Context and background.
Dreyfus and cognitive science

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In Hubert Dreyfus's critique of artificial intelligence[1], considerable importance is given to the matter of context –used here as a blanket term covering an immense and possibly heterogeneous phenomenon, which includes situation, background, circumstances, occasion and possibly more. Perhaps the best way to point to context in this most general sense is to proceed dialectically, and take as a first approximation context to be whatever is revealed as an obstacle whenever one attempts to account for mental dynamics on the formal model of a combinatorial game over families of interchangeable, fixed, self-standing – context-free as it were– elements. Dreyfus has argued persuasively that the human mind always 'operates', if that is the right word, within a setting which permeates whatever it is it operates on.

Dreyfus's thought on these matters was shaped during the years when artificial intelligence (AI) was at the height of early hopes and initial successes. This was also a period during which what was to become known as 'cognitive science' was little more than a ray of light falling on psychology and linguistics from the rising sun of AI[2]. Neuroscience was scarcely visible. Philosophy of mind as we know it today was confined to a small, exclusively philosophical circle, and philosophy of language was only beginning to enter the 'cognitive turn'. The whole field has by now undergone a sweeping reconfiguration, as well as an enormous development. On one hand, AI is no longer a central subdiscipline in cognitive science, and it has been thoroughly transformed by the advances of neurocomputing; it is now 'good old-fashioned artificial intelligence' (GOFAI[3]) which has become scarcely visible from the standpoint of mainstream cognitive science. On the other hand, philosophy of mind and philosophy of language have all but fused into one single branch of philosophy of which a major trend has become a partner in the cognitive enterprise.

Despite the changes, Dreyfus's analysis of AI not only continues to be relevant as a critical tool for evaluating the field of AI as it has evolved –as he himself has shown in the third edition of the 1972 book, in the book with his brother Stuart Dreyfus[4] and in various papers, and as the present volume proves–, but it also raises crucial issues for cognitive science today. However on this second front the situation is far less clear, and the present essay aims at showing, on a modest scale, what sort of clarification is required. The reasons this is not an entirely straightforward matter are twofold.

There is, first, the general question of the relation between Dreyfus's work and cognitive science. Less attention than what might have been expected has been paid by either side to the other. This could be the effect of one of two opposite causes.

On Dreyfus's part, it could be seen as the consequence of his belief that his main arguments apply, *mutatis mutandis,* to most of cognitive science, and therefore need not be spelled out at length,

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[1] Dreyfus 1972/1979/1992.

[2] In the introduction to the 1979 revised edition of the 1972 book, Dreyfus refers to cognitive science (p.27) and quotes in a footnote (p. 309) the definition given by Allan Collins in the first issue of the journal *Cognitive Science* (1976) Today's cognitive scientist, regardless of persuasion and field, would be quite amazed by Collins's definition: as Dreyfus reports it, it clearly puts GOFAI in the center, with psychology the only other field mentioned as germane, and in a marginal role at that (some "experimental techniques developed by cognitive psychologists in recent years" are included among the "analysis techniques" of the new discipline).

[3]'A felicitous phrase coined by John Haugeland in his 1985 book to refer to the first epoch of artificial intelligence, roughly from its Promethean beginnings in the mid-fifties to the onset of doubt in the late 1970s, which coincided, and in fact was correlated with, the rebirth of connectionism.

[4] Dreyfus and Dreyfus 1986.

at least not by him. That belief in turn could be supported by either one of two arguments. On the side of the analysis, Dreyfus could claim that his diagnosis of AI is but the outcome of a much more general assessment of the whole Western philosophical tradition, and that cognitive science, for the most part, insofar as it resists straighforward reduction to, or absorption by, neuroscience, is directly inspired by that tradition and therefore falls under the same critique. On the side of the object of the analysis, Dreyfus could be tempted to say that cognitive science is really, as Collins saw it in the early days, just AI pursued by more diverse means[5]. It would not even be necessary, then, to take the long route through the philosophical tradition.

Alternatively, Dreyfus could decline the responsibility of assessing cognitive science as a whole, and insist on being read as aiming solely at a certain paradigm[6], of which AI is an immediate, literal application, and which could, and probably has, informed parts of cognitive science, without taking a stand on the extent to which the actual commitments of today's cognitive science relate to that paradigm.

Symmetrically, cognitive science may regard the Dreyfusian critique of AI as either too sweeping, and thus overshooting the mark, or too restricted to be of concern. If Dreyfus –so might cognitive scientists reason– thinks of his arguments as militating against the very idea of cognitive science[7], he must be wrong; if on the other hand he takes them to apply only to AI, why should we feel concerned?

The second reason why it is no easy matter to assess the mutual relevance of the Dreyfusian analysis of context to cognitive science and vice-versa is that there has been a considerable evolution in the way philosophers of language and of mind have been thinking of content and context. In the last fifteen years or so, several important research programmes have been launched which are all predicated on one or another form of contextualist assumption –the assumption, or perhaps the observation, that context is a crucial and ineliminable aspect of intentionality. These programmes have reached a degree of sophistication and depth which makes proposals offered in the GOFAI framework look simplistic or obsolete. It would thus be reasonable to expect the contributors to this recent current of thought, on one hand, and Dreyfus and his followers, on the other, to acknowledge one anothers' work: one camp would be praised as pioneers, the other would welcome the fulfillment of its predictions. But in fact there is –as far as I know– no sign of any awareness of the other group's existence. Why is that? Perhaps there is, appearances notwithstanding, little in common between the two – the issues may be distinct, and/or the inspirations which guide the analyses orthogonal. Perhaps philosophical styles and traditions makes mutual understanding impossible. However it be, the question deserves to be asked.

