchical structure of semantic memory based on the measurement of the response time have not always brought, however, the expected results. For instance, connecting the concepts into parent classes, their different semantic distance should affect also the length of the response time. But, in experiments with the notions "poodle-dog-animal" the rate of the memory link "dog-animal" was not higher than with the link "poodle-animal".

ness instead of their simple and isolated fragments. Both of them deal with stereotyped common situations that are part of real human life. The essential difference between them is given by the fact that scenarios represent the stereotyped sequence of activities (e.g. behaviour in a restaurant) while the frames represent different sections of the world, such as objects (bedroom, kite) or manifestations of particular states (disorders, diseases). The scenario structure of (memory) knowledge assumes that due to its integrity and interconnection, a human being does not have to hear all details of the story in order to be able to complete the unuttered, that means to fill the gaps in the communicated.

Minsky's theory of frames or the later theory of knowledge lines ([38]) are built on the assumption that a human, who finds him/herself in new situations or re-evaluates a particular problem, retrieves from the memory a data structure (a frame or a knowledge line) which he/she adapts to reality by changing its details. The data structure is formed by a list of properties and their admissible values. Some of its substantial properties (or also their values) are always valid, true, and therefore invariable, while others can be supplemented or replaced by specific cases or data.

Many objections were raised to these approaches (see e.g. [30], [7]) which can be summarized from the perspective of the Cartesian paradigm approximately as follows: 1. The understanding of new situations is predetermined by the preceding situations but each scenario or frame must have been once new. That is why Marková asks whether some scenarios are inborn or *a priori*. 2. Although no doubts are generally cast on the understanding of new situations on the basis of foregoing experience, the given approaches are based on the presupposition of the statics and passiveness of the mind. It is capable to insert new information only into the preceding scenarios or frames and has no capability to restructure them actively or create new scenarios or frames. Moreover, if we speak about the importance of preceding experiences, we cannot base the modelling of the frames or scenarios on their universality because they are unique, individual, subjective. Therefore, both the completion of the unuttered in the existing original scenarios and frames or the creation of new scenarios and frames are exposed to individual and subjective interpretation. In addition, the method of introspection is itself subjective.

In conclusion we should say that cognitive psychology – as one of the resulting currents of earlier psychological schools – striving to overcome Cartesian dualism was unable to avoid its snares. With regard to methodology it employs research from the first person perspective – introspection. Since introspection is not capable to answer the question of how the topical cognitive processes proceed or how the primary mental states are formed, it assumes that algorithmic processes and universal mental states are innate and are realized on the level of unconsciousness and are inaccessible to any exploration. The criterion of the correct application of knowledge is then considered from the point of view of the third person and is thus external. This leads to obvious discrepancies firstly between theoretical presuppositions based partly on monism (mental reductionalism) and partly on dualism (mental de-

terminism), and secondly between dualistic methods used for their verification (introspection, verbal protocols) and criteria of the hypotheses verification (identical behaviour in identical situations which are monistic. It is therefore not by incidence that Searle points to the unmaintainability of classical dualistic but also monistic visions of men and proposes the following modification of Descartes' original statement: "I am a thinking being therefore I am a physical being".¹⁴ And it is definitely not at random that a new field of psychology is developing today, namely discursive psychology which defines psychology as follows: "...psychology is a study of active people whether as individuals or in groups, using material and symbolic instruments for implementing a variety of projects according to local criteria of correctness ([22], 223). Its authors see the origin of all the mental in interpersonal interactions where people use symbols or other intentional signs according to normative criteria of correctness or incorrectness. The assignment of discursive psychology is the investigation of discourses, the concept "discourse" being understood not in its narrow sense as a verbal presentation of thoughts and arguments but being extended to cover all types of the cognitive.

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¹⁴ Searle sees a solution in "biological naturalism" according to which mental "phenomena are caused by neurophysiological processes in the brain and are themselves traits of the brain" ([7], 1). Rose ([39], 170) contemplates in a similar way: The brain 'does not cause' the mind as would have said naive mechanistic materialists (as whistle of a steam locomotive) nor is it valid that the mind and the brain are two different types of thing as Cartesian dualism argues. Rather it is true that we have one thing, mind-brain, about which we can speak in two relatively different languages, probably in the languages of neurology and of psychology." As analogous example he gives a sheet of paper with written text, on which we may examine symbols according to their chemical composition, what does not either elucidate their meaning or eliminate their investigation at a higher semantic level. Marková also sees a solution of the problem in focusing on the properties of living organisms characterized by true and actual causality or purposefulness manifested by the interaction with the milieu and capability of Darwinian evolution (see [30]).

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