Steps towards an ecological approach to thinking

Journal of **Anthropological Psychology**
No. 18, 2007,
Department of Psychology
University of Aarhus

Abstract

This article explores possible paths and steps in an attempt to conceptualize thinking apart from cognitivism and dualism within the frame of an ecological psychology. The term 'ecological' should be understood, and will be used, in a double way, first, meaning a psychology which regards the organism-environment mutuality to be the unit of analysis, and, second, a psychology which grasps the special forms and nature of human life. This double perspective on thinking is needed. In this article the focus is on 'anticipation' which is regarded as essential in thinking. This analysis is 'ultra-realistic' and 'supra-individual' and, – it aims to contribute to an integrated general psychology and to go beyond a cognitive view on 'cognition'

(NB: this download contains the target article only – please find the commentaries on the webpage)

Jytte Bang
Department of Psychology, University of Copenhagen

Steps towards an ecological approach to thinking

> Changing the world is a very powerful way of changing behavior; changing the individual while leaving the world alone is a dubious proposition
> (Ulric Neisser, 1976, p. 183)

Thinking and anticipation – a life-world perspective on a phenomenon

What exactly is this process in humans, which psychology has named *thinking*?

From a pragmatic point of view – that is, from the point of view of ordinary practical life – this question should not present a problem. From this practical perspective, thinking can be nothing but a functional aspect of living life, of understanding and keeping in control with the environments in which humans live. What psychology tends to call 'mental functions' can be nothing but functional aspects of practical life and its environmental preconditions which afford thinking. Looking for what thinking 'is' means looking for environmental preconditions that afford thinking, just as it means looking for environment-organism mutuality in order to understand specifics about the process as an act of the individual. From a practical point of view, it is as simple as that. Thinking, thus, is part and parcel of almost all human activity: Young children have to learn what things are for and what the social conventions in their culture are. Adults have to take responsibility to themselves and to others and, thus, must plan, make decisions, and reflect upon possibilities and choices. Certain dangers must be avoided; certain goals must be reached for. Practical everyday life must be scheduled in order to coordinate with others and share social practices. There is, however, quite a gap between *perceiving* the obvious and *conceiving* the obvious. So, even if thinking obviously is an integrated functional aspect of practical human life, conceiving it adequately still needs some work to be done. This, especially, when it comes to conceiving the process of thinking in individuals, because this is very often left for traditional cognitive psychology which tends to obscure the conceiving because of an ongoing dualistic framework. In short, to reach the obvious is a challenge in two respects – first, we must try to *perceive* the phenomenon of thinking adequately as a functional aspect of practical life, and second, we must try to *conceive* it adequately, too. In this article I shall try to go deeper into how to conceive thinking adequately, that is, ecologically. But, before doing so, I shall begin by sketching what is an adequate perception of thinking.

Perceiving the obvious. A straightforward example from everyday life may help to identify the whole phenomenon of thinking that needs a conceptualization within an ecological framework.

A child is going to a birthday party of a friend. Therefore, she needs to buy a present and goes with Dad to a toy store. For the child to decide what is a proper present for her friend, she has to think, that is, she has to take into consideration several aspects of buying something for somebody: It should not be too expensive, it should be a girls' present, it should be unique and meant for exactly this friend with her interests, imaginations and so on. In short, certain specific possibilities and constraints should be considered – what is available and what is needed. Underlying and influencing this process is a personal and emotional process in the child: "what do I want to give my friend so that she will be happy and continue to like me?" Meaning, "I want to continue and to even deepen our friendship".

What we do learn from the mentioned everyday episode is that thinking is deeply *personally* and *emotionally* motivated *acting*, embedded in culturally developed systems of *meaning*, directed towards participating in some possible future situation which has to be *anticipated* for a variety of aspects – in this case for participating in a culturally developed activity setting (being a guest at a birthday party). In this episode, the anticipated *future situation* could mean in a couple of hours or tomorrow, that is, imagined time and situation separated from here and now. However, this does not mean that thinking/anticipating is restricted to such cases of time displacement. Crossing the street without being hit by a car also involves thinking in the sense of anticipating important aspects of the situational process, or, more precisely, being aware of possible dangerous events embedded in the immediate flow of acting organisms in a situation. In this respect, anticipation is a functional aspect of a lot of situations and needs not be reduced to the level of human (reflective) thinking. *Anticipating is a functional aspect of living and participating meaningfully in a world of resistance, ambiguities and choices*. Reflective thinking is just a special case of this general state. So, the everyday example shows us that thinking in humans builds on the ability of organisms to manage and to contribute to ongoing life in a world of resistance, ambiguities and choices. *Anticipating* is the needed process of an individual living organism, and thinking in humans is just a specific and unique case of this functional demand. Later, I shall return to the

specific case of anticipation in relation to the societal life of humans. But for now, it seems to be important to focus more on what is anticipation in general It is important for two reasons: first, because anticipation in general is the functional aspect of the organism-environment mutuality, and secondly, because anticipation, if not conceived ecologically, takes us directly back to the persistent problem of dualisms in psychology.

Anticipation and the need to get beyond dualism in psychology. Mainstream cognitive psychology does not exactly share the 'obvious' pragmatic view on thinking and anticipating elaborated above. Rather, it tends to separate thinking from persons, that is, from intentional individuals with bodies, living and acting together with others with whom they share interests, desires, feelings. Also, by separating and reducing thinking to a cognitive 'business', psychology tends to reproduce a three-step model of knowing – to sense, to perceive, and to think - of which thinking is regarded most apart from sensations and, thus, most apart from practical sensuous life. In general, cognitive psychology adopts a dual perspective on thinking and struggles hard to make it all fit together. While the mechanical, materialistic perspective of behaviorism focuses on thinking as an external behavioral process, idealism focuses on thinking as internal cognitive processes. In mainstream cognitive psychology, these perspectives are often integrated in one perspective which stresses internal, mental as well as external, behavioral, processes. Mayer (1992), for instance, suggests a compromise between *cognition* and *behavior* that many cognitive psychologists will probably accept. Mayer describes three assumptions that, taken together, define what thinking is: Thinking is *cognitive* and occurs in the mind of the cognitive system, it is a *process* involving sets of operations, and it is *directed* at and results in behavior that "solves" some problem. From the very beginning, defining thinking as *cognitive* reduces the analysis to the business of abstractions and technologies. Obviously, traditional cognitive psychology could easily interpret the episode mentioned above as a cognitive-plus-behavioral process of rational decision making - internal cognitive operations shifting with external behavior. Steps of decision making could be described, then, and generalized into a "theory". Adding 'experiencing emotions' to this description would probably only result in a structural theory about how cognitive and emotional elements interact more or less mechanically. Quite obviously such an abstract and structural theory is in conflict with an ecological attempt to describe and conceive thinking processes as being a functional aspect of interested, meaningful, human living, because it is not based on the existential meaning of being somebody living a life and sharing conditions of life with others. Cognitivism is an abstraction from experience and therefore mental processes are studied as abstractions. This holds true, as Bolton (1991) says, even when "... cognitive psychology claims to be a program for describing and explaining the functioning of consciousness..." (ibid., p. 107), an attempt which Bolton considers the false phenomenology of cognitivism. In his view, *subjectivism, technology* and *intellectualism* are influencing Western mind:

> "The life of the mind is seen as a series of operations, so that the success of the discipline [that is, psychology, J.B.] rests upon our technical capacity to make explicit the structure of these operations; and this structure can be characterized in purely intellectual terms as, say, problem-solving, information-processing, etc." (ibid., p. 111).