The paper has two aims. One is simply to lay out in the open what I take to be, in rough outline, on one hand Dreyfus's contribution to the general issue of context, and on the other what the new contextualism is about; space limitations prevent all historical and textual detail, but enough is provided I think to show, first that Dreyfus has directly exerted some, insufficiently acknowledged, influence, but that common sources also have their share in whatever convergence there is, and second that there is a lot of divergence as well between the two enterprises. The other aim is to sketch some ways of reducing the gap, thus outlining the relevance of Dreyfus's work to some central issues in cognitive science, and conversely the possibility of bringing recent developments of cognitive science and philosophy of mind to bear on his theses.

1. Dreyfus's analysis of context, situation and background: A bird's eye view

At first glance, context, background, situation, circumstances, environment are so closely related and at once so loosely defined that one may wonder whether, appearances notwithstanding, they don't refer to one and the same phenomenon. On the other hand, it would certainly be wrong to defer to common, or philosophical, usage, to distribute different contents to these notions as if there were a consensus on how to do it. The fact is that, as far as the terms go, common parlance is

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[5] He certainly does say this whenever he comments on Fodor or Chomsky, but of course what he then picks on are 'formalist' pronouncements by these authors which reflect but one current within cognitive science, and in somewhat dated terms at that –no criticism of Dreyfus being implied, of course: he rightly dealt with the 'best scientific theory' available at the time he wrote. This leaves entirely open the question raised: Is Dreyfus willing to say that essentially all of cognitive science today is either neuroscience or glorified AI? What would militate against this interpretation of Dreyfus's attitude is his recourse, especially in and since the 1986 book with Stuart Dreyfus, to arguments drawn precisely from empirical research in cognitive psychology.

[6] "Cognitivism", as it has come to be known since John Haugeland and John Searle (independently?) coined the word.

[7] To paraphrase Haugeland's title.

hopelessly fickle, while theorists in philosophy of language, philosophy of mind, artificial intelligence and cognitive science, have by no means agreed on a distribution of technical uses.

The three basic terms, in Dreyfus's vocabulary, are 'context', 'situation', and 'background'. Dreyfus employs 'context' and 'situation' as nouns standing by themselves, and they are entries – rich ones– in the index of *What Computers Can't Do*; while 'background' does not usually stand alone, being often a constituent of the phrase "against the background of [*e.g.* practices]", or appearing in expressions such as "[contextual regularity is] the background of problem solving, language use, and other intelligent behavior" (p. 271), and does not appear in the index of the book. Only when discussing, many years later, Searle's notion of Background (capital B) does Dreyfus treat 'the background' as an noun phrase in subject position, and background as some sort of entity. However the basic idea of the background, as it has come to be known following Searle's 1983 *Intentionality,* is fully present in Dreyfus's 1972 book, and the grammatical difference reflects his well-developed view on the background phenomenon and what distinguishes it from the context and situation phenomena.

Context, for Dreyfus, is at root the setting (to use the vaguest possible word) in which humans encounter facts, utterances, problems, etc.; the essential feature of context is that it is not definable by rules nor readily representable in any way (in particular, it does not consist, on any given occasion, of a finite set of features, let alone pieces of information). The context phenomenon is a basic character of our cognitive or mental lives which consists in the fact that we are never (at least in natural circumstances) confronted with any task at all outside a context: there is no such thing as understanding a word, translating a sentence, solving a problem (however simple), deciding on the appropriate response to a demand, independently of some context in which the word, sentence, etc. has in fact appeared: for human beings, signs, demands, tasks *never* show up in isolation. Therefore whatever fixed meaning, rule, knowledge, representation or information may be thought to be attached to a given sign, demand, task etc. in a proprietary way (as on the traditional view, the word 'dog' is endowed with a fixed meaning consisting, for example, in a rule for determining the correct application of the word) has to be 'mixed' in one way or another with 'ingredients' coming from the context.

This view is conceptually[8] compatible with a position which Dreyfus actually rejects: AI of the traditional sort (GOFAI), as well as various schools in semantics and pragmatics, agree that 'meaningful stimuli' or representations seldom come in isolation. The process of understanding or 'processing' such stimuli, they believe, consists in determining the contribution of context, and this they conceive of as discovering the set of relevant aspects of the context, finding the appropriate representations of those aspects, and running a kind of inference on the set of premises consisting of the content or information attached to the meaningful stimulus by itself, together with the representations of the relevant features of the context[9]. Everyone agrees that this is a very difficult task, but the view is that it is actually performed by the human mind; therefore, the *context problem,* which I take to be the scientific problem of describing this process[10], be it step by step in restricted families of cases, is a meaningful problem.

Let us call this view *moderate contextualism*. Moderate contextualism stands in contrast with a position which is even further away from Dreyfus's view, and which may be called *context eliminativism*. Contextual dependance, according to this other view, is a mere appearance, which a proper reanalysis of the task under consideration will simply eliminate: context-dependent processing, or processing of context-dependent items, are really nothing but 'wild' varieties of context-free processing of context-free elements: it is all a matter of discovering the right elementary procedures and elements, which is naturally harder than in the case of laboratory-grown varieties (also known as toy problems).

As is well known, Dreyfus attacked eliminativism in his 1972 book, with such effectiveness that when, in the mid-eighties, the connectionists reappeared on the scene with the PDP paradigm[11], one of their main arguments, on the performance end, was that connectionist nets were not only context-sensitive (which at least by that time all self-respecting GOFAI programs equally claimed to

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[8] *I.e.* independently of feasibility issues.

[9] The context thus appears on this view under the guise of 'cognitive environment': it stands to mental happenings in the relation in which physical happenings stand to the physical environment. The use of 'environment' in the discussion of context is indicative of a strong naturalistic stance which is of course quite foreign to Dreyfus. Dan Sperber and Deirdre Wilson's Relevance Theory (Sperber & Wilson 1986) is the most sophisticated research program predicated on the identification of context with cognitive environment.

[10] To which one might wish to associate the technological problem of simulating the process.