Costall (1991) adds to this critique of cognitivism by saying that the computer metaphor of cognitive psychology only seemingly goes beyond the mind-as-abstract scope for psychology. Costall is critical to Johnson-Laird's claim that the computer metaphor can be considered as a reaction to *dualism*. This should be the case, because the brain and the mind are *bound together* as computer and program. Costall comments that this "bond"

> "...permits us to treat the software of the mind as *separable* from the hardware of the body, and hence to regard psychology as an entirely autonomous science. Indeed, to treat the mind as an abstract set of instructions that controls the body is simply to reformulate the traditional dualism of mind and body" (ibid., p. 157).

According to Reed (1997), such dualisms are due to the influence of liberal Protestant thought. He provocatively describes psychology as a 'secular religion'.

> "We easily assume that the late-nineteenth-century propensity for placing the mind in the brain is a stepping stone to a secular materialist worldview and therefore is opposed to, or at least independent of, any religious view of human nature. But this assumption is wrong" (ibid., p. 5).

In Reed's opinion, psychology succeeded in becoming a science because of its defense of a theological conception of human nature. In connection with these dualisms psychology is still facing some specific gap problems, which make it quite complicated to conceive the obvious facts of anticipating and thinking. In short, the attempt to develop an ecological approach to thinking actually faces the hardest and most persistent problems of psychology, including what is psychology all about, on which grounds should psychology be founded, and what should be the proper unit of analysis. An adequate conceiving of thinking must be opposed to such kind of abstractions. An ecological approach begins where thinking unfolds, that is, in the complex *life-world* of *intentional* living organisms, including human beings. This shift from *cognition* to *life-world* and *intention* is a global and radical one. It marks not merely a quest for a new cognitive theory on thinking but rather a quest for conceiving thinking within a new global and non-dualistic perspective for psychology. It seems to be important to establish further connections between more ecological levels of the analysis, from empirical cultural studies to

philosophy of knowing. Conceiving thinking adequately, therefore, must have different points of departure and more levels of organism-environment mutuality must connect to each other. In the next part I shall try to unfold an analysis of some conditions of living life, which, in my view, seem essential if a dualistic and cognitivistic account on thinking should be avoided. One main figure in such a striving in psychology is, of course, J. Gibson. With his theory of *direct perception* Gibson outlines an important and radical alternative to dualism and cognitivism. Gibson's theory on perception is a theory of how animals come to *know* their environments. According to Gibson, perceiving is direct in the sense that there are no intermediaries between the perceiver and the thing being perceived. He abandoned the S - R paradigm set by behaviorism and dismissed modern cognitivism with its idea of mental representations operating on stimulus input. For Gibson, perception is not a response to stimuli but an observer's awareness of the environment. This awareness is based on information specific to its sources in the environment. Instead of S – R, he regards exploratory action as a basic unit of analysis which makes information available for an actively exploring organism, and perceptual learning as the fundamental cognitive process. This *direct realism* claims that it is possible to perceive the surrounding environments *directly on the basis of information already available in the environment. No mental representations are needed for that process* and perceptual learning does not mean to build up representations but to *become more aware of*, and sensitive to, available information. "Information pick-up is a process carried out by a functional system distributed throughout an animal's nervous system" (Reed, 1991. p. 178). Gibson himself puts it like this: "Samples of external stimulation", he says, "are obtained for the sake of the information they carry about the environment, not for the sensations that may (or not may) accompany them" (Gibson, 1966, p. 250), and further:

> "Instead of postulating that the brain constructs information from the input of a sensory nerve, we can suppose that the centers of the nervous system, including the brain, resonate to information" (ibid., p. 267).

From the very beginning, Gibson's ecological psychology, thus, is opposed to the Cartesian separation into two parallel entities of environmental properties and organismic properties, a gap which remained in the stimulus-response formulation. The lack (and, thus, the striving of ecological psychology to unfold) is

> "... an adequate functional account of living processes that have co-evolved with respect to a set of environmental conditions and maintain a dynamic and reciprocal relation with those conditions" (Heft, 2001, p. 15).

It seems quite clear that Gibson's theory of perception includes more levels, or, maybe better expressed, that he tries to conceptualize perception as a synthesis of evolutionary and individual processes. There must be an organism actively and existentially attending to its environment, and there must be environments worth attending to and engaging in to the organism. In that respect it seems possible to connect his position to the concepts of *meaning* and *intentionality*, for instance:

> "How are the exploratory shifts of fixation guided or controlled? What causes the eyes to move in one direction rather than another, and to stop at one part of the array instead of another? The answer can only be that interesting structures in the array, and interesting bits of structure, particularly motion, *draw* the foveas toward them. Once it is admitted that the variables of optical structure contain information or meaning, that they specify what their sources afford, this hypothesis becomes reasonable" (Gibson, 1966, p. 260).

As a consequence of his theoretical position, he became skeptical to positions that suggested abstract categories having any explanatory power as to 'cognition'. The distinction between past-present-future to some extent seems meaningless and belongs to an abstract category of 'time'. Expressions like "information does not exist exclusively in the present" and "contact with the environment has nothing to do with the present" seemingly grasp his idea of stimulus-information saying that perceiving is a process of keeping in touch with the world, it is an experiencing of things rather than of having an experience. Time seems to be only an analytical category (abstraction) simply produced in self-consciousness and introspection (Gibson, 1975). One does not have to agree with Gibson in every detail here[1], but in my view those ideas can be helpful as for basing the discussions on the ground of realism, and it is definitely needed when it comes to approaching processes of anticipating and thinking ecologically. In my view, such an approach must start with the unfolding of *preconditions for thinking*, and when studied as a process in individuals, thinking must be regarded as *a functional aspect of practical life* and of humans trying to actively manage their environments, and to participate by producing and reproducing those shared conditions of life. Admittedly, in the following, I do not focus on cases of direct *social* interaction, and consequently the analysis does not focus much on individuals being each other's environmental preconditions. This is not kept out because I do not value the importance of social exchange in an ecological theory, on the contrary. I simply want to focus on 'the environment' regarded as a general precondition for thinking in individuals. Focusing on 'the environment' might sound a bit abstract to an ecological analysis. Gibson, for instance, treats the environment in quite concrete ways, even when he is speaking in general. The solid ground affords walking, he says, and thus at the same time expresses general and specific features about the environment and about organism-environment mutuality. Focusing on 'the environment' in a bit more abstract way here, is related to my attempt is to

[1] I tend to disagree with his notion of times as an analytical category, for instance, but that discussion will be left out.

seek out preconditions for general and for specific cases of anticipation in the organism-environment mutuality. The attempt, thus, is to see how close to the phenomenon of anticipation in individuals one can get without beginning solely with the individual mind – which would only reproduce dualism once again. The dynamic and historical/developmental nature of the relation between organism/individual and environment must be the point of departure. An ecological analysis of anticipation must begin with the general phenomenon of 'living-in-(and-thus-contributing-to)-a-world-of-(changing)-order' that is the general source of anticipating activities in an individual and in an individual mind. In an ecological analysis it does make sense to claim that anticipation finds resources *in the world* when organisms or individuals attend to it with their desires and needs. The sources of anticipation lay in-between the world and individuals living in the world – thus expanding their life-world evolutionarily, historically and individually. In the following analysis 'the world' refers to the natural and the cultural world without any efforts to differentiate in the first place. From an ecological perspective, anticipation must be regarded and conceived as a functional aspect of everyday life, it is a very common way for organisms to guide themselves through practical activities throughout a day. Everyday life for humans includes participating in and adding to cultural life, and consequently an ecological approach to thinking in humans also must be aware of differences that such cultural/societal environmental differences create. This is the double perspective of *organisms-in-natural-environments* and *humans-as-societal-organisms* proposed in this article.

An ultra-realistic and supra-individual analysis of anticipation

Let me try now to sketch some possible steps towards such an integrated natural-cultural perspective on thinking in humans. As mentioned above, *anticipation* is an essential feature of thinking, and so, this is where I want to begin. How can psychology succeed in conceiving anticipation as a functional aspect of the natural-cultural environment of humans? Because anticipation is the essential phenomenon of thinking, *transcending the situation* (in the here-and-now sense of the word) is what is actually going on. Individuals are not only embedded in situations, neither do they only adapt to them. Individuals cross the what-is-present-here-and-now, step out of immediateness when reaching into the future. The child in the toy store did so while being present there. She is keeping in touch with her world, not just responding to stimuli. She is acting at a specific location at a specific time, but the *situation* of buying a present is not restricted to this. The child imagines future events and makes decisions which promote some possible experiences rather than others. It all shows that anticipation is a psychological process in an individual who tries to make some sort of a 'grip' into the future to be able to manage whatever it might bring. It is a complex subjective process of considerations, voices heard, events imagined, desires, feelings and so on. It is a process of experiencing possible experiences of shared subjectivity, not "cold" cognition. Concepts are needed that can help explain how attending the future is possible and what the specific human forms of this anticipatory process are. So, the question is: where should we turn our heads to if appealing to thinking as a 'mental construction' or 'imagination' leads us directly back to dualism and cognitivism? My suggestion here is that before approaching thinking in humans, an ecological analysis of anticipation should begin at *supra-individual levels*. The analytical grip of this exploration is to expose the existence of anticipation as a crucial *pre-thinking and pre-individual phenomenon* in more ways. By doing so, it will hopefully become clearer that it is wrong to adopt anticipation as a process which should primarily be explored by studying supposed individual human cognitive structure.

On the contrary, anticipation is a core concept of psychology and is an embedded part of every sort of organism-environment mutuality at all levels. I have decided to name the analytical grip of this analysis to expose through *ultra-realism* – consciously contradicting and challenging commonsense ideas about anticipation as a primarily 'high-level-mental' phenomenon, because it potentially creates a false dichotomy between lower and higher psychological processes[2]. Overall, the analysis serves as a provocative counterpoint to the *extra-realism* (idealism) of cognitivism and representationalism. I believe that anticipation is an essential part and a functional aspect of all forms of dynamic life, definitely not only in humans. Further, I shall argue that to find the sources for anticipation in living organisms, one must look into *the order and regularities of the dynamically changing order of the world itself*. This view I name an ultra-realist position. Now, I shall argue that anticipation can be approached in this essentially non-dualistic and non-cognitivistic manner by illustrating how it is embedded in different ways in 1) an organism's activity (generally), 2) environmental features (specifically), and 3) in human's environment (the special case). The three steps of analysis will focus on three concepts which illuminate in different ways and at different levels some pre-thinking aspects of anticipation in individuals. These concepts are: *search activity*, *the general-particular mutuality*, and *ecological knowledge*. In different ways they all put a focus on how far it is possible to go into conceiving thinking in humans *without any sort of appeal to mental construction*. The analysis is preliminarily separated into three steps, but also it should be considered a way to dynamically cumulate preconditions for thinking in humans. This means that further steps of the analysis are adding to the previous steps, societal preconditions integrating other preconditions.

[2] It should, of course, not be obscured with the fact that thinking in humans finds its resources in the societal nature of humans.

Anticipation: search activity

It may be that thinking means to potentially create future situations for an individual[3]. However, this does *not* mean that the process of potentially creating future situations *depends* on thinking. The phenomenon of anticipation can fully unfold in processes without thinking, which N. Engelsted (1989), a Danish colleague, nicely illustrates in his dialectical analysis of *auto-kinesis* in simple organisms. The analysis is based on activity theory, and, according to Engelsted, a moving organism is, of course, *acting in relation to its surroundings*. This is the domain of perception and cognition, that is, *knowing* of and about its surroundings. However, such a concept of acting is insufficient, because an organism is moving around even if it is not exploring anything specific. Activity, thus, he regards *a principle of life*. Engelsted helps to more fully stress the fusion of (in his words) the conative (striving) and cognitive elements and regards intentional anticipation as the essence of psyche. The *intentional existence of the object in the activity of the subject is the general characteristic of the psyche in all its forms*, i.e. also in the very first form, meaning to regard psyche a *teleological principle* of life. Psyche and teleology, Engelsted says, refer quite simply to the same thing.

> "Man has true intentionality....True intentionality thus exists in the real world. This has been called psyche throughout the history of thought and its special quality is precisely the teleological, i.e. the genuine reference to a future situation or goal" (ibid., p. 30).

Again we see that Engelsted's activity-theoretical approach claims *intentionality* and *telos* to be the basis of psychology – not perception. But how did it come into existence? To answer this question is an important step for a theory of thinking, because it offers an opportunity to get beyond cognitivism. Engelsted distinguishes between *servo-kinesis* and *auto-kinesis*. Kinesis is the pure result of natural selection, a feedback mechanism working when a negative stimulus causes the organism to respond by moving away (or a positive stimulus causes an organism to get nearer some object). But there are not only positive and negative stimuli in the world (the traditional domain of behaviorism). There are also the presence and absence of the stimuli. The interesting case is, of course, how to characterize a situation where stimuli important for an organism is not present, that is *the absence of a positive stimulus*. In Engelsted's analysis, this positive absent stimuli is food, but probably it should be generalized to other aspects of life as life forms develop. How does psychology conceptualize a situation characterized by *the absence of positive stimuli*? This constitutes a problem, which leads Engelsted to the principle of auto-kinesis. Auto-kinesis (or *spontaneous activity*), he argues, is a reality of life, favored by natural selection. The situation is that when there is a lack of positive stimuli, there is no positive stimulation available for an organism. When an organism is off contact with the stimulus (food), it cannot eat, because it cannot eat what is not there. But it must eat, or it will die. Activity is what makes it survive another day. So, activity occurs in organisms without present external stimulation. This behavior is not uncaused, because it is based on the laws of biochemistry and metabolism. But *it is uncaused as for the surrounding environment* – no external stimuli prod it along. Auto-kinesis is quite different from servo-kinesis, which belongs to the world of homeostasis.

> "Servo-kinesis is a model example of the stimulus-response scheme and represents a direct relationship with controlling environmental variables. Auto-kinesis, on the other hand, per definition defies the stimulus-response sequence, since the response appears spontaneously or prior to the biologically meaningful stimulus. There is no direct relationship between the behavior of the subject and the sought for stimulus. No chain of physical-chemical events causally connects the two. The moving animal receives no controlling influence in the form of energy or information from its teleonomic target" (ibid. p. 38f.).