[11] PDP stands for Parallel Distributed Processing, see Rumelhart and McClelland 1986. PDP models are feed-forward neural nets made up of successive layers going from input to output; thus they are generalized perceptrons; see Anderson and Rosenfeld 1988 for a history of the neurocomputing tradition, including Rosenblatt's perceptron.

be), but that they were *naturally* so, which meant that they could deal with context without in effect eliminating it, in contrast, said the connectionists, with GOFAI programs.

PDP connectionists were in fact moderate contextualists, if not in theory, at least in practice, insofar as the context problem which their models could conceivably solve was the problem which moderate contextualism construes as the context problem. Because Dreyfus had not considered the possibility of moderate contextualism at first, probably due to the fact that the position he wanted to discredit was GOFAI's eliminativism, he welcomed PDP as a step in the right direction. However, he had already provided, in the 1972 book, arguments equally effective (or ineffective) against moderate contextualism as against eliminativism.

These arguments are those which appeal to the situation and to the background. Dreyfus doesn't in fact make a clear terminological distinction in the book, and it is only my decision as a commentator to use the label 'situation' for one set of considerations , and the label 'background' for another. In Dreyfus's mind, they go hand in hand, and I don't know how helpful he would regard my analytic attempt at peeling them apart.

Situation, as I propose to use the term, is *based* on objective features of the environment. However, as Dreyfus sees it, not only is it not represent*ed*, but that it is such that it cannot in principle be turned by a cognitive system (man, animal, or machine) into a bunch of representations with the help of which the system then determines the proper course of action. Now why is such a move impossible? Dreyfus advances two reasons. On one hand, a situation is *holistic*. Its (brute) elements do not exist independently of the context as a whole, or at least they do not carry an intrinsic significance: only the situation endows them with meaning and relevance. Therefore it is not open to the system to evaluate the situation *on the basis of* its elements. On the other hand, the situation already includes the system's expectations and goals, so there isn't even the possibility of first assessing, in whatever way, the (holistic) contribution of the environment, independently of the system's state, in order to determine the course of action as a function of environmental constraints and internal dispositions. What the environment contributes is, so to speak, laden with the system's views, somewhat in the way in which philosophers of science have come to recognize that observations are theory-laden, and even, since Kuhn, that the very meaning of observational terms depends on the theory within which they are deployed.

The phenomenon of situation *per se* does not actually spell the inevitable doom of moderate contextualism, although it remains to be shown exactly how situations would be handled in that framework. But context also carries or constitutes a background; and there perhaps lies a reason why context must evade any form of moderate contextualism, however sophisticated.

Let us consider again, in as simple a form as possible, the question which is being raised. A human being –or, more generally, a cognitive system– is, again and again, confronted with the problem of what to do next . Although the person or system may not think of its predicament as a problem, let us accept this description and construe it sufficiently broadly as to include, for example, the "problem" for Mary of how to give meaning, here and now, to an acoustic stream such as "Could you pass the salt?". The question being raised, again, is whether there exists a general method which Mary, or any creature or system, can apply to the "terms" of the problem in order to discover its "solution", a method which moreover could in principle be made fully explicit and be shown to consist of a sequence of simple, unproblematic, steps.

Context-eliminativism consists in postulating a positive answer. But as we have seen, arguments provided by moderate contextualists as well as Dreyfus have conclusively shown, there is no way the theorist can reparametrize the 'phase space'[12] so that contextual clues disappear altogether. Further, as we have just seen, contrary to the hopes of the moderate contextualists, there is no way one can systematically infer the correct answer as a function of the occasion regarded as constituted by a *given* collection of *objective* features of the state of affairs obtaining at the time and location under consideration, features defined independently of the occasion (holism) and of the expectations of the creature (subjectivism). Still, why couldn't there be a mechanism which, given the expectations of the creature, and the objective totality of features of the physical setup on the occasion under consideration, would produce, *e.g.* as a fixed point in the sense of (mathematical) functional analysis, a global solution made up of (interrelated) features of the physical setup, of the relevant aspects of the subjective take on the situation by the creature, and of the algorithm leading to the desired next step? Such would be the fond hope of a sophisticated moderate contextualist.

That hope is futile, according to Dreyfus, because context, on a given occasion, not only defines a situation, but also constitutes a background. The postulated mechanism would in effect treat the occasion as a type, and in order to subsume it under that type would tear it away from its singular spatio-temporal location. But why should we believe that such an extraction might be possible? This would require an absolute standpoint from which to conduct the operation. In turn,

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[12] John McCarthy's way of putting it, in a quotation in Dreyfus 1972: 213 from M. Minsky, ed., *Semantic Information Processing*, Cambridge, MA: MIT Press 1969.

this absolute standpoint could be obtained only by emptying the occasion under consideration of *all* of its features. Indeed, the moderate contextualist's sophisticated strategy consists in distinguishing between the "ordinary" context, made up of local and localizable features of the occasion, what may be called the "proximal context" on one hand, and on the other the "distal context" which includes all the rest[13].

The immediate objection is that this is more than can fit in any *manageable* notion of context: it is too much to detach. The background which is present on any given concrete occasion is, in his words, "something like an ultimate context [...] the even broader situation –call it the human life-world"[14]. What we have here is something like a logical argument, akin to the fact that the collection of all sets is too 'large' to itself be a set. On that reading of the notion, there is *nothing* such as the background, rather the background is the *medium*, the Husserlian 'outer horizon' or even perhaps the Jaspersian *Umgreifenden* ("the encompassing").

But Dreyfus's has a second problem in mind, which he regards as even more serious. For him, background operates as an existential, rather than purely logical, precondition. In Wittgensteinian language, it is a (or *the*) human form of life: "The human world […] is prestructured in terms of human purposes and concerns in such a way that what counts as an object or is significant about an object already is a function of, or embodies, that concern."[15]. A biological counterpart might be von Uexküll's *Umwelt*. But Dreyfus's major references are Heidegger and Merleau-Ponty. The background, in the Heideggerian framework, is provided by a particular state, mode of being in which an involved human being (no mere creature) copes with a situation already fully endowed with meaning, and bearing within itself, so to speak, the entire equipment necessary for coping. On this reading then, the background is the condition of possibility for there to be anything at all of any significance to a being.