The auto-kinesis is simply the first form of activity, understood as a behavior relating, not just responding, to the external world. Hence auto-kinesis offers an alternative opening to the understanding of psyche.

The effort to connect the disconnected presupposes in itself the connection. It simply implies that the unrealized link between subject and object that the auto-kinesis tries to realize, is already a biological reality. The absent must already be present – to put it in a Hegelian way. With auto-kinesis the teleological relation between the subject and the object is brought into existence – meaning that the subject de facto acts with reference to a future goal. "This subjective relating is *psyche* and its qualities are intention, goal, idea, motive, etc, which qualities are brought into existence by the cheer fact of auto-kinetic locomotion. Psyche, thus, is not a substance or a force. It is an expression of a unique material relationship in the world, as are all the basic steps on the cosmogenetic ladder, the nuclear, the atomic, the chemical, the living." (ibid., p. 43). Psyche is teleological activity. "From monad to man psyche is self-movement and cognition united in the self-willed goal-intending act" (ibid., p. 46). The *absent present*, the *non-presence* of objects or the *negative* (a Hegelian term) could be regarded as just another term for the same idea. My suggestion is that we need to expand the importance of such an idea into psychology as such. By doing so, the phenomenon of the absent present has no longer just to do with a lack of food, but is defining for every individual psychic activity, including perception and thinking. As for humans' thinking, I suggest the absent present to be understood in more ways.

[3] This does not exclude problem solving or other phenomena within a traditional 'cognitive' domain, because searching for a solution not yet known (or searching for the problem itself) is just a special case of anticipating.

First, an individual is prepared for managing the absent present, that is, going into the field of anticipation a) because of our common evolutionary background and b) because of our being embedded in a societal and culturally produced world. These points represent two aspects of how organism-environment mutuality makes sense. In two different – but reciprocally influencing – ways these aspects point to some general features of the natural and the cultural environment which both afford 'anticipation'.

Second, because of such natural and cultural preconditions an individual is able to manage the absent present individually as a basis for individual development, life experiences, knowing and thinking about self and world, and so on. Managing the absent present in processes of reflective thinking is one, but only one, example of how such natural-cultural preconditions can be picked up by individuals. The principle of the absent present is a biological principle in that the search activities of a specific organism share this organism-environment mutuality with other organisms. In this respect what belongs to the individual is actually not only individual but goes beyond individuality. As mentioned above, the environments in different ways afford anticipation, because the absent present is a general (global) feature. Thus, an individual is always already embedded in what is a) biologically and b) socio-culturally *general*. The next two paragraphs in this article is devoted to further elaboration of this idea, beginning with how the world in general affords anticipation and after that how human societal production can be regarded a resource of anticipation. This step is regarded as a small but potentially important step following the first one. In both cases anticipation remains treated at a supra-individual level. If the organism-environment mutuality – expressed in terms of autokinesis - is regarded as *biologically general*, there must be some conditions and constraints – some order - in the world itself which promote the general. The world as some individual meets it can be regarded as a *relatively stable order of relations and object across time*. If not so, no biological general could occur. A teleonomic activity like searching for food could not be, if not for the relatively stable existence of available food. It holds true as to human societies and practices as well. So, why is it so important to focus on relations, complexities, contradictions, ambiguities? It is so, because what is picked up (and this way added to) by the activity of an intentional individual is not simply isolated or static elements but objects of action embedded in dynamic relations, contradictions, and complexities. Showing that it is possible to attend directly to and act upon those dynamic relations also potentially wrings 'generalizations' in the human world of concepts and understanding out of the grip of 'mental constructions'. Thus, for this purpose I try to bring perceiving in the Gibsonian sense together with anticipating in the sense of managing changes, contradictions, ambiguities etc. In this sense, anticipation must be a kind of perceiving that is, perceiving what is not 'there' yet or perceiving the absent present, the potentialities of material, the future possibilities for action and more. However, perceiving the absent present or perceiving a future situation means 'perceiving' in an expanded interpretation of the term. What is absent present means present in an absent way and not just 'absent'. What is really absent cannot be perceived, but the traits and the signs of it can. So, in this expanded sense the absent-present, the future possibilities, the ambiguities etc. are perceived. So, what is needed is an expanded view on *perceiving* as well as on *presence* of something – of *knowing* as well as of *ontology*. This we can only reach if we give up regarding perceiving and presence from the viewpoint of empiricism and elementarism. Perceiving the absent present does not make much sense from such a perspective, because elements are taken literally to mean finite units. It does not make much sense, for instance, if I claim that I perceive a person sitting in his favorite chair at home and actually he is at work and will only be sitting in the chair later in the day. 'Absent' in this literal sense means 'not being present', while what is absent present 'is there'. One can only conceive the absent present if breaking with elementarism. Therefore, a theory on thinking which wants to include also a Gibsonian perspective must be careful as to ideas of *what* is actually perceived, when perceived directly. Gibson's concept of affordances is such an expanded view on what is perceived, and his theory of perceptual learning is approaching the same issue. Thus, I believe that it is important for an ecological theory on thinking to elaborate more on the *perceiving-anticipating zone* of knowing. For now, let me try to take some further steps into my attempt to approach such a zone. The next step in this ultra-realist and supra-individual analysis will be to search for what could be the preconditions for a perceiving-anticipating relation in-between the individual and his/her world.

Anticipation: the general and the particular – a synthesis

What stands clearly in relation to teleonomic activity of an organism is that what is *general* (Danish: almen; German: Allgemeine) and what is *particular* in relation to individual activity cannot be separated. An individual organism acts in particular ways in particular situations in particular environments, but at the same time, teleonomic activity is a general biological aspect of the general mutual organism-environment relationship, and environment itself reveals general (stable-changing) order in some particular ways. Let me now try to relate this idea of a dialectical general-particular unity to my attempt to conceive thinking. This step marks a shift from search activity as a biological precondition for some individual 'meeting' the world and what could be searched for there. Of course, those two form an inseparable unit of organism-environment mutuality, which also seems to be Engelsted's point of view. My shift of focus is a shift within such a perspective, rather than a shift of perspective. Of course, an individual is biologically ready for an epistemic situation in which the individual needs to think and to learn. But thinking and learning itself go beyond biology. If the epistemic situation is regarded as a case of an individual *meeting* the world in the sense of watching it and trying to think and learn about what is watched, the epistemic situation is a *spectator* situation and focus will be on *cognition* in the first place. Anticipation and

thinking cannot be conceived adequately, then. We need to regard an epistemic situation as a case of anticipation made possible in that an intentional agent (or more) enters and gives life to some situation. If only perceiving-acting focus, we cannot explain thinking. If only anticipation, we cannot explain the directness of the epistemic situation. Thus, a united perception-action-anticipation perspective is needed. So, the questions in this part of the analysis are how it makes sense to say that anticipation is *in-between* the world and an individual. In my attempt to explore this unit of perception-action-anticipation, I shall now try to explore it in more detail from the perspective of Hegel's dialectics and of James' radical empiricism. My hope is to explore how those two perspectives respectively and in connection add to the ecological analysis. I shall begin with Hegel, because his contribution is already present in Engelsted's theory of psyche. The idea of the absent present, which is a core idea in Engelsted's definition of psyche, is as Hegelian as can be.

Hegel and the dialectics of change and of knowing. In cognitivism, thinking is conceptually based upon an individual mind working with sense-data. Therefore, thinking is regarded only as a mental act of creating or constructing general *ideas* and *knowledge* on the basis of particular sense-data (particulars). In other words, the particular and the general is *seemingly* separated and only exist unified in those mental constructions named *concepts*. According to Hegel (1809), a thing (particular) always shows its own general relationship, its essence which is what a thing cannot do without, or it will no longer be this thing. The essence is what makes a thing to what it is, that is, its genesis (history of development). A sheep, for instance, lets the genesis of the sheep species appear in the individual organism. What makes an individual (a particular) sheep a sheep instead of a horse or a cow is its genesis. If essence appears, this means that appearance is somewhat essential to the phenomena. That is, what is acted upon and what is perceived, is not a superficial surface of things but essences, loaded with meaning and developmental change. No matter if the perceiver is aware of this process or not. Therefore, the dialectics of essence and appearance is a general condition of knowing not only in humans but in all organisms with a psyche. What animal would be able to survive, if not for knowing the general of appearances? In my opinion, this is exactly what Gibson's concept of affordance actually grasps – a general functional relation between an organism and its environment, specified in relation to specific 'things'. So, from a Hegelian perspective we can also find a somewhat parallel argument against traditional empiricism and elementarism. Even though we relate and act upon particular things and objects (which could actually be called elements), they are not isolated units but appearances of the general (lines of development). Hegel (ibid.) offers an example which seems to illustrate the dialectics between the particular and the general: What has been said if somebody picks up a piece of paper and says "this paper"? Seemingly, a real thing's real *particular* personal and individual being. But the problem is that what somebody tries to say, by the help of language, disintegrates if somebody tries to say it. To describe "this paper" would be a process without an end, because what one all the time expresses is *the general*. "This" paper is each "this", that is, the general. It does not help if one says "one single thing", because everything is a single thing, and therefore one has only said what is most *general*. If one presents the piece of paper, what is presented is one *here* among many *here's*, that is, the general. One can draw the conclusion from this analysis that no relationship and nobody who tries to come to know the world can escape the synthesis of the particular and the general. This synthesis is a developmental (genetic) one in its nature, and in this respect the general (genesis, essence) appears *as* the object and is not "in" or "hidden behind" it. In which ways can Hegel's dialectics be considered as opposed to empiricism? It can, because empiricism in his universe is related to formal logic and to the making of abstract and formal conceptualizations on the basis of differences and similarities among particulars thus being categorized. This process is what he calls *understanding* and understanding to him is only related to abstract formalizations, not to discovery of the dynamic and *concrete* being of the subject matter given. According to Hegel, what is concrete is not just what is before our senses and available to perception. Concrete refers to the history of the subject matter, to its *becoming* and has nothing to do with the making of abstractions. On the contrary, concrete knowing is knowing about what is concrete, what is embedded in dynamic, changing, and evolving – that is, *dialectical* - processes in real world. He does not underestimate processes of understanding, but tends to consider them only a point of departure of knowing – a kind of immature form of knowing (Hegel, 1812/1969).

In Hegel's universe, analysis, matter in isolation, identity and difference, abstract universality are all concepts related to empiricism. It is considerations of a subject matter from outside, not from the position of its own dynamic and concrete being. Dialectics is what grasps such processes. Dialectics he regards as the negation of the one-sidedness and limitations of the predicates of understanding. And something is suppressed and put aside by being regarded as finite. In his analysis of *understanding*, he points to the problem of subject matter as isolated particulars suppressing themselves by being conceptualized as finite. This neither leaves room for movement, nor for change or emergence. Therefore, to better grasp these processes, Hegel introduces his dialectics of *being and nothing*. An object of knowing is not just 'being' in the finite or particular and abstract form, it is 'nothing' as well. By introducing 'nothing' Hegel points to processes of *becoming*, that is, what is not (yet) there, what changes over time and so on, as an immanent feature of being itself. Therefore, a particular is never just a particular, it is co-existing within dynamic processes of change and becoming. "... nowhere in heaven or on earth is there anything which does not contain within itself both being and nothing" (Hegel, 1812/1969, p. 85).

Hegel's dialectics makes it more than difficult to maintain the idea of 'knowing' and of 'generalizations' as processes solely based on mental construction, that is, a process of picking up particulars or *elements* as the basis of mental construction. Any particular is interwoven in dynamic processes co-defining it as it is *nothing*. This means that to know (and think) about particulars is to know (and think) about the general as well. So far, the source of thinking is not at all the

cognitivist assumption of an individual being separated from the world. Thinking is not the third link in some process of knowing and it is not distanced from the world and from sensuous life. Neither is the situation that of a particular individual *meeting* (watching) particulars of the world. If so, thinking would be the only source for the general and the general would be regarded solely as conceptual constructions. It would be impossible to agree with others about conceptual understandings, because every individual would have to construct those relations by an individual mind. Thus, knowing is not primarily a process of counting and putting things into formal categories, that is, of mentally *creating* abstract categories on the basis of sensed particulars. Such an idea is just reproducing the idea of anticipation as a solely mental process. The synthesis of the particular and the general *is* the physical world being dynamic; it forms a source of picking up information about dynamic processes. Gibson grasped this with his concepts of direct perception, affordance, and invariants, and Hegel's dialectics contributes to conceiving this idea by pointing to the pick-up of general-particular unity and of being-and-nothing. I have tried to argue that a synthetic view on the world and on dynamic processes also forms the basis for an ecological approach to anticipation as well. Anticipation cannot happen without acting in relation to, or knowing about, such synthesis. Not only species evolve because of self movements (meaning that they themselves can be regarded as a synthesis). Individual's thinking and knowing find its resources here too. The point being that *the germ of anticipation lays in the qualities of the world itself and in the organisms having capacities (species-specific and individual) to engage in it*. Further, this point puts a focus on the nature of the world and what counts as information for some individual – broader; it puts focus on *ontology* within an ecological frame of reference. In my view, dialectics may contribute to an ecological ontology. It is another word for development and change, and thus engaging in the world means engaging in dialectics of the world, in tensions, ambiguities, and contradictions. This means that individuals are not just picking-up particulars. An individual is picking up relations and qualities of relations - tensions, ambiguities, and contradictions, as well as continuity and synthesis. It is all a part of a dialectical ecological ontology. Tensions, ambiguities, and contradictions, and more are perceived directly. Clearly enough, 'adapting' to such aspects of the world is adapting to movement and change, but at the same time movement and change cannot be adapted to, because adapting is a way of establishing some kind of homeostatic order. The only way to cope with such movements and changes, with dialectics, is to adapt in a *non-homeostatic* way. Probably *learnability* in organisms can be considered as a phenomenon related to living in a dynamically moving world of ambiguities. Thus, at least some organisms (if not all?) must have the capacity of *adapting by not adapting*. My final point in this part of the ultra-realist analysis is this: *Anticipation is a potential, an offer, and a demand coming from the world, and individual organisms expand those conditions in different ways through dialectical synthesis*. 'Being' means 'becoming', then, and 'adapting' means 'expanding' and 'changing' reality. Putting relations into the world is not only a playground for philosophers; it is the very practical and existential conditions of life itself. A critique of empiricism is the foundation for William James' *radical empiricism* (Heft, 2001). And interestingly enough, some parallels to James' theory and to the ecological perspective inspired by him can be found in Hegel and, further, in the philosophy of Marx. James' radical empiricism, as well as Marx' dialectical and historical materialism can both be regarded as attempts to break out of this empiricist-rationalist paradigm and dualism though in different (but equally fundamental and very important) ways. To better focus on such possible and productive crossings of theories, an analysis of some core ideas of both are needed. Later in the article the contributions from dialectical materialism shall be picked up. Preliminarily, in this part an analysis of James in relation to Hegel shall remain in focus. In general, unfolding those theoretical perspectives in relation to each other may contribute to overcoming empiricism and elementarism, which is crucial to an ecological perspective on thinking.