A rather different way of construing the background makes it a causal factor in the production of representations. Two options are available here. One is mentalistic, and is defended by John Searle in his book *Intentionality*: "The Background is a set of nonrepresentational mental capacities that enable all representing to take place"[16]. In later works however he seems to generalize his notion of the Background, as witnessed by the following characterization: "Intentional phenomena […] only function within a set of Background capacities which are not themselves intentional"[17]. Among those capacities are manners of doing, know-how, ways of comporting oneself in the human, in particular social, arena. But Background need not be, in Searle's revised picture, mentalistic in a literal sense: "[W]hen we talk about the Background we are talking about a certain category of neurophysiological causation."[18]The "capacities" (by which he means "abilities, dispositions, tendencies, and *causal structures generally*"[19]) involved need not have an exact description in the vocabulary of psychology; indeed, one should expect them usually *not* to have such a description, given that psychology as currently understood is intentionalistic, while Background is *defined* by Searle as composed of "nonintentional or preintentional capacities"[20].

Dreyfus, however, criticizes Searle for falling into the same trap as Husserl: they are both wrong to assume, he writes, "that […] meaning must be brought into a meaningless universe, from outside as it were, by *meaning-giving minds*"[21]. He charges both Husserl and Searle to hold on to the notion of a something in the head, a noema or a neurophysiological process, in which the essence of intentionality would lie[22]. Seen in this light, background only informs this process, shapes it to give it its specific content. Dreyfus rejects this view and wants to steer clear of both a logical and a psychologistic construal of the background

For this he relies in part on Merleau-Ponty's idea of a bodily origin of meaning; on the view he defends, and which is becoming increasingly popular in cognitive science, action comes before reflection, and body before mind: "He [Merleau-Ponty] argues that it is the body which confers the meaning", writes Dreyfus[23]. The body is the seat of a learning process in virtue of which, according

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[13] This distinction is proposed by Bianchi in her dissertation.

[14] Dreyfus 1972: 221

[15] *Ibid.*: 261. Concern should not be too quickly reduced to a goal in the standard (detachable) sense.

[16] Searle 1983: 143.

[17] Searle 1992: 175.

[18] Searle 1992: 129.

[19] *Ibid.*; italics his.

[20] *Ibid.*

[21] Dreyfus 1998, section II; italics his.

[22] Dreyfus 1982, Introduction.

[23] Dreyfus 1972: 248.

to the Dreyfus & Dreyfus model[24], the logical world of context-free rules which in many cases at least guide the beginner is transformed into a set of generalized bodily habits or skills. This makes the background sound much more concrete and much less transcendental.

But Dreyfus emphatically does not want to reduce it to the neuroscientific description of the underpinning of a *psychological process.* Following Heidegger, Dreyfus denies the possibility of an intentional content disconnected from involved coping; at least, of *primary* intentional content; what does exist is derivative intentional content which is ontologically, and presumably ontogenetically, dependent on pretheoretic understanding; and which (I assume) would not conceivably arise in the absence of that very special social skill called language.

That this would be hard to accept should not surprise us, according to Dreyfus: the whole philosophical tradition has hidden it from our view. Producing a transparent account of background is surely beyond the purview of this paper. For our purpose here, it may perhaps suffice to summarize the discussion thus: the background is no thing, not even a set of objective practices, corporal dispositions, acquired skills, or whatever; rather, it is what practices, corporal dispositions, acquired skills etc. jointly secrete in historical time and which makes significance possible (not logically, not in every possible world: in our human world).

2. The new contextualism

At a distance, it is fairly easy to discern a cluster of ideas which notwithstanding differences in disciplinary origin, motivation, content, fineness of grain, share an interest in contextual phenomena and a conviction that, very roughly, standard formalist approaches are unable to account for them. An additional trait which they share is contrastive: they all *look* very different from Dreyfus's ideas – which is one reason[25] why it is so tempting to think they deal with completely disjoint topics. The challenge is to bring to light the connections between what Dreyfus on one hand, and the new contextualists on the other, have in mind, without simply lumping them together under the common banner "We Take Context Seriously!".

The new contextualism forms a large domain straddling mostly the semantics/pragmatics province of linguistics –including computational models–, philosophy of language, and, increasingly, philosophy of mind. Some new contextualists remain formalists, convinced however, precisely by the unsolvability of the context problem(s) in the classical framework, that new formalisms must be invented, or that formalism itself must undergo reform. At the other extreme, some draw their inspiration from Wittgenstein and have no interest in exploring any kind of formalistic or naturalistic research programme. In between are those who are anti-formalists but seek a reformed, non-functionalist, naturalism. What keeps the conversation going between them, despite their differences, is a shared Fregean culture, and a common starting point: the matter of meaning, and more specifically the coherence or applicability of the notion of literal meaning. While what gets in the way of a conversation between them and Dreyfus is the latter's starting point –the matter of intelligence and more specifically the coherence or applicability of the notion of mechanical intelligence– and on the cultural side the existential phenomenology from which he draws his deepest inspiration.

The idea that words have fixed, intrinsic, literal meanings is one of the most entrenched in philosophy, as well as common sense, and it retains its appeal even in the present context-aware atmosphere. One important dimension along which the new contextualists can be ordered is the degree to which they attempt to distance themselves from the thesis that *something like* literal meaning plays a role in the intentionality of words and of acts of linguistic communication. The leading figure in the moderate camp is David Kaplan. Kaplan's idea[26] is that what is intrinsically attached to a word is not a meaning in one or another traditional construal (intensional or extensional), but rather what he calls *character*, which is a function from contexts to contents. In other words, a word standing by itself does not in general directly point to anything at all, whether material or Platonic; instead, it requires a context of occurrence to do so. Kaplan's goal is to show that the word provides, or is constituted by, a set of rules which automatically take the occurrent context as input and outputs the content. Some words, according to Kaplan, –he calls them pure indexicals– fit this scheme perfectly: there is a rule which, given an occurrence of the sentence "I am thirsty", provides the word 'I' with its referent, *viz.* the speaker (in the simple case where the sentence has been uttered). Similar rules work for 'here', 'now', 'today' and so forth. He contrasts these words with what he calls 'demonstratives', whose content depends on both a (static,

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[24] See Dreyfus & Dreyfus 1986, chap. 1.