William James and radical empiricism. To James, one of the main sources for an ecological turn of psychology is a critical correction of empiricism which also seems to undermine the foundation of rationalism. Ordinary empiricism, he says, "...has always shown a tendency to do away with the connections of things, and to insist most on the disjunctions" (1912, p. 42f). Based on such a world-view, the efforts of rationalism have always been "... to correct its incoherencies by the addition of trans-experiential agents of unification, substances, intellectual categories and powers, or selves ..." (ibid.). James suggests radical empiricism to open up for a new world-view:

> "To be radical, an empiricism must neither admit into its construction any element that is not directly experienced, nor exclude from them any element that is directly experienced. For such a philosophy, *the relations that connect experiences must themselves be experienced relations, and any kind of relation experienced must be accounted as "real" as anything else in the system*" (ibid., p. 42).

By suggesting the scope of radical empiricism James tried to break out of dualism by unfolding his idea of an "undifferentiated experience that is immediately and prereflectively encountered" (Heft, 2001, p. 26) – the immediate flux of life called *pure experience*. "The instant field of the present is at all times what I call the 'pure' experience", James says, "It is only virtually or potentially either object or subject as yet" (James, 1912, p. 23). To James, it is a collective name for just what appears, for time, space and for being there. This pure experience provides the "material" for the selective function which characterizes processes of knowing (Heft, 2001). A multiplicity of potential structures can be realized in pure experience through this selective process, and, thus, the object known and the knower are each embedded in contexts of relations with their own structures. The *multiplicity of potential structure in pure experience* and *the selective function of*

knowing form the basis of his radical empiricism, which is an ontology putting *relations* into the world. By so doing, he banished the empiricist ontology and its account on knowing. According to empiricist ontology, the world is composed by elements, and relations between such elements are established only through associations in experience, not as a discovery of existing structure in the world. He also banished the idealist account on order and structure, according to which the problem of the arbitrariness of associations should be resolved by proposing that the order in experience originates in the structuring process of knowing itself (ibid.). This means that the relations between the knower and the known (subject and object) should not be treated as discontinuous entities. From the point of view of a radical empiricist we need not have any representative theories to fill out the gap with 'mental representations'. There is no such discontinuity between knower and known. What is experienced as continuous *is* continuous. James even stretches this view to the process of experiencing experiences:

> "... an experience that knows another can figure as its *representative*, not in any quasi-miraculous "epistemological" sense, but in the definite practical sense of being its *substitute* in various operations, sometimes physical and sometimes mental, which lead us to its associates and results. By experimenting on our ideas of reality, we may save ourselves the trouble of experimenting on the real experiences which they severally mean. The ideas form related systems, corresponding point for point to the system which the realities form; and by letting an ideal term call up its associates systematically, we may be lead to a terminus which the corresponding real term would have led to in case we had operated on the real world" (James, 1912, p. 61).

Experimenting on our ideas is like being virtual knowers, and we can become actual knowers of something because of the percept's "retroactive validating power" (ibid., p. 68). Becoming an actual knower of something must be like returning to the flow of reality and of life, returning to the *that* but now being able to know it is the *what*. It is knowing in a more complete sense, according to James, and knowing of the world this ideational-perceptual way is the form of thinking unchallenged. I believe that the needed awareness when crossing the street without being hit by a car might belong to such unchallenged thinking. With his radical empiricism, James offers a way to grasp continuity of knower and known, of ideas and what they are ideas about, of percept and concept. It is all a part of processes and transitions of life, the rich reality of *that* in relation to which knowing can never be a static relation. By returning to the richness and semi-chaos of reality, the process of knowing is validating itself. This also holds true as to two minds sharing knowing when they share the same object, buying something for money or verbal exchange like making an appointment to meet each other somewhere.

This contributes to an overall non-dualistic approach to anticipation, because, essentially, anticipation is a part of the dynamic nature of the world. What can be changed must be change*able*[4]. To sum up, from the theoretical perspectives presented above it is really not possible for organisms and individuals to 'adapt' to circumstances and conditions of life or even to events or situations in which they participate. No situation is closed or fixed, and entering it means expanding it and changing it, thus enriching the situation as well as the self. Attempts to get along with a situation (such as entering a toy store for the purpose of buying a gift for a friend) means to anticipate possibilities, openings, contradictions, ambiguities and more, sometimes by perceiving and sometimes by imagining as well. According to Gibson, perceiving is direct in the sense that there are no intermediaries between the perceiver and the thing being perceived. This is a very important point in direct realism. In my view, the synthesis of being and nothing, suggested by Hegel, contributes to the issue of how perception can be conceived as being direct without ending in the immediateness of a behaviorist S – R formula. By adding Hegel to direct realism one may say that there are no intermediaries between the perceiver and the thing being perceived – except for *nothing*. *Nothing* is not an empty concept[5] but refers to dynamic relations of becoming and changing, which is all a part of situated activity. Not only some object (particulars, elements) but its *nothing* is perceived directly: its boundaries, its being interwoven into relationships with other objects and processes, etc. Therefore, an immediate situation is always-already mediated in this Hegelian sense. Thus, the immediate is negating itself – a point that must be taken into consideration when claimed that perception is direct[6]. So, it is not possible to single out anticipation as some 'cognitive' function. If it is a function it is a function of life, deeply and inseparably interwoven with existential needs, desires, wishes, acting, etc. Living, feeling, acting, anticipating, and producing cannot be separated in human life. Marx has captured part of it from another angle with his theory of *societal production*. At a societal level, changing and expanding the world has reached its organized and institutionalized forms. It is a continuity as well as a change of the general organism-environment relation elaborated above into a societal ecology. The question now is if, and in which ways, a theory of societal production can contribute to an ecological perspective on thinking. In the next paragraph I shall try to continue my ultra-realist and supra-individual investigation of this issue. I want to study the supra-individual sources of thinking in humans, and the main focus will be on *ecological knowledge*.

[4] In spite of the fact that James (1898) is quite critical to Hegelianism.
[5] Interestingly, Emiko Ohnuki-Tierney (1994) suggests the term 'zero signifiers' (signifiers without materiality of linguistic labels or object) to highlight the importance of the dynamic interplay between the objectified and non-objectified signifiers in a semiotic/symbolic system. Zero signifiers, thus, is an expression of the power of absence.
[6] In this sense, *mediated* does, of course, not mean to bring something in between the perceiver and the thing perceived, such as some instrument to focus attention or some culturally developed concept that serves as a 'schemata' for what can be perceived, that is, perceiving being cultivated in the way Wartofsky (1980) suggests.

Anticipation: Ecological knowledge and societal ecology

The term *ecological knowledge* is borrowed from Heft (2001) who uses it to reject the Cartesian-Newtonian universe which claims "... a dichotomy between a meaningless material world and a subjective, meaningful psychological realm ..." (ibid., p. 329). On the contrary, ecological knowledge refers to the existence of *meaningful features* of a common environment: "These meaningful features, while being *products* of individual and collective action, are at the same time fundamental to, and *constitutive of* individual knowledge" (ibid.). Tools, artifacts, representations, social patterns of action, and institutions all belong to what can be called ecological knowledge. The concept of ecological knowledge comes very close to Leontjew's concept of *meaning* and to his theory of how *meaning* is produced in a societal and historical process (Leontjew, 1983). Leontjew's concept of meaning builds on Marx' idea of *alienation*, and I shall now try to weave the concept of ecological knowledge into a general view on societal ecology, because it is essential to an ecological perspective on thinking in humans. In Marxism what are foremost are individuals participating in societal production meant for supra-individual purposes. *Alienation*, not *adaptation*, is the core concept. The concept of alienation is an important one in my search for an ecological approach to thinking in *humans*. A search for thinking in humans implies searching for what is specifically *human* and specifically *humans' conditions of life*. According to Marx, societal production is what constitutes and defines human life – an idea echoed in Leontjew's (1983) concept of *meaning*. Marx' (1845) idea of societal production as constitutive for human life seems to be important to a theory of thinking in humans. Producing own life conditions (collectively as well as individually) means that anticipation is always-already a societal precondition to individual psychological processes. Societies cannot emerge and cannot develop or change if not for anticipation. Anticipation is, so to speak, embedded in the materiality and ideality of human organized life and it can be observed how humans collectively use those preconditions for societal purposes. Also, anticipating activities are expected from everyone who wants to be an included member of ordinary societal life. In the Western countries, the educational systems serve as examples since *not* participating 'appropriately' in school activities and *not* living up to what is demanded by the school system means moving onto a high risk zone for being excluded from future possibilities that a student might otherwise have had. Societal production is not only a matter of producing material entities for human needs. Societal production is a matter of producing and reproducing relations among human beings as well. A computer, for instance, is a material product, but also it is an artifact used for reproducing and expanding specific historically developed forms of societal practices. In this sense, a computer expresses ideal aspects of human life. Ideality, thus, is a part of a societal material production and a part of practical activity. The concept of 'the ideal' should be handled very carefully because it is loaded with pre-realist meaning. From the perspective of idealism (representationalism), ideality occurs as mental representations (ideas) in some individual's head. From the perspective of dialectical materialism, however, ideality is a part of the human world due to production and to the shaping of human societies[7]. This perspective focuses on the ideal aspects of the human world. Ideality expresses collectively unfolded attempts to manage relations and expand into new relations. As a part of this process relations themselves get into focus and become objectified, so that they can be managed in ways similar to material objects. Intellectual work, thus, only differs from other forms of practical work as to what are the features and the nature of the objects worked with. As the Russian philosopher E. Ilyenkow puts it, ideality is

> "...the historically formed modes of human social life, which confront the individual processing consciousness and will as a special "supernatural" objective reality, as a special *object* comparable with material reality and situated on one and the same spatial plane (and hence often identified with it)" (Ilyenkow, 1977, p. 79).

Ideality exists in the world as a result of societal movements and changes caused by humans. It can be found in rules, laws, books, pictures, institutions, communities of practice, and so on and its form of existence is both material products and human activities – habitual ways of doing things (Bakhurst, 1991). So, ideality is not just ideas. Ideality can be regarded as a special *human form* of history crystallized, reproduced and changed over time. In this way, ideality in human societies is discontinuously-continuous with the general process of picking up and expanding relations described above: societal life creates newness and expands human life, but at the same time the basic processes of anticipating are not altered. In short, human societies make up a *societal ecology*. With his concept of *meaning* Leontjew (1983) contributes to conceiving societal ecology. He has adopted the idea of thinking as a process deeply connected to the practical life of human beings. Thinking is not contrasted to practice or to sensuous life, and it does not belong to an isolated world of ideas. Following Leontjew's theory, it becomes possible to realize how thinking is connected to practical human work and productivity, how thinking is a functional aspect of practical human life. The supra-individual nature of societal ecology and of ecological knowledge, thus, is the specific ecological sources of thinking. Parallel to the previous analysis of the natural world it is essential to a realistic and ecological study of thinking to reveal the specific features and dialectics of such a societal ecology. An example: Some toy (say, a car) in a toy store is not only pieces of material, it is expressions of human work in the sense that somebody has produced the car and somebody else has produced the societal practices into which cars fit. Furthermore, the car is also an expression of the societal practice of letting children play with representations of adult human practices – in short, a toy car *is* ecological knowledge revealing material

[7] Again, the concept of 'zero signifiers' could add to this analysis.

and ideal features. It can be a gift, and 'gift' *is* ecological knowledge, too, embedded in different conventional ways of *doing* gifts – having means doing, and vice versa, in the life-world of humans. Anticipation intersects having and doing in that doing always implies exploring and expanding what one 'has'. 'Having' a favorite thing, for instance, is a very personal and emotional experience. A child's favorite teddy bear is an emotionally important thing in the life-world of the child, and love might very well expand it into a uniquely ragged expression of child-bear history. Thus, humans are able to not only *perceive, experience, and use general conditions of life* but to *expand and objectify those conditions*, that is, to produce new conditions for living. Thus, tensions, ambiguities, and contradictions are not just perceivable but discoverable and produceable as well. They are mysteries and people find them intriguing. When discovered, they become objects in themselves and form the beginning of institutionalized intellectual exploration. If discoveries or theories can help explaining or changing something, they are good tools (at least in a pragmatic sense), and they spread around in society. Discoveries, objectifications (reifications), and expansions create new relations and synthesis, thus adding to *what* as well as *how* humans can think.