[25] The other being historical and sociological, a matter of what one has time to read, how much attention one is ready to invest, how generously one acknowledges intellectual debts, etc.

[26] See Almog *et al.* 1989.

occurrent) context and on a *demonstration,* a particular event which accompanies the occurrence of the word: typically, 'this' is accompanied by a pointing event.

This bare beginning of a sketch of Kaplan's line of thought will do for present purposes. The following questions can already be intelligibly raised: (1) Does Kaplan's scheme work in the most favorable case, *i.e.* for pure indexicals? (2) What exactly is a demonstration? (3) Isn't there something to say about what a context is, and isn't it reasonable to ask, in view of Kaplan's goal to provide self-standing semantic rules? (4) Are all contextual effects, beyond indexicality and 'demonstrativity', likely to yield to the same sort of treatment? In particular (5) To what extent is the semantic (properly linguistic) level sealed off from the pragmatic (*general* cognitive) level? If the latter somehow leaks into the former, how are we to going to protect the objective context from the boundless influence of subjectivity? –or in other words, what is going to protect us from the possibility that any given sentence can get to mean anything at all according to the participants' states of mind, even when linguistic conventions remain fixed? And thus finally (6) What if context comes first, in such a way that there can be no context-independent rule attached to words and strings of words which dictates what parameters need to be assigned values, and what aspects of contexts are to determine theses values?

This paper's aim is not to provide encyclopedic, let alone original, answers to these complex, interrelated questions: they motivate an extensive literature to which the reader is referred. Here they can help us set up a few landmarks on the territory.

A preliminary observation concerns the relevance of the problems raised by context for *linguistic* phenomena to the problems concerning *cognitive* phenomena. In interrogative form, what does Kaplan's line, for example, which is obviously part of the philosophy of *language,* have to do with the philosophy of *mind* ? Well, the passage from language to thought is provided by the idea that the meaning of a declarative sentence is a proposition, and that propositions are the sort of entity which many of our mental states are relations to (attitudes toward); conversely, it seems natural to individuate many of our mental states by way of specific beliefs, the specification being provided by a declarative sentence. Seen in this light, there is a very close connection between the sentence "It's raining" and the thought or belief *that it is raining.*

This simple transfer principle immediately leads to problems such as the following. There are indexical sentences, are there correspondingly indexical thoughts? According to the classical Fregean framework, thoughts cannot be indexical: the completion of meaning works at the linguistic level, and the proposition labelled by the sentence is necessarily complete, self-standing. But this is not the case, as John Perry has convincingly shown[27]: there are thoughts, or propositions, which contain an ineliminable indexical element. The transfer principle applied in the reverse direction then raises a question for Kaplan's treatment of pure indexicals in sentences. But Perry's work also raises an interesting point for Dreyfus's analysis, as we will briefly indicate in §3.

A related issue is whether all the 'ingredients' of a thought are present in the sentence whose meaning it constitutes – can one think a thought which *involves* X without the thought including a thought *about* X? In the standard framework, the answer is no, but Perry again shows this to be mistaken[28]: some thoughts at least comprise elements which are not represented. And again this throws a new light on Dreyfus's take on the issue of representation.

Perry, and his co-author Jon Barwise, are fairly radical. Radicalism may also result from a certain way of examining questions (2)-(6) above. For example, the phrase 'Jim's book' involves a 'demonstration' not only of Jim (the hearer, reader, interpreter of the sentence must know which Jim is being referred to), but also of the relation indicated by the genitive[29]. The classical attitude treats the underdetermination as a form of polysemy: the interpreter has to choose, among the several meanings of the genitive, which one applies in the case under consideration: are we talking of the book Jim *owns*, or of the book Jim *is reading*? The trouble is that there simply is no finite list, and actually no list at all, of the relations which Jim may bear to the book: he may be giving it, stealing it, praising it, hating it, printing it, having wanted to write it for years, using it as a fly swatter, sitting on it to reach his plate, thinking about it obsessively, quoting from it, not being able to remember its title, denying it ever existed, and so on *ad infinitum.*

This is but one (especially interesting) case of what is referred to since Friedrich Waismann as the *open texture*[30] of natural language, and examples such as this are so familiar among the new contextualists that one sometimes marvels at how much delight seems to go into making up ever better and wilder variations in order to illustrate very similar points. Of course, the inspiration here

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[27] Perry 1992, especially the title essay.

[28] *Op. cit.,* especially "Thought without representation".

[29] Recanati makes extensive use of this case; see *e.g.* Recanati 1998.

[30] Waismann 1945 coins the expression in relation to empirical predicates; his position reflects Wittgenstein's famous remarks on family resemblance in the *Investigations* .

is Wittgenstein, and the best representative of unabashed radicalism, as far as linguistic contextualism goes, is Charles Travis, the author of a book subtitled *Wittgenstein's Philosophy of Language*[31]. Travis's thesis is that the truth conditions of a sentence are *occasion dependent.* Whether it is the case or not that there is water in the refrigerator depends on the occasion in which the sentence is considered or uttered: is the topic drinkable water in an accessible container and in sizable quantity, or is it humidity rendering the refrigerator electrically permeable, or is it frost on the coils, or is it H_2O molecules in the cottage cheese? etc.

Contrary to pure indexicals, polysemous words, lexicalised metaphors, anaphoras and the like, sentences such as "There is water in the refrigerator", or "York lies 25 miles north-west of Leeds", or "The table is covered with breadcrumbs" don't bear their incompleteness on their sleeves[32]. They contain no pointer to some element whose interpretation is both needed for an understanding of the sentence (or the fixation of its truth conditions) and requires searching the context, the circumstances of the occasion. It is the context which tells the interpreter which features of the sentence need contextual determination. Words, on that view, loose the leading role which is theirs in the traditional picture, and remains theirs in moderate forms of contextualism.

Yet another important feature of examples of this sort is that they can undergo an indefinite number of additions such that the truth conditions of the sentence (or the applicability of the predicate) under consideration, undergo a brutal change at every addition. This shows that there is no locality principle in virtue of which, given a sentence (or predicate), there is a prespecified list of aspects of the context which it is sufficient to consult in order to fix its truth conditions (or applicability). This is a form of holism which does not appeal to notions such as the sense of the situation, the practices of the community, the involvement in a form of life, in short, the background in one or another form, but is every bit as threatening to the formalist view.

Reference to Wittgenstein, as well as the general flavor of the examples in this literature, and also the passion for collecting these examples, these signs all point to two authors well known to the reader. One is Dreyfus, of course, the other is John Searle, who deserves a special mention here, for his theoretical contribution of course but also because of the likeness of some of his views to Dreyfus's. Very roughly, Searle uses context in the straightforward sense, at first, as an argument against the cognitivist view of the mental; he then generalizes his notion of context to background, and uses background as an argument againt the intellectualist component of cognitivism; third (though not last chronologically), he argues against the informational/functionalist component of cognitivism. All of this is (very forcefully) written up in books and papers which appeared from the late 70's to the mid-90's. But all this is present, couched in a different language and framed in a different setting, in Dreyfus's 1972 book. The paradox is that Dreyfus quotes Searle, in his later writings, while Searle hardly ever quotes Dreyfus.

Indeed, it sometimes seems as though Searle enacts his own Chinese Room thought experiment, with *What Computers Can't Do* instead of the Chinese phrase book. It may well be that, although the book does figure in the bibliography of *The Rediscovery of the Mind*, Searle has not read it. But he certainly has absorbed it through osmosis, which is less of a miracle than might appear to one who is not familiar with the lively exchanges on the topic of AI prompted by Dreyfus's arrival at Berkeley in 1969. During the twenty-odd years when Searle's philosophy of mind developed, a constant flux of students, teaching assistants, post-docs, fellows of the richly-endowed Institute of Cognitive Science, gathered intellectual pollen from various teachers and dispersed it to everyone's benefit. The "critique of artificial reason" which made Dreyfus famous in some circles, and gives the book its subtitle, appeared in 1972 but was in the stage of intensive preparation in the years immediately preceding, and in particular was aired at a two-year seminar which many people attended and where well-known philosophers such as Charles Taylor gave talks. Chapter 9 of Searle's *Rediscovery*, published in 1992, is entitled "The Critique of Cognitive Reason", without a reference to Dreyfus's 1972 book (which appears, as was just mentioned, in the bibliography, but *stripped of its subtitle*). Similarly, Searle says at the beginning of Chapter 8, that "[i]n the early 1970s [he] began investigating the phenomena that [he] later came to call 'the Background'"[33] , and somewhere he writes that his theory is akin to no-one else's except perhaps Bourdieu. But that investigation was actually started in the mid 1960s by Dreyfus, and essentially concluded by the

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[31] Travis 1989.

[32] I focus here not on 'the' in the first and third sentences, but on what counts as water being present in the refrigerator, York lying (exactly?) 25 miles in a (exactly?) north-wersterly direction from Leeds, or crumbs (literally?) covering the table (so as to make it invisible?, etc.). Travis invents and examines such examples with exquisite thoroughness.

[33] Searle 1992: 175

early 1970s; the basic arguments, the basic features of "Background", the kinds of example[34], all this was laid open in Dreyfus's 1972 book[35].

There is a lesson in this, which has something to do with context in fact. What must have happened is that Searle was so caught up in his initial problem, which was what to make of Wittgenstein's attack on the Fregean ideas about meaning[36], that he did not realize he was picking up ideas which Dreyfus was developing across the hall while thinking about the mind. As he admits, "[t]he thesis [that only against Background are conditions of satisfactions defined] was originally a claim about literal meaning (Searle 1978), but [he now] believes what applies to literal meaning applies also to speaker's intended meaning, and indeed, to all forms of intentionality, whether linguistic or non-linguistic"[37]. But this is a rediscovery of the mind as Dreyfus pictured it, in print, twenty years earlier.

Before leaving the new contextualism, a word should be said about an extreme form of radicalism within that current of thought. For thinkers such as Lawrence Barsalou, Douglas Hintzman or Ronald Langacker[38], meanings vanish entirely from the theoretical horizon. They are replaced, essentially, by repertoires of cases, in other words, by *encyclopedic* information acquired through exposure. This is quite close to Dreyfus's idea (put to use by the PDP modellers) that an intelligent mind proceeds not by applying rules but calling forth from experience a collection of examples, applying an intuitive similarity metric, and finally dealing with the problem at hand in roughly the same way as with the experience closest to it.

One final remark may help in making out the level at which Dreyfus and the contextualists are converging. If they are right, a consequence of either view is that pure reflection plays a lesser role in mental life, in intelligent behavior, than the first cognitivists thought, and that what is no longer attributable to reflection must be borne either by the environment or by the mind itself, but then not in the form of representations. There may well be representations: some contextualists such as Searle tend to believe it, Dreyfus, or at least some of his radical followers, tend to doubt it, but at any rate they all argue in favor of a non-representational ground on which mental life rests, either, somehow, directly, or via a representational process.