Thinking approached from the perspective of psychological ecology. With the 'what' and 'how' relation let me now return to the child in the toy store and how my attempt to approach thinking ecologically may contribute to an interpretation of that case. It is a practical and recognizable everyday situation and thus it might be seen as a prototype for how and where to begin when conceiving, anticipating and thinking ecologically. What and how the child thinks in such a situation in general has, of course, to do with how the child, within her life-world, as an intentional agent explores the dynamics of the *global situation*. The global situation (at least) includes this: She has left her home and now finds herself in a crowded room where she has to act, to make decisions and, thus, to anticipate how to act mindfully and purposefully with respect to the future. After buying the present, she has to move home again and then get to the birthday party, where she will give the present to her friend. The situation of buying a present in a toy store is not simply a situated activity, if by situated is meant somebody acting in some specific environments on some specific time. An ecological analysis of her buying a present is not as simple as that, at least not if one wants to take seriously the analysis of the absent present and the societal ecology elaborated above. Both parts of the analysis suggest that the *situation* is an ill-defined category being loaded with meaning: it is not at all a restricted here-and-now event. I stress this because of its potential theoretical and methodological consequences. It seems quite difficult to insist on a cognitive-structural description of the thinking process of the child, because it would end up being a fixation projected from the child's mental apparatus into the world and that would be quite disrespectful as to the complexity and dynamics of the child's acting in the global situation[8]. How and what the child thinks is dynamically related to how the child relates to herself as an intentional agent in a human life-world in which she continuously and (to her) meaningfully generalize experiences (I neglect un-dynamic concepts like 'schemata' or 'scripts' here; they have no explanatory power). In a dynamic global situation thinking is 'global' if the child is meaningfully involved; because of that we need to study the more or less specific and/or general features of 'globality' of the situation for the child if we want to conceive thinking ecologically. This is the overall theoretical and methodological claim following the analysis of the article. In somewhat abstract terms concrete cases of 'globality' might be analyzed helpfully by the suggested concepts of 'presence' and 'absence'. When anticipating in a situation like this one, the child needs to manage the 'present present', the 'absent present', and the 'absent absent' at the same time in her process of figuring out what to buy. Clearly enough, the 'present present' is a part of the situation, because it simply expresses the objects and persons actually being located at a certain place at a certain time. All this can be attended to directly. The girl can pick up things, look at them etc. The 'absent absent' refers to objects and persons that are not present because they are at some other location. It means that they cannot be perceived. However, presence or absence of objects and persons is not only a matter of either-or, as the analysis has illuminated. Even though certain persons are not there, they might play a role in the process, either because they are important persons in the child's life and therefore influential, or because they in general participate in keeping up different societal institutions, practices, habits, etc. Similarly, even though certain things are not there, they may play a role. They are absent present. Actually there is a countless number of absent present aspects of the situation. The child will try to navigate by *being aware (or un-aware aware) of what to be (or not to be) aware of* as well as *how to be aware of it* when anticipating what to buy. The motives and the feelings of the child is a crucial part of it. An ecological analysis of a situation must unfold all the subtle relations between perceiving and anticipating, both being part of intentional subjective acting and exploring the present and present absent aspects of the situation. The child might want to buy an attractive doll, for instance. But what are her motives for that? Not only that it is available, that is, present. Playing with dolls is part of girls' play communities; it is part of social sharing, processes inclusion and exclusion, of joyful time and much more. In addition, certain dolls have become fashionable and giving a fashionable doll to somebody is a loving gesture. Of course much more could be added to the analysis of the situation. However, the point is that when a child sees the doll, gets excited, and decides to buy it for a friend, she is buying not only a doll but all that is related to the doll – the societal ideality related to it. She is exploring the field, reproducing cultural

[8] It should be mentioned here that J. Dewey's concept of 'inquiry' and his theoretical approach to the 'situation' is relevant to the analysis unfolded here. Dewey suggests a realistic account on inquiry by saying that a situation may have certain traits. Indeterminate situations can be disturbed, troubled, ambiguous, confused, and full of conflicting tendencies, obscure, and more. So, we are doubtful because the situation is doubtful. In his view, personal state of doubt refers to the situation and not just to some mental state of the individual. (Dewey, 1977; Cole, 1996)

ways of doing things and expanding herself through the process. She is thinking because she is an intentional agent in a life-world; hence, thinking is a functional aspect of human life. The subjective act of thinking is a process in the individual, but it is informed by and adding to the ongoing flow of dynamic environmental-societal complexities and ambiguities. Of course even the ill-defined concept of a 'situation' is an abstraction. But nevertheless, it might be helpful to further methodological studies following the suggested ecological approach to thinking - because the 'global situation' serves as an open-ended and dynamic *unit* of analysis. The *how* and *what* aspects of thinking in humans cannot be separated within an ecological dialectical framework. How people think is not answered by appealing to mental structures or functions, it is not about technologies or abstract hierarchies neglecting content. What people think, on the other hand, is not just about cultural specific content and differences or a matter of individual preferences.

Thinking processes might be studied on the basis of ecological theory and developmental science, if psychology succeeds in developing a methodology that helps us focus on dynamics of human life. This is a strategy that breaks with 'cognitive' psychology. It is a suggestion to rethink processes of knowing, learning, thinking, etc. within a much less segregated general psychology.

References

Bakhurst, D. (1991). *The Problem of the Ideal. Consciousness and Revolution in Soviet Philosophy*. Cambridge: Cambridge University Press. 175-215.

Bolton, N. (1991). Cognitivism: A phenomenological critique. In Arthur Still & Alan Costall: *Against Cognitivism – Alternative Foundations for Cognitive Psychology*. Hertfordshire: Harvester Wheatsheaf. 103-121.

Cole, M. (1996). *Cultural Psychology – a once and future discipline*. Cambridge, Mass.: The Belknap Press of Harvard University Press.

Costall, A. (1991). 'Graceful degradation': Cognitivism and the metaphors of the computer. In Arthur Still & Alan Costall: *Against Cognitivism – Alternative Foundations for Cognitive Psychology*. Hertfordshire: Harvester Wheatsheaf. 151-169.

Dewey, J. (1949/1977). The Pattern and Structure of Inquiry. From Logic: the theory of Enquiry. Reprinted in John Sidorsky (Ed.) (1977). *John Dewey – The Essential Writings*. Chap. 4. Harper Torchbooks. 31- 43.

Engelsted, N. (1989). What is the psyche and how did it get into the world? In Niels Engelsted, Lars Hem & Jens Mammen (Eds.). *Essays in General Psychology – Seven Danish Contributions*. Aarhus University Press.13-48.

Gibson, J. J. (1966). *The Senses Considered as Perceptual Systems*: Houghton Mifflin Company.

Gibson, J. J. (1975). Events are Perceivable But Time Is Not. In J. T. Fraser & N. Lawrence: *The study of Time II*. Springer-Verlag. 295-301.

Heft, H. (2001). *Ecological Psychology in Context – James Gibson, Roger Barker, and the Legacy of William James' Radical Empiricism*; Lawrence Erlbaum Associates.

Hegel, G.W.F. (1809). *Phänomenologie des Geistes*. Leipzig: Fritz Eckardt Verlag.

Hegel, G.W.F. (1812/1969). *Hegel's Science of Logic*. London: George Allen & Unwin LTD.

Ilyenkow, E. V. (1977). The Concept of the Ideal; In: *Philosophy in the USSR – Problems of Dialectical Materialism*; Moscow, 71-99.

James, W. (1898). *The Will to Believe – and other Essays in Popular Philosophy*. Longmans Green and Co.

James, W. (1912). *Essays in Radical Empiricism*. New York: Longmans, Green, and co.

Leontjew, A. N. (1983). Virksomhed, *Bevidsthed, Personlighed*. Moskva: Sputnik

Marx, K. (1845). *the German Ideology, Part 1; A: Idealism and Materialism; chap. 4: The Essence of the Materialism Conception of History, Social Being and Social Consciousness;*http://www.marx.org/archive/marx/works/1845/german-ideology/ch01a.htm

Mayer, R. E. (1992). *Thinking, problem solving, cognition*; W. H. Freeman and Company.

Neisser, U. (1976). *Cognition and Reality*. San Francisco.

Ohnuki-Tierney, E. (1994). The Power of Absence. *L'Homme 130, avr.-juin, XXXIV (2). 59-76.*

Reed, E. (1997). *From soul to mind: the emergence of psychology, from Erasmus Darwin to William James*. London: Yale University Press.

Wartofsky, M. W. (1980). Visual Scenarios: The Role of Representation in Visual Perception; IN: *The Perception of Pictures*, vol. II, Academic Press, Inc., chap. 4.