3. Narrowing the gap

Despite their overlap and similarities which should by now be evident, Dreyfus and the new contextualists are equally clearly not saying all of the same things. Not only do they have different theoretical goals, and thus focus on different aspects of the phenomenon, but they also differ in the way they cut things up. And quite likely they actually disagree on important points. To narrow the gap does not mean to make the positions appear to be close, but to lower their degree of incommensurability. In this final section, I will attempt to bring out features of the respective frameworks, with the hope of offering a clearer picture of the problem situation; besides, the issues raised are of interest in their own right.

It is a striking fact that mind and intelligence have very complex, and very different, grammars. It is tempting for an outsider to think that Dreyfus and a typical contextualist such as Searle or Perry are simply not on to the same topic, one being concerned with intelligence, the other with mind. Insiders know better: grammar is misleading, they believe, and everyone is in fact after the same thing. The truth, I suggest, lies somewhere in between.

There are (at least) two reasons for the grammatical complexities. The first is that 'intelligence'[39] is polysemous even within the present context: in one usage it is nearly synonymous

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[34] In this area, very few of the examples are important in themselves (X's Y, as in Jim's book above, being one exception). What is needed is the basic intuition which allows one to manufacture them as the need arises. In his critique of Schank's restaurant script, Dreyfus 1972/9: 41 *sq.* shows how to do it: the trick is to focus on just about any feature of the situation, examine what commonsense and tacit assumptions about the material or social world make that feature the way it is, and negate any one of these assumptions. A comic touch does no harm.

[35] Which is, *of course*, not to claim that Searle's and Bourdieu's theories are contained in Dreyfus's! But there is considerable overlap.

[36] In conversation, Searle once mentioned to Dreyfus the impact which the reading of Wittgenstein's *On Certainty* had on his thinking.

[37] Searle 1992: 175.

[38] I owe these references to Bianchi's dissertation.

[39] In English, and in French even more clearly perhaps. The grammar is of course very dependent on the language; French, for example, has one word ('esprit') for both 'mind' and 'spirit', a linguistic fact which makes life difficult for a French philosopher of mind.

vith 'mind' (as in "Newborns [*or* dogs] are intelligent", which means the same as "Newborns [*or* dogs] have minds"); in another, it is a graded property of something, mind, behavior, person, and even, though perhaps metaphorically, system, institution, machine... The second source of complexity lies in the ontology: mind is either regarded as a thing, or as a function. On the reified, Cartesian view, intelligence is an 'accident' (in the Aristotelian sense) of the 'essence' mind; it can still be either roughly co-extensional with mind (the non-graded sense) or belong to a mind to a lesser or greater degree. On the functional view, intelligence is either strictly synonymous with mind or denotes its graded quality.

The whole idea of Turing, in his famous paper in *Mind,* is to get rid of these perplexities by adopting a stance which one could call 'grammatical behaviorism', and which may or may not, depending on further theoretical options, result from plain scientific behaviorism. Intelligent behavior on this view becomes the sole primitive notion, and mind and intelligence remain only as derivative notions, one with a built-in threshold (having a mind is equivalent to being above threshold) and one without (behavior can be intelligent to any degree from nil to infinity).

AI, which is Dreyfus's topic, is a form of behaviorism, directly bequeathed by Turing. But it brings in the mind through the back door: it postulates representations. Whether or not this is an inevitable consequence of the Turingian option is a difficult question which must be left for another occasion[40]. The crucial point for our purpose is that Dreyfus's main target is precisely that move. AI's original sin, for him, is not its behaviorism, it is its representationalism (its intellectualism). Dreyfus doesn't fault AI for being too behavioristic, but for being inconsistent in its behaviorism: it isn't behavioristic all the way and in the right way, *i.e.* in the way sketched by Heidegger and Merleau-Ponty. This is the deep reason[41] why the problem of AI is the right problem for Dreyfus to tackle, or rather why is it for him the right entry into the problem of mind. Although his ontology of mind remains mostly implicit, he is a radical anti-Cartesian, an eliminativist about the mind.

The new contextualists, on the other hand, have as their starting point not behavior but language. They are after *linguistic* understanding. Everybody knows since Chomsky's famous review of Skinner's book that language is the Achilles heel of (psychological) behaviorism. But Frege already had a Cartesian view of the mind, and so did Brentano (at least as contemporary analytic philosophers read him). Frege provides the framework for mainstream philosophy of language, and Brentano provides mainstream philosophy of mind with a definition of mind as bearer of representations. The new contextualists, by and large, belong squarely in that tradition.

Thus it is now plain that Dreyfus and the new contextualists, with different points of departure, meet on the topic of mind. It is equally plain that they deeply disagree: Dreyfus defends a sophisticated behaviorism, the new contextualists defend a sophisticated Cartesianism, or, to accommodate Searle's position, a sophisticated representationalism. The irony is that both camps use arguments from the phenomenology of context to show the inadequacy of the crude versions of their respective options: contextualists disprove simple-minded cognitivism, and Dreyfus disproves simple-minded behaviorism indirectly, by showing that cognitivism in any form is false for reasons which apply equally to behaviorism in the classical construal (cognitivism is indeed, seen from the right perspective, behaviorism pursued by novel means).

This way of putting the matter is an oversimplification however. As we have seen, among the new contextualists, while a majority lean towards naturalism[42], a minority tend to oppose it. This is where radicalism matters: very radical contextualists side with Dreyfus against all of their less than fully radical colleagues. Or rather, they would side with him, presumably, if they cared, as he does, to disprove the possibility of the cognitivist enterprise. Moderate contextualists, however sophisticated, hold on to the hope of discovering a "calculus" of thought which would faithfully model contextual effects while lending itself to mechanization, by virtue of being a calculus in at least roughly the sense imagined by AI. This stance is exemplified in a particularly clear and coherent way by Sperber and Wilson's Relevance Theory[43]. While recognizing, and indeed illustrating by entertaining and convincing examples, the "open texture" of communication, they defend a mechanistic account of interpretation. According to them, a hearer retrieves, from among the indefinitely many possible interpretations of a speaker's utterance, the correct one, by (nonconsciously) observing a double-maximisation principle: she goes for the most relevant at the cost of the least processing effort; and this works because the speaker is (nonconsciously) counting

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[40] See Andler 1998 for preliminaries. Turing himself did not make the move, perhaps only for lack of time, but pehaps also for deeper reasons.

[41] The shallow one being the historical situation of the field at the time Dreyfus got involved in it (as the introduction reminds the reader).

[42] Non-eliminative mentalistic naturalism, that is (as opposed to Searle's uneasy, or the Churchland's unabashed, neurobiological naturalism).

[43] Sperber & Wilson 1986/96.

on her to follow this strategy. Clearly, the hearer's task is a very particular one as far as cognitive tasks go: retrieving a speaker's communicative intention, as I have argued elsewhere[44], has a number of features which make it comparatively simple from the theoretical standpoint. But this is not the critical issue from a Dreyfusian perspective: what Dreyfus want to know is whether anyone claims to have a theory *of* relevance. But Sperber and Wilson are quite clear about the scope of their theory: their "principle of relevance" does not define, quantify or characterize in any way the relevance, for a hearer, of the informations she can potentially extract from an utterance by exploiting contextual clues. Such a task would be, they believe, hopelessly unconstrained. Their goal is to show how communication proceeds, in a given "landscape" of potential relevance: Relevance Theory is not a theory *of* relevance, but a theory of communication based on the idea that interpretation is inferential, that inference is permissive and therefore requires control, and that maximization of relevance subject to minimization of effort provides the necessary control principle.

Well then, it seems legitimate to ask whether the theory, beyond its obvious contribution to pragmatics, has a role to play in the overarching enterprise of naturalization of the mental. It is clearly meant to be. One should therefore expect the authors to hope that their theory would, in the fullness of time, hook onto a naturalistic account of relevance. Now sophisticated cognitive scientists don't take the failure of GOFAI's attempts at providing such an account as negative evidence against its possibility. But they are bound to pay attention to Fodor's arguments, in Part IV of *Modularity of Mind*, against the possibility of a science of "central processes" – in other words, a science of thought. Fodor bases his attack on, roughly, the consideration of context, and explicitly refers to Dreyfus in the penultimate paragraph of his book[45]: Fodor's general line can be characterized as an argument against the possibility of a theory *of* relevance. So that, while leaving untouched Relevance Theory, Fodor points to a severe potential limitation of its importance for cognitive science. One should therefore expect the authors of Relevance Theory to try and undermine Fodor's line. Indeed, Sperber mounts an attack against Fodor's "impossibility theorem for cognitive science" by questioning the irreducibly non-modular character of central processes[46] Although he does not claim to hold a solution to the problem of relevance, he argues that central processes are modular to a certain, and perhaps, large extent. In a certain way, Dreyfus could partly agree with Sperber's line: after all, as we have seen, he agrees that there is a non-representational dimension of mind. But of course, the "joints" within the "central processes" are of a vastly different nature than Dreyfus's embodied skills and concerned coping. And Fodor's intuitions on the matter, which for once echo Dreyfus's, retain most of their appeal, despite Sperber's pleas for domain-specificity.

The reader may feel at this point that the story is told: Dreyfus believes that intelligence can't be mechanized, or naturalized for that matter, while the new contextualists believe that literal meaning is not the centerpiece of linguistic theorizing; these concerns only partly overlap (that they do overlap is what I've been at pains to show), so that some agreement is possible, and actual to a small extent, and disagreement is possible, and actual to a large extent, but the opposition is too oblique to be resolved.

Yet this is perhaps not the end of the story. Each camp has its blindspot, and each has ideas which the other could profit from. There are several issues that are worth exploring. One is the self: Perry has shown that egocentric thoughts[47] must have a very particular, quite un-Fregean, structure if they must enter into an adequate account of action. This connects, on one hand, with the ontology of mind, and on the other with Dreyfus's account of the Merleau-Pontian conception of the centrality of the body in behavior. It is quite striking that traces of the primacy of the concrete, bodily ego should be found in the very structure of the simplest and ontogenetically earliest thoughts.

Another issue is Dreyfus's basic taxonomy of states of mind, inspired by his reading of Heidegger's *Being and Time* Division 1. Thoughts about hammers, for example, come in two varieties according to the mode of the state of mind of which they are a part. In the involved mode, there is no concept or representation of the hammer as a separate object in objective space-time, with objective, intrinsic properties, although there is competent coping with the hammer and also, as Dreyfus came to see[48], a form of awareness of the hammer. In the detached mode, the hammer-thought looks like a traditional representation, but it results from a rational reconstruction, it is not

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[44] Andler (in press).

[45] Fodor 1983: 129.

[46] Sperber 1994.

[47] This can be seen as part of a much broader issue, that of non-conceptual content, which is at present a lively area of research in the philosophy of mind. See Peacocke 1998.

[48] He credits Searle for having brought about this change in his views, see Dreyfus 1998.

primitive or basic. The passage from one to the other mode occurs on the occasion of a breakdown (the hammer not fitting in the fluid, competent coping in which the subject is engaged). The question which can be raised, from the standpoint of the neurophysiology and neuropsychology of motor action[49] but also perhaps by re-examining its phenomenology, is whether every state does not includes both a deliberative, detached, component, and an involved, automatic, component. This would not sit well with the thesis of the primacy of the involved mode of thinking. One place to look for further inspiration on this issue is developmental psychology: babies are not prone to deliberation, in the standard sense, yet they seem to display a highly differentiated, and systematically evolving, pattern of conceptual competence[50].

This is not the time to pursue either of these issues. But enough has been said, I hope, to show that Dreyfus's critique of artificial intelligence, far from setting him apart from contemporary cognitive science, puts him and his followers in direct contact with it. As always, contact means risk for both sides, as well as potential for enrichment.

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[49] See *e.g.* Jeannerod 1997.

[50] See *e.g.* Carey 1997.

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